

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**DEPARTMENT OF THE AIR FORCE  
INSTRUCTION 48-127**



**17 MARCH 2026**

**Aerospace Medicine**

**OCCUPATIONAL NOISE AND  
HEARING CONSERVATION PROGRAM**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This Department of the Air Force Instruction (DAFI) implements Department of the Air Force Policy Directive (DAFPD) 48-1, *Aerospace and Operational Medicine Enterprise (AOME)*; Occupational Safety and Health Administration (OSHA) Title 29, Code of Federal Regulations (CFR) 1910.95, *Occupational Noise Exposure*; and Title 5, CFR, Volume 1, Part 339, *Medical Qualification Determinations* in accordance with DoDI 6055.12, *Hearing Conservation Program*. This instruction administers the Department of the Air Force (DAF) Hearing Conservation Program (HCP) to prevent occupational illness and injuries under Federal and Department of Defense (DoD) references. This Instruction requires the collection and or maintenance of information protected by the Privacy Act of 1974 authorized by Department of Defense Directive (DoDD) 5400.11, *DoD Privacy and Civil Liberties Programs*. The applicable System of Record Notices Defense Health Agency (EDHA) 07, Military Health Information System, EDHA 19, Defense Occupational & Environmental Health Readiness System – Industrial Hygiene (DOEHRS-IH), and F044 F SG E, Electronic Medical Records System are available at: <https://dpcl.d.defense.gov/Privacy/SORNs/>. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. This DAFI may be supplemented at any level, but all supplements that directly implement this publication must be routed to Headquarters AF/SG Logistics and Installation Support Division (SG4/10) for coordination prior to certification and approval. Refer recommended changes and questions to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*. Route AF Form 847s from the field through the appropriate functional

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### ***SUMMARY OF CHANGES***

This document has been substantially revised and should be reviewed in its entirety. Major changes include: All Active Duty, Guard, and Reserve military personnel are required to receive annual audiograms, added hearing protection fit testing requirements for individuals enrolled in the HCP in accordance with (IAW) DoDI 6055.12, an added requirement that individual audiograms completed as a part of the Separation History Physical Examinations will be documented on a DD Form 2215, *Reference Audiogram*, or DD 2216, *Hearing Conservation Data*, and an added requirement to track all audiogram follow-up and fit-testing requirements in Aeromedical Services Information Management System (ASIMS). The document also includes substantial administrative template and terminology changes such as a chapter addition on guidance and procedures, the removal of Attachment 7, Office of Workers’ Compensation Program Hearing Loss Medical Requirements as paraphrased from the Department of Labor Hearing Loss Section Instruction, the removal of the Acoustic & Vibration Center of Excellence, and the removal of the Hearing Conservation Center. Several attachments have been reformatted and expanded into chapters to include certification, equipment standards, and testing protocols; hearing protection; fitness and risk evaluations; Medical Readiness Command (MRC)/Major Command (MAJCOM) Professional Supervisor details; and a noise exposure assessment strategy. Additionally, the Hearing Conservation Diagnostic Centers (HCDC) have been replaced by MRC/MAJCOM Professional Supervisors and installation Hearing Conservation Program Managers have been replaced by installation Professional Supervisors. Additional updates have also been made to the prescribed forms. AF Form 1672, *Hearing Conservation Diagnostic Center Referral* is obsolete and has been rescinded. Further, the DAF Form 1753, *Hearing Conservation Examination*, has been updated and is no longer required to be completed for Separations Health and Physical Examinations (SHPEs). Deference is given to the Defense Health Agency (DHA) for non-

operational health care delivery guidance. In instances where Air Force Medical Service guidance and DHA guidance overlap, commanders will prioritize Department of the Air Force operational readiness mission execution.

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## Chapter 1

### PROGRAM OVERVIEW

**1.1. The Hearing Conservation Program.** The DAF HCP is a command-driven component of the Occupational and Environmental Health (OEH) Program designed to safeguard workers by mitigating or eliminating exposure to hazardous noise and ototoxic chemicals, thereby protecting their health and improving combat and operational readiness. The implementation of this program must occur across the full lifecycle of acquisition, sustainment, and support for weapons systems, munitions, and other materiel. Mitigation and elimination processes require identifying all areas where personnel are exposed to hazardous noise and ototoxic chemicals and reducing these exposures through engineering or administrative controls or through the proper use of personal protective equipment (PPE). Also refer to DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*.

**1.2. Program and Written Plan.** DoDI 6055.12 requires all DoD Components to implement a comprehensive hearing protection program and have a written plan for hearing conservation when personnel are subject to occupational and operational noise exposures as defined therein. This instruction meets the program and written plan intent and requirements and reflects the unique functions, capabilities, and procedures of the DAF HCP.

**1.3. Applicability.** This instruction applies to all civilian employees and uniformed personnel of the Regular Air Force, the Air Force Reserve, the Air National Guard, the United States Space Force, and all others with a contractual obligation to abide by the terms of DAF publications. All DAF Active Duty, Guard, and Reserve military personnel with occupational and operational noise exposures will receive audiograms annually IAW DODI 6055.12.

**1.4. Hearing Protector Fit-Test Requirements.** All DAF personnel enrolled in the HCP will have a quantitative hearing protector (HP) fit-test IAW DODI 6055.12.

**1.5. Separation History and Physical Examination.** All military personnel completing an audiogram as part of the SHPE will have it documented on either a DD 2215, *Reference Audiogram*, or DD 2216, *Hearing Conservation Data*. An AF Form 1753, *Hearing Conservation Examination*, is not required to be completed for SHPE audiograms but could still be utilized at a provider's discretion.

**1.6. Joint Base Considerations.** For Joint Bases, Services will follow this instruction if the DAF is the supporting Service unless specific processes and provisions, meeting the intent and requirements of OSHA and DoDI 6055.12, are detailed in a Memorandum of Agreement (MOA) or Host Tenant Support Agreement (HTSA).

**1.7. Occupational and Environmental Health Working Group Review.** IAW DAFI 48-145, *Occupational and Environmental Health Program*, hearing conservation issues will be reviewed and considered through the Occupational and Environmental Health Working Group (OEHWG) just as any other occupational exposure.

**1.8. OEH MOA/HTSA Considerations.** HCP requirements should be covered in conjunction with other OEH program responsibilities through MOAs or HTSA as outlined in DAFI 48-145, paragraph 2.8.7.

## Chapter 2

### ROLES AND RESPONSIBILITIES

#### **2.1. Deputy Assistant Secretary of the Air Force for Environment, Safety and Infrastructure (SAF/IE).**

2.1.1. As delegated by the Assistant Secretary of the Air Force for Installations, Environment and Energy (SAF/IE), provide policy, guidance, direction and oversight of all matters pertaining to the formulation, review and execution of plans, policies, programs and budgets relative to the Environment, Safety and Occupational Health (ESOH) programs. Oversee implementation of those programs IAW AFD 90-8, *Environment, Safety and Occupational Health Management and Risk Management*.

2.1.2. Ensure DAF operations involving occupational and combat-related exposure to hazardous noise establish and maintain HCPs in compliance with Federal and DoD requirements. Such programs encompass the minimum requirements in DoDI 6055.12.

#### **2.2. Assistant Secretary of the Air Force for Acquisition (SAF/AQ).** SAF/AQ will:

2.2.1. Ensure Acquisitions Program Offices include personnel noise study data on systems in the Programmatic Environment, Safety, and Occupational Health Evaluations (PESHE) and obtain formal coordination of new and updated PESHEs from their supporting Surgeon General offices, as required by DAFI 20-101\_63-101, *Integrated Life Cycle Management*. The coordinating Surgeon General office shall provide copies of the PESHE to the United States Air Force School of Aerospace Medicine (USAFSAM) Occupational and Environmental Health Department (USAFSAM/OE).

2.2.2. Ensure new equipment and weapons systems being considered for fielding have the lowest sound emission levels that are technologically and economically possible and are compatible with performance and environmental requirements. Title 42 USC Section 4914, *Development of Low-Noise-Emission Products*, applies.

#### **2.3. Department of the Air Force Surgeon General (AF/SG).** AF/SG will:

2.3.1. Provide strategic direction to execute the DAF HCP.

2.3.2. Appoint the AF/SG's Audiology Consultant.

2.3.3. Support Combatant Commanders to establish hearing testing capabilities in theaters of operation whenever appropriate.

#### **2.4. AF/SG Policy and Resources Directorate (AF/SGMED).** SGMED will:

2.4.1. Develop DAF HCP policy and provide coordination on DAF hearing conservation matters.

2.4.2. Coordinate with the Defense Health Agency to resource and equip DAF installations to assist with meeting the HCP requirements.

2.4.3. Utilize the Centralized OEHWG, ESOH Council, and/or the Air Force Medical Service Governance process as an executive forum to advocate for DAF HCP policy and resource requirements when necessary.

2.4.4. Serve as the principal DAF point of contact with Federal and DoD agencies regulating occupational exposure to hazardous noise.

2.4.5. Disseminate information pertaining to policy and new or pending legislation to Air Force Medical Command.

**2.5. Air Force Safety Center (AFSEC).** AFSEC will coordinate with Air Force Medical Command on safety requirements associated with hazardous noise and ototoxic chemical exposure. **(T-0)**

**2.6. Air Force Medical Command (AFMEDCOM).** AFMEDCOM will:

2.6.1. Provide installations with policy execution guidance to ensure correct interpretation and implementation of DAF HCP requirements IAW DoDI 6055.12 and hearing testing protocols as outlined in this instruction.

2.6.2. In conjunction with the AF/SG's Audiology Consultant, identify military treatment facilities on DAF installations with organic audiologic services that will be designated as MRC/MAJCOM Professional Supervisors to evaluate personnel with hearing loss.

2.6.3. Ensure a list of the designated MRC/MAJCOM Professional Supervisors remains current and is readily available on the approved Public Health career field website.

2.6.4. Ensure DAF HCP data is consolidated within the OEH Program Management Review (PMR) and is reported to SAF/IE no less than annually and as requested. **(T-0)**

2.6.5. Evaluate DAF HCP effectiveness annually based on significant threshold shift (STS) rates, audiogram completion rates, permanent threshold shift (PTS) rates, and HP fit-test completion rates. **(T-0)**

2.6.6. Develop additional metrics as needed to assist in measuring HCP program effectiveness.

2.6.7. Coordinate with SGMED to identify and resolve HCP policy and resourcing issues.

2.6.8. Disseminate information pertaining to policy and new or pending legislation to MRCs and MAJCOMs.

**2.7. Medical Readiness Commands (MRCs)/Major Commands (MAJCOMs).** MRCs and MAJCOMs with units not transferred to an MRC will:

2.7.1. Coordinate with the AF/SG's Audiology Consultant to identify and designate an MRC/MAJCOM Professional Supervisor to oversee the command HCP.

2.7.2. Allocate resources to staff and equip the MRC/MAJCOM Professional Supervisors within their area of responsibility to provide regional hearing conservation referral support. Reference **Chapter 7** for additional information. At a minimum, testing capabilities will include diagnostic audiometer equipment sufficient to complete a full comprehensive hearing exam and a full range of immittance, electrophysiological, and otoacoustic emissions equipment.

2.7.3. Ensure that each geographically separated unit (GSU) within their area of responsibility has a supporting MTF/Medical Unit assigned in accordance with AFI 25-201, *Intra-Service, Intra-Agency, and Inter-Agency Support Agreements Procedures*, to assist with the HCP as outlined in this instruction. **(T-1)**

2.7.4. Ensure HCP requirements are covered in conjunction with other OEH program responsibilities designated in MOAs or HTSA as outlined in DAFI 48-145, paragraph 2.8.7.

2.7.5. Ensure HCP program management performance monitoring across all bases within their command through the Command and installation ESOH Councils or other AFI 90-801 approved methods. **(T-1)**

2.7.6. Engage installation-level HCP personnel within the Command to assist in applying corrective actions to identified areas of non-compliance and best practices.

2.7.7. Coordinate with AFMEDCOM to identify and resolve HCP programmatic issues.

2.7.8. Ensure the annual PMR includes a consolidated account of installation HCP data and is forwarded to AFMEDCOM by the prescribed suspense.

2.7.9. Disseminate information pertaining to policy and new or pending legislation to installation HCP staff.

2.7.10. Work with the Defense Health Agency (DHA) to ensure gaining Military Treatment Facilities (MTFs) have funds to send new Air Force (AF) audiologists to a hearing conservation program training course at USAFSAM within one year of assignment to first duty station for active duty or within the first year of employment for civilian audiologists. Contract audiologists hired to perform hearing conservation program duties may attend training at USAFSAM or a civilian equivalent training approved by the AF/SG's Audiology Consultant in accordance with contract management policy.

## **2.8. Air Education and Training Command (AETC) and Service Academies.** AETC and Service Academies will:

2.8.1. Ensure all military trainees (including those in basic military training) receive a reference audiogram as soon as possible after entering military service, prior to conducting noise hazardous operations as defined in DoDI 6055.12, 3.2.a., to include weapons firing. **(T-0)**

2.8.2. Ensure all Officer Training School trainees and Service Academy cadets receive a reference audiogram as soon as possible after entering Military Service, prior to conducting noise hazardous operations as defined in DoDI 6055.12, 3.2.a., to include weapons firing. **(T-0)**

## **2.9. Air Force Materiel Command (AFMC) and 711th Human Performance Wing (HPW).** AFMC Commander will ensure that the Air Force Research Laboratory (AFRL) at the 711 HPW will:

2.9.1. Appoint an Occupational and Environmental Medicine (OEM) Consultant who provides consultation for the DAF HCP. **(T-2)**

2.9.2. Execute research and consultative missions related to noise evaluation and control. The point of contact (POC) is the ESOH Service Center at [esoh.service.center@us.af.mil](mailto:esoh.service.center@us.af.mil), 888-232-3764 or DSN 312-798-3764. Direct all requests for support and any questions about these responsibilities to this POC.

2.9.3. Provide consultative services to measure, evaluate, and recommend controls and solutions for occupational noise concerns within the DAF.

2.9.4. Develop and recommend noise criteria, assessment, and control strategies to acquisition programs.

- 2.9.5. Maintain a list of potential ototoxic chemicals in the occupational environment and make the list available on the ESOH Service Center webpage. **(T-2)**
- 2.9.6. Conduct research related to noise exposure criteria and speech intelligibility.
- 2.9.7. Represent the DAF on ANSI accredited standards committees relative to noise S1 (acoustics), S3 (bioacoustics), and S12 (noise). **(T-2)**
- 2.9.8. Conduct acoustic research related to human performance in DAF environments.
- 2.9.9. Conduct measurements to quantify the performance of attenuation of hearing protectors (HPs) and attenuation and speech intelligibility of communication headsets and microphones.
- 2.9.10. Characterize the ground run-up, flyover, and interior noise levels of aircraft.
- 2.9.11. Characterize high-level continuous noise, greater than 130 decibels (dB) and impulsive noise greater than 140 dBs.
- 2.9.12. Recommend to AF/SG, DAF exposure criteria for continuous and impulsive noise.
- 2.9.13. Provide data, information, and consultation related to historic acoustic assessments performed by the 711 HPW and professional organizations to base Bioenvironmental Engineering (BE).
- 2.9.14. Provide consultation and assistance on the selection of HPs.
- 2.9.15. Provide data, information, and consultation on unique or complex acoustic environments as requested.
- 2.9.16. Develop guidance on hierarchy of noise measurement techniques.
- 2.9.17. Represent DAF with federal agencies and national professional organizations that set standards and outline standards of practice in the ESOH disciplines. **(T-2)**
- 2.9.18. Maintain a repository of relevant references in noise and hearing protection.
- 2.9.19. Assist in the development of guidance and oversight criteria for the DAF HCP.
- 2.9.20. Evaluate DAF HCP effectiveness-based performance measures as defined by DODI 6055.12, Headquarters AF, and AFMEDCOM. At a minimum, performance measures include STS rates, audiogram completion rates, PTS rates, HP fit-test completion rates, and threshold shift follow-up rates. **(T-0)**
- 2.9.21. Provide AFMEDCOM and the MRCs/MAJCOMs with base-specific reports communicating the results of the performance measures at least annually.
- 2.9.22. Evaluate and report recommendations for corrective action to installation Professional Supervisors and to MRC/MAJCOM Public Health to improve data quality in the Department of Defense Occupational and Environmental Health Readiness System (DOEHRS) Data Repository (DR) at least annually and upon request.
- 2.9.23. Appoint an appropriately trained audiologist to serve as the DAF Hearing Conservation Program Manager (HCPM). This individual will serve as a primary DAF representative to the DoD Hearing Conservation and Readiness Working Group and the DoD DOEHRS-Hearing Conservation (HC) functional users' group and as the DAF consultant for DOEHRS-HC and DR. **(T-1)**

2.9.24. Produce annual reports on the percentage of hazardous noise workplaces characterized and the index of unacceptable noise exposures as outlined in DoDI 6055.12 and provide to AFMEDCOM.

2.9.25. Provide training to support the HCP.

2.9.25.1. Provide HC and DR orientation and program management training for newly assigned military, civilian, and contract DAF audiologists, as needed.

2.9.25.2. Conduct formal Council for Accreditation in Occupational Hearing Conservation (CAOHC)-approved training for DoD personnel (military and civilian) who perform audiograms. Reference [Chapter 3](#).

2.9.25.2.1. Provide AF certification numbers to students upon completion of CAOHC training. If DAF certification numbers are unavailable on the last day of training, they will be provided within 10 days of CAOHC training.

2.9.25.2.2. Track hearing conservation certification numbers for personnel who are trained IAW the CAOHC approved course. Note: DAF personnel who receive CAOHC-approved training at civilian agencies must register certification information with the DAF HCPM and receive a DAF certification number prior to conducting audiometric testing. DAF personnel who are CAOHC trained by a DoD component other than the AF will use the certification number issued by that Service.

2.9.25.2.3. Conduct training for Public Health (PH) Officers and skill-level appropriate 4E0X1 Public Health Technicians using course material that addresses components of HCP administration and management.

2.9.25.3. Provide CAOHC hands-on and didactic DOEHRS-HC training for 4E0X1 personnel for the HCP.

2.9.25.4. Provide quantitative HP fit-test training and establish and track a training certificate for DoD personnel (military and civilian) who perform audiograms IAW DoDI 6055.12.

2.9.25.5. Conduct training for providers on audiogram review, audiogram consultation, referrals, and fitness and risk evaluations.

2.9.25.6. Conduct training for BE technicians and officers that addresses identification, assessment, control and documentation in DOEHRS-IH of hazardous noise exposures as outlined by Federal, DoD and DAF standards.

**2.10. Wing or Delta Commanders.** Wing or Delta Commanders will:

2.10.1. Provide oversight and support for an installation hazardous noise reduction and protection program.

2.10.2. Ensure the HCP is a standing agenda item for evaluation at the ESOH Council as outlined in DAFI 90-801. **(T-2)** This evaluation may incorporate metrics from DoDI 6055.12, specifically STS and PTS incidence rates, HCP trends and performance, and audiogram compliance levels.

**2.11. Unit Commanders.** Unit Commanders will:

2.11.1. Ensure units and Workplace Supervisors comply with all OSHA, DoD, DAF, and HCP requirements (e.g., workplace noise hazard assessments; monitoring of hazardous noise-exposed personnel including pre-placement, periodic, follow-up, and termination audiograms; training of noise-exposed personnel; annual screening of personnel; and supplying hearing protection devices and enforcing use, as appropriate). **(T-0)**

2.11.2. Participate in the review of workplace hazards as process owners to identify actions needed to mitigate hazardous noise and ototoxic chemical exposures.

2.11.3. Resource engineering controls as the primary means of eliminating exposure to potentially hazardous noise when feasible. **(T-0)** Apply engineering controls to military-unique workplaces, within the constraints of maintaining combat readiness.

2.11.4. Assign priorities for noise control resources based on the applicable Risk Assessment Codes (RAC) IAW DoDI 6055.05, *Occupational and Environmental Health (OEH)*. **(T-0)**

2.11.5. Monitor and ensure HCP compliance for all assigned personnel, to include any necessary follow-up audiograms within the required timeframe.

## **2.12. Workplace Supervisors.** Workplace Supervisors will:

2.12.1. Ensure personnel comply with all OSHA, DoD, DAF, and HCP requirements (e.g., comply with workplace noise hazard assessments; pre-placement, periodic, follow-up, and termination audiograms; training; and use of hearing protection devices as appropriate). **(T-0)**

2.12.2. Use BE recommendations for engineering controls as the primary means of eliminating exposure to potentially hazardous noise and protecting the hearing of assigned personnel to ensure an individual's daily noise dose does not exceed an 8-hour time weighted average (TWA) of 85 decibels A-weighted (dBA). Limiting exposure time, increasing distance from noise sources (in some cases), and ensuring all workers are correctly using approved (Certified Protective Equipment List) hearing protection are secondary means of limiting the hazardous noise dose when engineering controls are not feasible to control hazardous noise. Explore and use all practical design approaches as recommended by BE to reduce noise levels to below hazardous levels.

2.12.3. Mark hazardous noise areas and equipment (as identified by BE) with signs and/or decals. **(T-0)** As a minimum, all signs and decals will comply with DoDI 6055.12. Signs and/or decals will describe, in words or with other visual symbols, the potential hazard and the required protective measures as annotated in [Figure 3.5](#). For potentially hazardous noise areas, signs will be located at their entrances or boundaries, including pathways leading to hazardous noise areas. Reference [Chapter 3](#) for more information.

2.12.3.1. Maintain a supply of approved HPs along pathways leading to hazardous noise areas or equipment.

2.12.3.2. Ensure personnel carry HPs with them when working in or entering designated hazardous noise areas and wear their hearing protection devices when noise sources are operating, regardless of exposure time. This includes visitors, temporary or transient personnel (i.e., repair technicians), aircrew, and ground-based controllers entering hazardous noise areas.

2.12.3.3. In consultation with BE, ensure each tool or piece of equipment producing noise levels greater than or equal to 85 dBA, including vehicles, is clearly marked to alert

personnel of the potential hazard. **(T-0)** Exclusions from individual equipment marking include entire spaces designated as hazardous noise areas with stationary equipment and exteriors of military combatant equipment.

2.12.4. Notify BE and PH personnel within 3 calendar days of any changes in workplace equipment, practices, or procedures that potentially affect or change hazardous noise workplace environments to ensure a BE noise level survey is conducted. Ensure that no hazardous noise producing equipment is operated beyond an initial 30-day implementation period unless it has been assessed by BE and all required controls have been implemented.

2.12.5. Ensure new equipment being considered for purchase has the lowest sound emission levels that are technologically and economically possible and are compatible with performance and environmental requirements. **(T-0)** Title 42 USC Section 4914 applies.

2.12.6. Consult BE on appropriate acoustics in specifications for all new facilities, equipment, and substantial modification projects with the goal to protect personnel by maintaining noise levels below 85 dBA in all occupied work areas during normal operations.

2.12.7. Ensure compliance and availability of approved HPs for workers exposed to hazardous noise IAW DoDI 6055.12. **(T-0)**

2.12.7.1. Only purchase earmuffs, disposable plugs, and/or other HPs approved by BE. If an approved HP is no longer available, consult with BE for a suitable replacement.

2.12.7.2. Consult with BE, PH, and the OEM Consultant before purchasing custom molded earplugs for the unit. **(T-1)** Reference [Chapter 5](#) for more information.

2.12.8. Instruct personnel on the HCP and on the proper use, care, and hygiene of their HPs. Ensure personnel HPs are properly maintained. Reference [Chapter 5](#) for more information.

2.12.9. Ensure workers with an occupational exposure to hazardous noise complete an initial/reference audiogram and receive HCP training from PH prior to, but not to exceed 30 days, before the date of the worker's initial exposure to hazardous noise. **(T-0)**

2.12.10. Conduct initial and annual workplace-specific hearing conservation training on workplace or unit ototoxic chemical exposures, hazardous noise exposures, and equipment for all personnel exposed to hazardous noise IAW OSHA standards. Consult PH for most updated training materials.

2.12.10.1. IAW with OSHA Standard 29 CFR 1910.95, training must cover: **(T-0)**

2.12.10.1.1. The effects of noise on hearing, on and off duty sources of hazardous noise, the purpose of hearing protection, and the proper use of HPs. Recommend the need to wear hearing protection off duty when exposed to hazardous noise.

2.12.10.1.2. The advantages, disadvantages, and attenuation of various types of HPs.

2.12.10.1.3. Instructions on use, proper wear, and care of HPs.

2.12.10.1.4. The interaction between HPs interfacing with other forms of PPE. Some types of PPE, such as eyewear, can create ill-fitting circumaural HPs if fit of all PPE is not evaluated collectively. Reference [Chapter 5](#) for more information.

2.12.10.1.5. The purpose of audiometric testing.

- 2.12.10.1.6. Hearing loss and how it may lead to disqualification from current duties if hearing is critical to job performance.
  - 2.12.10.1.7. Mandatory requirement of assigned personal protective equipment and the administrative actions that may follow for failure to wear.
  - 2.12.10.2. Document all training on the worker's DAF Form 55, *Employee Safety and Health Record*, or equivalent. **(T-2)**
  - 2.12.11. Ensure personnel on the HCP are made available for medical examination and attend scheduled medical appointments. **(T-1)**
  - 2.12.12. Allow personnel at least 14 hours without exposure to hazardous noise before reporting for all audiograms and any follow-up tests after a positive STS. The 14-hour period cannot be met by wearing hearing protective devices.
  - 2.12.13. Inform BE and PH personnel of each new operation, job, or process before it is implemented.
  - 2.12.14. Ensure all hazardous noise areas above the dual hearing protection requirement are evaluated for a RAC to assist commanders in tracking corrective actions and mitigating the source.
  - 2.12.15. Recommend the use of HPs and other noise control methods outside the workplace, including the use of HPs for installation recreation facilities with hazardous noise sources (auto hobby, skeet, etc.).
  - 2.12.16. Maintain a copy of 29 CFR 1910.95 in the workplace and ensure it is readily available to workers.
  - 2.12.17. Assist with the completion of an AF Form 1754, *Job Capability and Safety Analysis*. Reference **Chapter 6** for more information.
  - 2.12.18. IAW OSHA regulation 29 CFR 1910.95(e), notify workers exposed at or above an 8-hour TWA of 85 dBA of the results of the noise monitoring surveys performed by BE. **(T-0)**
  - 2.12.19. Notify each worker of hazardous noise sources in the workplace as identified by BE.
  - 2.12.20. Provide information to BE about work practices and procedures involving potential exposure to hazardous noise to allow proper surveys and evaluations of the workplace.
  - 2.12.21. Update and maintain current rosters of personnel occupationally exposed to hazardous noise using the ASIMS Occupational Health Supervisor Module. Ensure all newly assigned and departing personnel receive all required audiograms (i.e., pre-placement and termination) in the scheduled timeframe.
    - 2.12.21.1. Add all new workers to the ASIMS workplace roster upon arrival at the work center.
    - 2.12.21.2. Request PH to remove (archive) personnel during worker out-processing or change in duty section.
    - 2.12.21.3. Validate ASIMS rosters at a minimum of every 3 months.
- 2.13. Employees with Workplace Hazardous Noise and Ototoxic Chemical Exposures.** Employees will:

2.13.1. Comply with all hazardous noise and ototoxic chemical control measures to reduce exposure as required IAW DoDI 6055.12. **(T-0)**

2.13.2. Reduce exposure by properly using HPs and advise others in the workplace to wear HPs when exposed to hazardous noise IAW OSHA CFR 1910.95. **(T-0)** Employees are highly encouraged to wear HPs off duty when operating hazardous noise producing equipment or tools, including firearms.

2.13.2.1. Personnel working in or entering designated hazardous noise areas will always carry HPs with them IAW DoDI 6055.12. **(T-0)** This includes visitors, temporary or transient personnel (i.e., repair technicians), aircrew, and ground-based controllers entering hazardous noise areas.

2.13.2.2. When hazardous noise sources are operating, personnel will wear their HPs regardless of exposure time IAW DoDI 6055.12. **(T-0)**

2.13.2.3. Personnel will wear HPs as directed when exposed to gunfire or artillery fire during all military operations to include test or training situations.

2.13.3. Maintain HPs appropriately as instructed by supervisor.

2.13.4. Notify supervisor when HPs no longer appear functional or usable so the HP can be replaced.

2.13.5. Receive all required audiometric evaluations IAW OSHA 29 CFR 1910.95, *Occupational Noise Exposure*, DoDI 6055.12, and this instruction. **(T-0)**

2.13.5.1. Report to required audiograms appointments and follow-up testing, as applies.

2.13.5.2. Take the HPs used to audiogram appointments as well as any PPE that is worn in conjunction with HPs, such as eyewear, that could affect the fit of HPs to ensure proper fitting. A proper fitting technique will be demonstrated at the time of the audiogram.

2.13.5.3. Discontinue performing duties in hazardous noise environment if the audiogram requirements are not met.

2.13.6. Report to supervisor or medical personnel any condition that place themselves or others at risk for an accident because of communication difficulty or the inability to hear warning signals.

2.13.7. Report to supervisor any new or changes in operating procedures that affect workplace hazardous noise exposure

2.13.8. Participate in noise exposure surveys and evaluations by wearing monitoring equipment as requested by BE.

2.13.9. Identify initiatives and inform supervisors of opportunities to reduce or eliminate hazardous noise in their work centers.

**2.14. Directors of Base Personnel (Military and Civilian).** Directors of Base Personnel will:

2.14.1. Evaluate and reassign personnel, based on medical recommendations, to a suitable workplace. Include those awaiting reasonable accommodation in, denied placement in, or those removed from hazardous noise-related jobs.

2.14.2. Ensure civilian workers receive a pre-placement hearing test and medical clearance before being hired or transferred into a position that includes duties in a hazardous noise environment. **(T-0)**

2.14.3. Upon request from the installation Professional Supervisor or the provider, prepare an AF Form 1754, Part 2, with essential tasks that a worker must perform, at a minimum, to qualify for or to retain a position to allow the provider to conduct a worker's fitness and risk evaluation.

2.14.4. Report the number of civilian claims filed for noise-induced hearing loss and the cost of the award to the ESOH Council.

2.14.5. Ensure Civilian Personnel Office provides the OEHWG and installation Professional Supervisor information related to any hazardous noise illness or injury claim.

**2.15. Host Installation and/or Organizational Safety Staff.** Safety will:

2.15.1. Complete a safety analysis of a work center using the AF Form 1754, Part 4, with assistance from the workplace supervisor. **(T-2)** Reference **Chapter 6** for more information.

2.15.2. Report noncompliance with the HCP to the workplace supervisor and BE office.

2.15.3. Identify newly added hazardous noise work tasks or areas noted during periodic safety inspections and report to BE.

**2.16. MTF Director or Medical Commander.** MTF Director/Medical Commander will:

2.16.1. Ensure a comprehensive HCP is available and appropriately resourced to meet requirements. **(T-1)**

2.16.2. Provide guidance for successful execution of the HCP at their installation. **(T-1)**

2.16.3. Appoint the audiologist or Installation OEM Consultant IAW DAFI 48-145 to be the installation Professional Supervisor of the audiometric program. **(T-1)**

2.16.4. Ensure that each GSU within their area of responsibility has HCP support as outlined in this instruction in accordance with AFI 25-201. **(T-1)**

2.16.5. Ensure ARC units in the MTF area of responsibility have HCP support IAW current regulations and host tenant support agreements as referenced in **paragraph 1.8** of this instruction.

2.16.6. RMU/CC will ensure successful oversight of the HCP within their area of responsibility.

2.16.7. RMU/CC will ensure training of assigned personnel to support HCP in coordination with owning MTF oversight.

**2.17. Chief of Aerospace Medicine (SGP).** The SGP will provide programmatic oversight of the HCP and coordinate all Aerospace Medicine activities related to HCP.

**2.18. Medical Squadron/Unit Commander or ARC/SGP.** Authority under whose command the HCP resides will:

2.18.1. Ensure HCP personnel meet training requirements.

2.18.1.1. Personnel (civilian and military) performing audiograms will be certified by an AF or DoD-equivalent course that is CAOHC-approved. **(T-0)** Reference **Chapter 3** for more information.

2.18.1.2. New AF audiologists will attend a hearing conservation program training course at USAFSAM within one year of assignment to first duty station for active duty or within the first year of employment for civilian audiologists. **(T-1)** Contract audiologists who are hired to perform hearing conservation program duties may attend training at USAFSAM or a civilian equivalent in accordance with contract management policy.

2.18.2. Determine personnel and resource gaps required for HCP mission success and report them to the MRC through the appropriate reporting chain.

## **2.19. Bioenvironmental Engineering (BE).** BE will:

2.19.1. Perform surveys of hazardous noise areas, equipment, and ototoxic chemical exposures as outlined in **Chapter 3** at least once and within 30 days of notification of any change in operation. **(T-0)**

2.19.1.1. Ensure only qualified personnel conduct the surveys. **(T-0)** Reference **Chapter 4.1. Certification** for more details.

2.19.1.2. Document hazardous noise areas, types of control measures used, and all results in DOEHRS-IH. **(T-0)** Utilize the DOEHRS Hazardous Noise Data Entry and Report Guide (DERG) for accurate input of data and reports.

2.19.1.3. Use the normal 95th percentile 8-hr Time Weighted Average (TWA) noise exposure in continuous and intermittent noise hazard assessments unless an exposure determination can be made in accordance with the DAF Noise Exposure Assessment Strategy as shown in **Figure 8.1**. In DOEHRS-IH, six measurements are required to calculate the normal 95th percentile. If six measurements are not available, the highest TWA value available will be used until at least six measurements are collected.

2.19.1.4. At the request of a pregnant worker's attending provider, quantify specific exposures if not previously quantified during routine or special assessments.

2.19.2. Work with the Precision Measurement Equipment Laboratory and/or Biomedical Equipment personnel to ensure calibration of sound level meters, microphones, noise dosimeters, and calibrators used for the HCP is completed as needed following ANSI S1.4, *Specification for Sound Level Meters* and ANSI S1.25, *Specification for Personal Noise Dosimeters*. **(T-0)**

2.19.3. Complete the Occupational and Environmental Health Exposure Data (OEHED) for PH and the OEHWG and ensure the OEHED includes the 8-hour TWA noise exposure, ototoxic chemical exposure assessment, and required controls. **(T-2)**

2.19.3.1. Ensure that resultant noise levels are below 85 dBA when using the hierarchy of controls. If resultant noise levels are greater than or equal to 85 dBA follow the hierarchy of controls with elimination of source being the top choice and working down through the options of engineering controls, administrative controls, and PPE. PPE should be the last resort. Where engineering controls are undertaken, the design objective is to reduce steady-state levels to below 85 dBA, regardless of personnel exposure time and to reduce impulsive noise levels to below 140 dB peak sound pressure level (SPL).

- 2.19.3.2. Calculate at-the-ear exposure. Reference **Chapter 3** for method to estimate HP attenuation.
- 2.19.3.2.1. Identify multiple types of HPs (i.e., earmuffs, ear plugs, headsets, etc.) approved for Similar Exposure Group (SEG) use and minimum required attenuation for each workplace process. Provide a list of these devices to PH and workplace supervisors.
  - 2.19.3.2.2. Ear level exposure is recommended to be between 76 to 84 dBA for an 8-hour exposure. Note: Care must be taken to avoid overprotection. Excessive attenuation may cause the worker distress resulting in non-compliance with wearing the HPs.
  - 2.19.3.3. Evaluate the risk of hearing loss when ototoxic chemicals are present in the workplace. Consider additive, synergistic, and individual effects of chemicals and noise exposures.
- 2.19.4. Provide PH and shop supervisors with the results of noise surveys and dosimetry. This information should include the hazard and required controls (i.e., engineering, administrative, and/or recommended HPs). This can be in the form of the certified PPE list if no engineering controls are being used (reference the Noise DERG).
- 2.19.5. Approve HPs for local use including local purchase items and HPs for special applications.
- 2.19.5.1. Verify special application needs and ensure devices provide appropriate attenuation.
  - 2.19.5.2. Notify MRC/MAJCOM BE and USAFSAM/OE of any special HP needs.
- 2.19.6. Assess the adequacy of all controls used to reduce noise exposures including HPs and evaluate industrial work areas where adverse hearing loss trends are noted.
- 2.19.7. Assist with fitness and risk evaluations upon request of the provider, to include hazardous noise exposures on and off duty.
- 2.19.8. Review facility and operations plans for new or modified facilities to ensure noise exposure control is appropriately considered.
- 2.19.9. In conjunction with the workplace supervisor, assess the feasibility of engineering controls for hazardous noise equipment and areas.
- 2.19.10. Conduct workplace assessments to support occupational illness and injury investigations and hearing loss claims.
- 2.19.11. Assign a RAC to all potentially hazardous noise areas and operations IAW DoDI 6055.01, *DoD Safety and Occupational Health (SOH) Program*. **(T-0)**
- 2.19.12. Coordinate any RAC 1, 2 or 3 with the installation safety office IAW DAFI 91-202, *USAF Mishap Prevention Program*, for inclusion into the installation Master Hazard Abatement Plan. **(T-1)**
- 2.19.13. Complete hazardous noise program self-assessments using the Program Maturity Audit System (PMAS) at least once per fiscal year. Communicate PMAS results to MTF leaders when non-compliance or other concerns are identified following unit established local business rules.

**2.20. Public Health (PH).** PH will:

2.20.1. Manage and perform annual and occupational hearing conservation audiograms except at installations where designated Occupational Medicine and/or hearing screening services are already established outside of PH. **(T-1)**

2.20.2. Ensure technicians who conduct audiograms are certified by a CAOHC-approved AF or DoD-equivalent course. **(T-0)**

2.20.2.1. Training must include hands-on DOEHRS-HC curriculum.

2.20.2.2. CAOHC-approved recertification is required at 5-year intervals for individuals active in audiometric testing.

2.20.2.3. All trained technicians using DOEHRS-HC will have their own DR account.

2.20.3. Provide annual and occupational hearing conservation audiometric surveillance testing that includes pure-tone, air-conducted hearing threshold examinations of each ear at test frequencies of 500, 1,000, 2,000, 3,000, 4,000, and 6,000 Hertz (Hz).

2.20.4. Hearing Conservation Program. Place personnel identified as occupationally exposed to hazardous noise and ototoxic chemicals, as annotated on a workplace-specific OEHED, in the HCP and ensure preplacement, periodic (at least annually), and termination audiograms are accomplished. **(T-0)** Track personnel on the HCP in coordination with workplace supervisors using the Occupational Health module in ASIMS.

2.20.4.1. Ensure the workplace clinical occupational health exam requirements (COHER) document adequately captures HCP testing and training requirements.

2.20.4.2. Ensure civilian personnel being considered for employment in an occupational specialty or area that involves exposure to hazardous noise receive a reference audiogram prior to, but as close as possible to, the actual date of anticipated noise exposure at no cost to the employee IAW 5 CFR 339, *Medical Qualification Determinations*, and 29 CFR 1910.95.

2.20.4.3. Track audiogram compliance and coordinate with personnel and supervisors to ensure compliance with audiogram and follow-up testing requirements. **(T-1)**

2.20.4.4. Maintain a variety of BE-approved HPs for distribution and accomplish an initial HP fitting for personnel enrolled in the HCP. Reference the fitting and dispensing section in **Chapter 5** for details.

2.20.4.5. Consult an audiologist for workers who cannot be adequately fitted with the recommended HP.

2.20.4.6. Examine the fit and condition of pre-formed and custom molded HP at each annual audiogram by having the individual place the HP in his/her ears as they would each day.

2.20.4.7. HP Fit-Testing. Ensure technicians who conduct fit-testing are current on the DHA-approved fit-testing training. Use a quantitative hearing protection fit-test at frequencies of 500, 1000, and 2000 Hz for initial HP fit-tests and for any positive STS to verify that the HP is adequate for the work environment. Document the fit-test on a form DD 3126, *Hearing Protection Fit-Test Record*, and place (or upload) the fully completed

form in the individual's electronic medical record. Resultant noise levels can be requested from BE. Track the completed fit-testing date in ASIMS. HP fit-testing will be accomplished:

- 2.20.4.7.1. At the initial reference audiogram, or before initial routine duty in hazardous noise areas, or as soon as possible after employment begins when their occupational noise exposures are in an extremely noise hazardous area measured at or greater than 95 dBA, 8-hour TWA for at least 1 day per year.
- 2.20.4.7.2. When a positive STS is identified on the periodic/annual audiogram.
- 2.20.4.7.3. When physical changes to an ear canal cause poor fit of selected HP.
- 2.20.4.7.4. If the primary type of fitted HP is no longer available and/or the worker switches forms of HP.
- 2.20.4.7.5. When a single frequency 15 dB shift at 1000, 2000, 3000, or 4000 Hz occurs.
- 2.20.4.8. Conduct and document HCP training on an SF 600, *Chronological Record of Medical Care*, or the electronic equivalent, at every initial and annual audiogram and place (or upload) to the individual's electronic medical record. IAW 29 CFR 1910.95, at a minimum, HCP training will cover **(T-0)**:
  - 2.20.4.8.1. The effects of hazardous noise on hearing, the purpose of hearing protection; the proper use of hearing protection devices; procedures to report HP fit and use concerns; the advantages, disadvantages, and attenuation of various personal HPs; the requirement to wear HPs when exposed to hazardous noise on duty; potential disqualification from current duties as a result of hearing loss; and recommendations to wear hearing protection off duty when exposed to hazardous noise.
  - 2.20.4.8.2. The proper selection, fit, use, and care of personal HPs and instructions to properly insert and fit HPs, which includes personnel requiring earmuffs.
  - 2.20.4.8.3. The interaction between HPs interfacing with other forms of PPE. Some types of PPE, such as eyewear, can create ill-fitting circumaural HPs if fit of all PPE is not evaluated collectively. Reference **Chapter 5** for details.
  - 2.20.4.8.4. The impact of hearing loss on career opportunities and quality of life.
  - 2.20.4.8.5. The purpose of audiometric testing, description of the audiometric test procedures, and explanation of the results of the tests.
  - 2.20.4.8.6. An explanation of the quantitative HP fit-test and personal attenuation rating (PAR).
- 2.20.4.9. Ensure all completed HCP medical forms are included in the individual's electronic health record, including the OEHEd and COHER.
- 2.20.4.10. Ensure supervisors of work centers on the HPC are provided with the approved workplace supervisor HCP training template.
- 2.20.4.11. Inspect HCP training documents during workplace visits to ensure all mandatory HCP training components are included. Inform workplace supervisor of any discrepancies and annotate on the PH occupational health workplace visit worksheet.

2.20.4.12. Perform trend analysis for HCP compliance and outcome measures (i.e., audiogram compliance, STS and PTS rates, overall and/or workplace-specific data). Compare observed trends to the trends in the Health of Forces and Hearing Health Surveillance reports. Use data and trends to determine management actions to improve the HCP. Investigate and provide re-education to workplaces in which trends indicate compliance issues or negative hearing conservation outcomes.

2.20.4.13. Assist workplace supervisors with the removal (archiving) of personnel who out-process or change duty sections.

2.20.4.14. Complete a termination audiogram when personnel enrolled in the HCP stop working in a designated hazardous noise area and will no longer be exposed to hazardous noise as defined in DoDI 6055.12. **(T-0)** Personnel moving to other DoD jobs (i.e., PCSing, PCAing) involving hazardous noise exposure with continued HCP enrollment need not be given a termination audiogram unless they change DoD Components.

2.20.4.15. Workers terminated from the HCP who subsequently return to hazardous noise duties should have their current audiogram compared to their most recent reference audiogram. If the current results do not indicate an STS, the most recent reference audiogram serves as the reference audiogram. If an STS is present, use the current audiogram to establish a new reference audiogram and follow the same process for an STS as outlined in [para. 2.20.14.](#) **(T-0)**

2.20.4.16. Assist workplace supervisors with validating ASIMS workplace rosters at a minimum of every 3 months.

2.20.5. Lighted Ear Inspection (LEI). Perform an LEI prior to conducting an audiogram and prior to performing a HP fitting and assessment.

2.20.5.1. LEIs help to determine if cerumen removal or other treatment is necessary to obtain an accurate audiogram and assist in properly selecting, assessing, and fitting of HP.

2.20.5.2. Technicians must be appropriately trained to perform an LEI at the Hearing Conservation course at USAFSAM.

2.20.5.3. All barriers (e.g., HP, hearing aids) must be removed before performing the LEI.

2.20.6. Provide standard instructions to individuals before conducting audiograms.

2.20.7. Ensure all barriers (e.g., HP, hearing aids) are removed before and during all audiograms.

2.20.8. Perform audiometric testing using the DOEHRS-HC software or other Hearing Center of Excellence and AFMEDCOM approved system to be transcribed into DOEHRS-HC if audiometric systems do not automatically connect to DOEHRS-HC. **(T-0)** Transcription of any audiograms should be accomplished the same date the audiogram was conducted. Ensure the appropriate DD Form (i.e., DD Form 2215 or DD Form 2216) is selected so that a reliable baseline can be established and hearing changes can be adequately assessed.

2.20.9. Ensure that a functional and biological operations check is conducted daily and before audiometer use as outlined in [Chapter 4](#). For further specifications, reference DoDI 6055.12. Ensure audiometers receive an annual electro-acoustic calibration by a Biomedical Equipment Technician.

2.20.10. Ensure appropriate audiometric DOEHRS-HC data is forwarded to the DOEHRS-DR at the end of each testing day.

2.20.10.1. In the event of network issues, export the records to either a shared network or disc and upload the records to the DR website when available.

2.20.10.2. Export data to the DR using DOEHRS-HC data export function.

2.20.10.3. Back up data to a secure device or network drive daily. When a new back up file is created, previous files may be deleted. Only the most recent backup file is needed in case of computer error or malfunction. Exporting data to the DR is not the same as backing up the database. Both must be accomplished.

2.20.11. Reference and Pre-Placement Audiograms. Conduct reference and pre-placement audiograms and document on a DD Form 2215 IAW the following: **(T-0)**

2.20.11.1. Military personnel, including officer accessions (e.g., Health Professional Scholarship Program and ROTC students), exposed to hazardous noise will receive a reference audiogram as soon as possible after entering military service prior to conducting hazardous noise operations, to include weapons firing. Reference **para. 2.8**. Those who did not receive a reference audiogram at initial training (no DD Form 2215 in DOEHRS-DR) will have an audiogram performed by PH at their first permanent duty location. Reference **Chapter 4** for 'reason' selection.

2.20.11.2. The reference audiogram is the first valid hearing test administered. The individual must be counseled to avoid high levels of occupational or non-occupational noise exposure during the 14-hour period preceding a hearing examination. HP will not be used to meet the 14-hour noise-free requirement.

2.20.11.3. An Audiometric Case History will be completed on all reference audiograms.

2.20.12. Annual or Periodic Audiograms. All DAF Active Duty, Guard, and Reserve military personnel will receive annual audiograms. **(T-0)** Civilian personnel exposed to hazardous noise levels exceeding the standards outlined in **Chapter 3** will be enrolled in the HCP and will receive annual audiograms IAW **para. 2.20.4**. **(T-0)**

2.20.12.1. Document annual audiograms on a DD Form 2216. **(T-0)**

2.20.12.2. Audiogram completion dates for personnel not authorized to be tracked in the ASIMS Occupational Health module will be annotated on their individual status page in ASIMS to track compliance. The ASIMS Occupational Health module should only be used for personnel enrolled in the HCP as outlined in **para. 2.20.4**.

2.20.13. Termination Audiograms.

2.20.13.1. Complete a termination audiogram for all servicemembers before they leave military service. **(T-0)** An audiogram conducted within 12 months of separation or retirement can be considered a termination audiogram. Reference DAFMAN 48-123, *Medical Examination and Standards*, for guidance on audiograms conducted for military personnel during a SHPE.

2.20.13.2. Complete a termination audiogram when personnel enrolled in the HCP stop working in a designated hazardous noise area and will no longer be exposed to hazardous noise as defined in DoDI 6055.12. **(T-0)** Personnel moving to other DoD jobs (i.e., PCSing,

PCAing) involving hazardous noise exposure with continued HCP enrollment need not be given a termination audiogram unless they change DoD Components.

2.20.13.3. Follow the same follow-up and referral procedures as an annual audiogram if an STS is identified on a termination audiogram.

2.20.13.4. A DAF Form 1753 is not required to be completed for SHPE audiograms but could still be utilized at a provider's discretion.

2.20.14. Follow-Up Audiograms. If an audiogram shows a change in hearing thresholds (e.g., a noticeable dip or worsening at specific frequencies) from the baseline/reference audiogram, a follow-up is crucial to determine if the change is temporary (potentially due to noise exposure, illness, or earwax), permanent (indicating actual hearing loss progression), or a testing error.

2.20.14.1. For noise-exposed personnel enrolled in the HCP, follow-up testing must be conducted within 30 days of the periodic test showing the STS. **(T-0)** For ARC personnel, follow-up testing must be done within 60 days of the annual test showing the STS. **(T-1)**

2.20.14.2. For military personnel not enrolled in the HCP, make every attempt to conduct follow-up testing within 30 days, but ensure follow-up is no more than 90 days from the positive STS date IAW DoDI 6055.12. **(T-0)**

2.20.14.3. If an STS is identified, refit the individual with HP and instruct proper care, use, and wear, as applies.

2.20.14.4. Conduct a follow up test when a person exhibits an STS, which includes a change in hearing threshold relative to the current reference audiogram of an average of 10 dB or more at 2,000, 3,000, and 4,000 Hz, in either ear. Age corrections will not be applied. Note: A single frequency 15 dB shift at 1,000, 2,000, 3,000, or 4,000 Hz is considered an early warning flag with no requirements for follow-up testing or referrals, but with a requirement to counsel the individual and to perform a quantitative HP fit-test to confirm adequate hearing protection, as applies.

2.20.14.4.1. Document a negative STS when hearing exhibits an improvement in hearing threshold from the reference audiogram. Administer a follow-up test the same day. If confirmed a negative shift, the results may be used to reestablish a reference audiogram to reflect the improvement in pure tone acuity.

2.20.14.4.2. Document a positive STS when hearing exhibits a decrease in hearing threshold from reference audiogram. Administer a noise-free follow-up test to confirm that the decrease in hearing is permanent. The follow-up test must be preceded by at least 14 hours of noise free (less than 80 dBA) and must not occur on the same day as the initial STS audiogram.

2.20.14.4.2.1. If the results of the follow-up test do not indicate a positive STS, the shift is considered a temporary threshold shift (TTS) and the baseline audiogram on file remains. The individual will return for monitoring in a year.

2.20.14.4.2.2. If the results of the follow-up test continue to exhibit a positive STS, the individual will be referred to a provider or audiologist for confirmation. Following subsequent medical evaluation and confirmation of a permanent threshold shift (PTS), replace the original reference audiogram with a new

reference audiogram IAW [para. 2.20.15.7.1](#).

2.20.14.5. Follow up testing for all personnel with a positive STS will be added to and tracked in the ASIMS Patient Management Module, and will include date of STS, follow-up testing dates, and updated hearing protection fit-testing date IAW [para. 2.20.4.7.2](#).

2.20.15. PTS Determination and Referrals. If the results of any follow-up test indicate the STS is accurate, the shift is considered a PTS and the individual should be referred to a provider or audiologist for confirmation. If follow-up audiograms are not performed within the required timeframe, then the annual audiogram is considered an administrative PTS until further evaluation by an audiologist is completed.

2.20.15.1. Refer all patients with a PTS or problem audiogram to the installation Professional Supervisor, OEM consultant, or to an audiologist. They will determine what further evaluation is required. Reference [Table 7.1](#) to determine the need for an audiology evaluation.

2.20.15.2. Installations may refer to other DoD, TRICARE network, or Veteran Affairs (VA) audiology clinics. For installations that refer to non-DoD audiologists, referrals will include comprehensive audiometric testing sufficient to determine type and degree of hearing loss and possible causation to assist in determining work-relatedness. Audiology reports will include any recommendations for hearing aids, HP, and further medical referrals and will include noise exposure history, any known indicators to the cause of the hearing loss, and an interpretation of tests results to explain the type and degree of hearing loss. The clinical outcomes will be documented and properly coded in the electronic health record. **(T-1)** All referral and audiological evaluation documentation will be sent to the MRC/MAJCOM Professional Supervisor for review and final determination.

2.20.15.3. Conduct a separate hearing test on DD Form 2215 and use it as a reference.

2.20.15.4. The report of the audiological evaluation must include:

2.20.15.4.1. Pure tone air conduction test (circumaural, supra-aural, or insert earphones), using pulsed tones for frequencies 250 Hz through 8,000 Hz (to include 3,000 and 6,000 Hz).

2.20.15.4.2. Pure tone bone conduction test, using pulsed tones for frequencies 500 through 4,000 Hz (to include 3,000 Hz).

2.20.15.4.3. Word recognition testing, under supra-aural earphones or insert earphones, using electronically recorded lists presented at appropriate supra-threshold levels.

2.20.15.4.4. Word testing using competing background noise if the patient reports difficulty hearing and/or understanding in the presence of background noise.

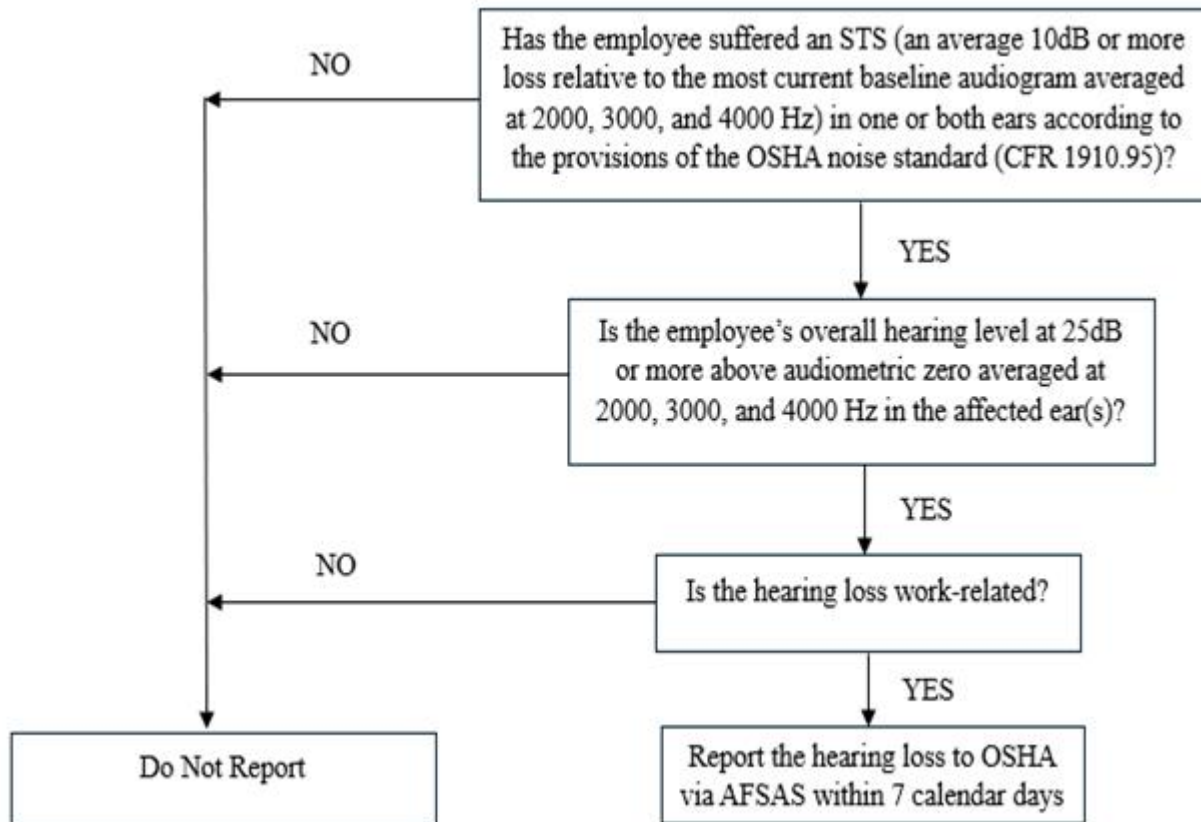
2.20.15.4.5. Immittance measures to include tympanometry and acoustic reflexes obtained for both ipsilateral and contralateral conditions. Acoustic reflex decay at 500-1,000 Hz should be accomplished if clinically warranted. All tests are to be performed unaided and with equipment calibrated per the most current and applicable ANSI standards.

- 2.20.15.4.6. Proof of acceptable background sound pressure levels measured in the audiometric test room. Note: This is required for network audiologists.
- 2.20.15.4.7. Proof of current audiometer calibration. Note: This is required for network audiologists.
- 2.20.15.4.8. Otoacoustic Emissions testing.
  - 2.20.15.4.8.1. Copies of the most current DD Form 2215 and DD Form 2216 on record.
  - 2.20.15.4.8.2. Copy of the DAF Form 1753, as applies.
- 2.20.15.5. Upload all audiology reports from non-DoD audiologists (i.e., TRICARE network or VA audiologists) into the individual's electronic medical record to be reviewed by the MRC/MAJCOM Professional Supervisor.
- 2.20.15.6. Track patients referred to the MRC/MAJCOM Professional Supervisor in conjunction with the referring provider to ensure findings and recommendations are reviewed and appropriate action is taken.
- 2.20.15.7. Reviewed Referral Documentation.
  - 2.20.15.7.1. Replace the original reference audiogram with a new reference audiogram when the medical evaluation confirms the STS is permanent. Replace with one of the following options (as chosen by the reviewing audiologists or provider) for re-establishing the reference audiogram:
    - 2.20.15.7.1.1. Use the results of the most recent follow-up test.
    - 2.20.15.7.1.2. Use the results of the audiology referral (if all pertinent examiner and audiometer information are available for the DD Form 2215). Diagnostic audiological threshold results are to be inputted manually at the request of the audiologist or provider.
    - 2.20.15.7.1.3. Conduct a separate hearing test on DD Form 2215 and use it as a reference.
  - 2.20.15.7.2. The original reference audiogram will be retained in the patient's medical record.
- 2.20.15.8. Document and code the PTS condition in the individual's electronic health record per the standards outlined in the Military Health System coding guidelines. **(T-0)**
- 2.20.15.9. Notification of a PTS.
  - 2.20.15.9.1. Notify an individual, in writing, within 21 calendar days when an audiologist or other provider confirms the positive threshold shift is permanent. Workers enrolled in the HCP will also be informed, in writing, that their supervisors will be notified that they have experienced a decrease in hearing. **(T-0)**
  - 2.20.15.9.2. Notify traditional Reservists, in writing, within 60 days when an audiologist or other provider confirms the positive threshold shift is permanent. **(T-1)** Workers enrolled in the HCP will be informed, in writing, that their supervisors will be notified that they have experienced a decrease in hearing.

- 2.20.15.9.3. Supervisors will be notified, in writing, within 10 calendar days after individual notification that the worker enrolled in the HCP has experienced a decrease in hearing. **(T-0)** The notification will not contain additional details without prior written authorization by the worker IAW DoDI 6025.18, *Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule Compliance in DoD Health Care Programs*, and DoDM 6025.18, *Implementation of the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule in DoD Health Care Programs*. The supervisor will be advised that any discussion of a worker's hearing abilities with non-authorized personnel is strictly prohibited.
- 2.20.16. Perform pre- and post-deployment audiograms.
- 2.20.16.1. Pre-deployment audiograms. DAF personnel may require pre-deployment audiograms if they are deemed at-risk for hazardous noise exposure during the deployment period (refer to remarks in deployment tasking line or COCOM reporting instructions). Examples of higher risk deployments might include joint missions such as stability operations, humanitarian, or emergency response activities. Recommendations for follow-up and referrals will follow the same procedures as outlined in this instruction.
- 2.20.16.2. Post-deployment audiograms. After the deployment period, DAF personnel who required a pre-deployment audiogram will complete a post-deployment audiogram (DD Form 2216) within 30 days of returning to permanent assignment. Recommendations and follow-up procedures for post-deployment audiograms will follow the same procedures as outlined in this instruction. Note: ARC personnel who deploy for 30 days or more are entitled to post-deployment follow-up care for 180 days upon return to home station.
- 2.20.17. Occupational illness investigations. Utilize the career field-approved occupational illness reporting checklist and categorization guide to conduct illness investigations related to OSHA reportable occupational hearing loss and document and track in the Air Force Safety Automated System (AFSAS). **(T-1)**
- 2.20.18. Reporting to OSHA. Criteria for an OSHA-reportable STS are defined in [Figure 2.1](#).
- 2.20.18.1. Report OSHA-reportable PTSs in AFSAS.
- 2.20.18.1.1. All Active Duty, civilian, and full time Reservist cases must be closed within 7 calendar days of confirmation of the PTS by the audiologist or overseeing provider IAW 29 CFR 1904.10, *Recording and Reporting Occupational Injuries and Illness*. **(T-0)**
- 2.20.18.1.2. All traditional Reservists cases must be closed within 180 days of confirmation of the PTS by the audiologist or overseeing provider IAW 29 CFR 1904.10. **(T-0)**
- 2.20.18.2. When an OSHA-reportable hearing loss occurs from an instantaneous event (e.g., acoustic trauma from one-time blast over pressure), record the hearing loss as a work-related "injury" IAW OSHA-recommended guidelines. Case must be closed within 7 calendar days of confirmation of the PTS by the audiologist or overseeing provider. **(T-0)**
- 2.20.18.3. Do not use age corrections for any hearing loss calculations.

2.20.18.4. Report the hearing loss only once unless an additional OSHA-reportable loss of hearing is incurred.

**Figure 2.1. Decision Tree for Reporting Hearing Loss.**



2.20.19. OEHWG and ESOH Council reporting. Brief unit audiogram compliance rates and unit-specific STS/TTS/PTS rates to the OEHWG at least quarterly (or more frequently as directed) and the ESOH Council annually (or more frequently as directed).

2.20.20. Fitness and risk evaluations. In consultation with OEHWG, conduct fitness and risk evaluations and forward a completed AF Form 1754 to the appropriate medical record authority for inclusion in the individual's medical record. Reference [Chapter 6](#) for details on conducting fitness and risk evaluations.

2.20.21. Provide current contact information to USAFSAM Epidemiology Consultant Services Division (USAFSAM/PHR), to include HCP POC, mailing address, phone number, and e-mail, semi-annually or upon request.

2.20.22. Ensure installation HCP data is consolidated within the OEH PMR and is reported annually and on an as-requested basis to the MRC/MAJCOM. (T-0)

**2.21. Biomedical Equipment Technician (BMET).** BMET (or equivalent) will:

2.21.1. Assist in the shipping of HCP audiometers according to Memorandum of Agreement: DH-2017-R-402. Audiometers not covered by the centrally managed DHA/USN MOA will be managed by local BMETs via in-house support or local contract or service.

2.21.2. Perform verification services on audio booths in the DAF inventory and prior to use in the HCP and document results in the equipment system of record and equipment data file (EDF).

2.21.2.1. Ensure all verifications are performed according to ANSI S1.4, *Specifications for Sound Level Meters* and ANSI S3.1, *Maximum Permissible Ambient Noise Levels for Audiometric Test Rooms*, or other current ANSI standards. **(T-0)**

2.21.2.2. Annually verify audio booths with a Type I precision sound level meter (SLM) with attached octave band analyzer and confirm the background octave band SPLs are not greater than the following:

2.21.2.2.1. For 500 Hz, 27 dB

2.21.2.2.2. For 1,000 Hz, 29 dB

2.21.2.2.3. For 2,000 Hz, 34 dB

2.21.2.2.4. For 4,000 Hz, 39 dB

2.21.2.2.5. For 8,000 Hz, 41 dB

2.21.2.3. When surveying the audio booth, use equipment conforming at least to the Type I requirements of the latest approved ANSI Standard S1.4 and the extended range requirements of ANSI S1.11, *Specifications for Octave-Band and Fractional Octave-Band Analog and Digital Filters*. **(T-0)**

2.21.2.4. Ensure equipment used for surveying audio booths is calibrated annually and document results in the equipment system of record and EDF.

2.21.2.5. Ensure audiometers receive an annual electro-acoustic calibration according to DHA/USN MOA: DHA-2017-R-402, and document results in the equipment system of record and EDF. Reference **Chapter 4**.

2.21.2.6. For stand-alone reserve installations, installations must codify a process to ensure audiometers receive an annual electro-acoustic calibration according to DHA/USN MOA: DHA 2017-R-402 and document results in the equipment system of record and EDF. Reference **Chapter 4**.

2.21.3. Perform exhaustive calibrations every 2 years. Reference **Chapter 4**.

**2.22. Installation Professional Supervisor or Occupational and Environmental Medicine (OEM) Consultant.** Installation Professional Supervisor or OEM Consultant will:

2.22.1. Ensure procedures are established to identify, schedule, and monitor all personnel on the HCP.

2.22.2. Ensure only audiometers that meet the standards of the ANSI S3.6, *Specification for Audiometers* or the most current version of ANSI standard are used in the HCP. **(T-0)**

2.22.3. Ensure the most current version of DOEHRS-HC (or current HC software application) is used and technicians are adequately trained on the program. **(T-1)**

2.22.4. Review the HCP for adequacy and appropriateness to protect workers from hazardous noise, including adequacy of education, audiogram completion rates, and adverse hearing loss trends in relationship to workplaces, Air Force Specialty Codes, HP usage, etc.

- 2.22.5. Trend and analyze DOEHRS-DR reports.
- 2.22.6. Ensure an efficient referral tracking mechanism is in place for audiograms between providers in the MTF and any outside audiologist or agency.
- 2.22.7. Review problem and determine if further evaluation is needed IAW DoDI 6055.12 and OSHA 29 CFR 1910.95. If follow-up care is needed, then request MRC/MAJCOM Professional Supervisor consultations or medical referrals for personnel who fall into the referral criteria utilizing **Table 7.1**.
- 2.22.8. Ensure hearing related fitness and risk evaluations are conducted and closed 45 days after determination that an evaluation is needed. Reference **Chapter 6**.
- 2.22.9. Ensure medical recommendations restricting hazardous noise exposures are based on:
  - 2.22.9.1. Failure of the worker to meet medical standards as defined in DAFMAN 48-123 and 5 CFR 339 for job placement.
  - 2.22.9.2. Inability of the worker to perform the essential functions of the job.
  - 2.22.9.3. Probability of the worker endangering himself/herself or others if allowed to work in a noise hazard environment. Consider the Risk Management matrix for assistance in the decision-making process as prescribed in AFI 90-802, *Risk Management*, paragraph 3.3..
- 2.22.10. Ensure recommendations are made for reasonable accommodation that allow a hearing-impaired worker to perform duties in a noise hazard environment without undue risk to personal safety and health or the safety of others. Reference **Chapter 6** for details on fitness and risk evaluations.
- 2.22.11. Ensure workers who are qualified for duty in hazardous noise areas or who perform processes that produce hazardous noise levels are able to perform essential job tasks and are not a safety hazard to themselves or others.
- 2.22.12. Attend and provide consultation to the OEHWG on HCP matters and address any trends and program, workplace, and worker concerns. **(T-2)**

**2.23. Flight Medicine or ARC Flight Surgeon.** Flight Medicine or ARC Flight Surgeon will:

- 2.23.1. Consult with the installation Professional Supervisor/OEM Consultant on all problem audiograms and occupational hearing related referrals.
- 2.23.2. Develop knowledge of related OSHA and DoD guidance to ensure appropriate audiometric follow-up and disposition occurs as detailed in this instruction.
- 2.23.3. Perform required audiometric reviews and examinations and make clinical recommendations. **(T-0)** Consult the MRC/MAJCOM Professional Supervisor for appropriate clinical recommendations, as needed.
- 2.23.4. Determine if workers possess the minimum physical abilities needed to perform essential duties and responsibilities without undue risk to themselves or others.
- 2.23.5. Establish reference and periodic (annual and close scrutiny) evaluations to detect signs and symptoms of noise induced hearing loss at an early stage to prevent progression. An

installation or MRC/MAJCOM Professional Supervisor can be consulted for appropriate clinical recommendations.

2.23.6. In coordination with the installation Professional Supervisor, initiate an AF Form 1754 for fitness and risk evaluations for personnel exceeding the H-1 profile who work in a hazardous noise area and make a medical recommendation. **(T-2)** Determine the extent of fitness and risk evaluation. Reference **Chapter 6**.

2.23.7. Determine whether a shift is related to an Ear, Nose and Throat (ENT) condition. **(T-2)** Advise the worker of their condition and treat or refer them for treatment IAW credentials and privileges. **(T-2)** NOTE: If an audiologist or provider determines the shift is not occupationally related (i.e., ENT infection like sinusitis, acute otitis media, strep throat, etc.), the unit is not responsible for the referral or treatment costs for civilian employees.

2.23.8. When indicated, review, complete, and sign the DAF Form 1753.

2.23.9. Complete Section II of the DAF Form 1753 before a baseline audiogram is re-established. Perform an examination of the ears, to include a comprehensive audiological evaluation as indicated, on patients with a PTS, individuals undergoing a fitness and risk evaluation, those receiving a reference audiogram with worse than H-1 hearing levels, or those with asymmetric hearing loss as defined in the Medical Standards Directory. Record the results in Section II of DAF Form 1753. The provider will note:

2.23.9.1. Condition of the external auditory canals and tympanic membranes.

2.23.9.2. Presence of middle ear disease and eustachian tube function.

2.23.9.3. Any condition that may interfere with the wear of HPs (permanently or temporarily).

2.23.9.4. Any abnormality that might adversely affect audiogram results.

2.23.10. Determine appropriate additional referral criteria as needed.

2.23.11. Document and code the condition in the Electronic Health Record per standards outlined in the Military Health System coding guidelines. **(T-0)**

2.23.12. Pregnant Industrial Workers. Use the American Conference on Governmental Industrial Hygienists (ACGIH) Threshold Limit Value Committee's recommendation and restrict pregnant women after 20 weeks gestation from discharging firearms with larger than a .22 caliber round or noise exposure greater than 115 decibels relative to the individual's low-frequency C-weighted decibels (dBC) TWA and peak 155 dBC to protect the hearing of the fetus. **(T-0)** See **Chapter 3** for further details.

2.23.12.1. Work with BE to appropriately characterize the work environment and to recommend the sound levels that should be avoided.

2.23.12.2. Job rotation should be considered for pregnant workers who are exposed to hazardous noise after 20 weeks.

2.23.13. Track patients referred to MRC/MAJCOM Professional Supervisor in conjunction with PH to ensure findings and recommendations are reviewed and appropriate action taken.

**2.24. MRC/MAJCOM Professional Supervisor or MTF Audiologist.** The MRC/MAJCOM Professional Supervisor or MTF audiologist will:

- 2.24.1. Provide a wide range of diagnostics and treatments in support of clinical referrals.
- 2.24.2. Provide diagnostic care in direct support of the HCP.
- 2.24.3. Review all evaluations conducted by non-DoD audiologists.
- 2.24.4. Provide consultation and overview of referrals so that management and disposition of personnel meet current AF standards.

**2.25. Occupational and Environmental Health Working Group (OEHWG).** OEHWG will:

- 2.25.1. Ensure personnel are monitored in the HCP IAW DoDI 6055.12 when there is potential for the following exposures:
  - 2.25.1.1. Continuous and intermittent noise that has an 8-hr TWA noise level of 85 dBA or greater.
  - 2.25.1.2. Impulse noise levels of 140 dBP or greater.
  - 2.25.1.3. Ototoxic chemical airborne exposures greater than 50% of the Occupational Exposure Limit (OEL) regardless of noise exposure.
  - 2.25.1.4. Significant ototoxic chemical dermal exposures regardless of noise exposure. A significant ototoxic dermal exposure would be a systemic dose equivalent to greater than 50% of the OEL.
  - 2.25.1.5. Upper sonic and ultrasound noise exposure exceeding the values in [Table 3.3](#).
- 2.25.2. Evaluate the effectiveness of the HCP by monitoring and reporting hazard assessment and outcome metrics IAW DoDI 6055.05, DoDI 6055.12, and AFMEDCOM. **(T-0)** Additional metrics to assist in measuring program effectiveness will be determined by the OEHWG.
- 2.25.3. Review approved civilian hearing loss claims filed at the installation and determine appropriate actions (e.g., focused education, increased audiometric monitoring, and coordination) with the installation Safety Office for increased compliance monitoring or other actions deemed necessary.
- 2.25.4. Document HCP decisions and recommendations in the OEHWG minutes.

## Chapter 3

### GUIDANCE AND PROCEDURES

#### 3.1. Hazardous Noise Surveillance.

3.1.1. Noise Exposure Limits on Hearing. The OEL is the most appropriate limit adopted from established, recognized standards (e.g., latest edition of the Threshold Limit Values (TLV)<sup>®</sup> Booklet published annually by the American Conference of Government Industrial Hygienists, 29 CFR 1910.1000 Tables Z-1, Z-2, and Z-3 and 40 CFR 141) for noise and is intended to prevent damage to the hearing of exposed personnel. These noise exposure limits are sound levels and durations to which nearly all workers may be exposed without permanent adverse effect on their ability to hear and understand normal speech.

**Table 3.1. Health Protection Criteria.**

Hearing Protection*	85 dBA, 8-hours or equivalent exposure times
Criterion level	85 dBA
Exchange rate	3 dB
Threshold level	80 dBA
Maximum level	115 dBA
Impulsive Noise	$L_{IAeq100ms}=85$ dBA. Reference MIL-STD 1474E Appendix B for impulsive noise requirements. No octave or one-third octave band.
Whole Body Effects*	No octave or one-third octave band level above 145 dB for frequencies from 1 Hz to 40 kilohertz (kHz).
Ultrasound*	Reference <a href="#">Table 3.3</a> .
Exposure to Music	
Patrons	$L_{eq,2h} < 90$ dBA
Employees*	Same as occupational standard
Air Force Musicians*	Same as occupational standard
* Based on recommendations from the Threshold Limit Values for Chemical Substance and Physical Agents & Biological Exposure Indices published by the American Conference of Governmental Industrial Hygienists; the current edition of this annual publication will be applied. Applies for on and off duty exposure.	

3.1.2. Continuous or Intermittent Exposures. The duration of unprotected noise exposure per day will not exceed the values specified in [Table 3.2](#) for the levels indicated for continuous exposure.

**Table 3.2. Limiting Values for Unprotected Noise Exposures.**

Sound Level (dBA)	Time (minutes)	Sound Level (dBA)	Time (minutes)	Sound level (dBA)	Time (minutes)

Over 115	Forbidden				
115	0.5	102	9.5	89	190
114	0.6	101	12	88	240
113	0.7	100	15	87	302
112	0.9	99	19	86	381
111	1.2	98	24	85	480
110	1.5	97	30	84	605
109	1.9	96	38	83**	762
108	2.4	95	48	82**	960
107	3.0	94	60	81**	1210
106	3.8	93	76	80**	24 Hours
105	4.7	92	95	Below 80	No limit
104	6.0	91	120		
103	7.5	90	151		

\* The A-weighted sound level is used to assess hearing damage risk due to noise exposure; for engineering noise control, other measures are required. The limiting duration of exposure at any noise level equal to or less than 115 dBA is determined from the equation at **Figure 3.1**. \*\* Exposures of more than 12 hours should be followed by periods of equal length in quiet (less than 72 dBA).

**Figure 3.1. Duration of Exposure Calculation.**

<p>Time, T (minutes) = <math>480 \times 2^{(85 - L_A)/3}</math></p> <p>Where, <math>L_A</math> = A-weighted sound level</p>
---

3.1.2.1. If exposures to two or more levels occur in one day, their combined effect should not exceed an 8-hour equivalent continuous level,  $L_{eq}$ , 480 min, of 85 dBA, given by the equation in **Figure 3.2**.

**Figure 3.2. Calculating Equivalent Sound Level.**

$L_{eq,T} = 10 \log \left[ \frac{1}{T} \sum_{i=1}^n t_i 10^{0.1L_i} \right]$ <p>where:</p> <p><math>L_{eq,T}</math> = equivalent sound level for the time period T (T = 480 for 8-hour )</p> <p><math>L_i</math> = sound level of each noise source above 80 dBA</p> <p><math>t_i</math> = exposure period (minutes) for each noise source</p> <p>T = total time period (minutes; 480 for 8-hour equivalent)</p> <p>n = number of sources</p>
---

3.1.2.2. This is equivalent to summing the fractions of the actual time of exposure to the allowable time of exposure. If this value exceeds one (1), the combined exposure should then be considered to exceed the standard. This may also be expressed mathematically as:

**Figure 3.3. Unity Calculation.**

$$\frac{C1}{T1} + \frac{C2}{T2} + \frac{C3}{T3} + \dots + \frac{Cn}{Tn} > 1$$

3.1.2.3. The C values are the actual exposure times to a given level; the T values are the times allowed at those levels by [Table 3.3](#). All occupational noise exposures above the threshold level of 80 dBA will be used in the above equations IAW OSHA 29 CFR 1910.95.

3.1.2.4. For work shifts other than 8-hour periods, the measured average noise exposure should be adjusted to an 8-hour equivalent exposure level using [Figure 3.4](#):

**Figure 3.4. Calculating 8-hour Equivalent Sound Level.**

$$Leq,8hr = Leq,T + 10 \log (T/8)$$

where:  
 $Leq,8hr$  = equivalent sound level for an 8-hour period  
 $Leq,T$  = measured sound level for the period T  
 T = length of the work shift in hours

3.1.3. Impulsive or Impact Exposures. Unprotected personnel will not be exposed to impulsive or impact noise. Reference MIL-STD 1474E for impulsive noise requirements.

3.1.4. Hazardous Noise Areas. A potentially hazardous noise area will be clearly identified by signs located at entrances to, or the borders of, the area. Supervisors will ensure signs are designed according to DoDI 6055.12 guideline and, at a minimum, will include the verbiage outlined in [Figure 3.5](#). (T-0)

**Figure 3.5. Hazardous Noise Area Sign Verbiage.**

**CAUTION**  
**HAZARDOUS NOISE AREA**  
**HEARING PROTECTION REQUIRED**

3.1.5. Signs and/or decals will describe (in words or with other visual symbols) the potential hazard and the required protective measures (e.g., “Danger”, “Hazardous Noise”, “Hearing Protection Required When in Operation”). Such wordings as “When machines are operating” or “Within 25 feet of operating band saw” may be added at the bottom of the caution sign to accurately identify the noise hazard area.

**3.2. Noise Exposure Limits on Whole Body Effects.** At certain high sound pressure levels, exposed persons may suffer adverse effects, which do not involve the hearing organs. Whole body limits are designed to prevent these effects.

3.2.1. No octave or one-third octave band level may exceed 145 dB for frequencies in the range of 1 Hz through 40 kHz, and the overall sound pressure level cannot exceed 150 dB

(unweighted). There are no time limits for exposures below these levels. However, protecting hearing requires adherence to the hearing protection limits mentioned above, in addition to the ultrasonic evaluation requirements mentioned in the next paragraph, to protect against non-auditory effects of noise; this applies regardless of any hearing protection used.

3.2.2. The impact of workplace equipment or other workplace conditions causing ultrasonic noise exposures will be evaluated. The limits specified in DoDI 6055.12 and the latest version of ACGIH Threshold Limit Values (TLV) for Chemical Substances and Physical Agents should be used. Note these limits are designed to protect hearing. They apply at the ear, and hearing protective devices can be used to meet these limits. Consultation with USAFSAM/OE may be required in measuring or evaluating ultrasonic noise.

**Table 3.3. Exposure Guidelines for Upper Sonic and Ultrasound Noise.**

Mid-Frequency of Third Octave Band (kHz)	One-Third Octave-Band SPL (dB re: 20 microPascals (μPa))	
	Ceiling Values	8-Hour TWA
10	105 <sup>A</sup>	88 <sup>A</sup>
12.5	105 <sup>A</sup>	89 <sup>A</sup>
16	105 <sup>A</sup>	92 <sup>A</sup>
20	105 <sup>A</sup>	94 <sup>A</sup>
25	110	--
31.5	115	--
40	115	--
50	115	--

\*ACGIH, 2010 TLVs and biological exposure indices (BEIs). These recommended limits (set at the middle frequencies of the one- third octave bands from 10 kHz to 50 kHz) are designed to prevent possible hearing loss caused by the subharmonics of the set frequencies, rather than the ultrasonic sound itself. (Also, reference most current version of American Conference of Governmental Industrial Hygienists for updates). Consultation with appropriate DoD Component technical centers may be required in measuring or evaluating equipment producing those levels.

<sup>A</sup> Subjective annoyance and discomfort may occur in some individuals at levels between 75 and 105 dB for the frequencies from 10 kHz to 20 kHz especially if they are tonal in nature. Hearing protection or engineering controls may be needed to prevent subjective effects. Tonal sounds in frequencies below 10 kHz might also need to be reduced to 80 dB.

3.2.3. Pregnant Workers. Fetal noise is a controversial topic with limited research on which to base exposure guidelines for pregnant women. A few studies suggest noise is a potential hazard; however, these studies provide insufficient evidence to establish firm fetal noise protection guidelines. There is evidence to suggest that noise exposure in excess of a C-weighted, 8-hour Leq,T of 115 dBC or a peak exposure of 155 dBC to the abdomen of pregnant workers, beyond the fifth month of pregnancy, may cause hearing loss in the fetus. Job rotation or modification of job tasks should be considered to create the safest and healthiest environment for pregnant workers and their unborn children. However, concern for safety and health should not lead to inappropriate actions that may constitute unlawful discrimination against pregnant women in the workplace.

3.2.3.1. Job rotation should be considered but not mandated for pregnant workers who are exposed to hazardous noise after 20 weeks. Using job rotation for 20+ week pregnancies is highly recommended but not mandated for workers having an equivalent continuous level (ECL) at or above 100 dBA unprotected exposure.

3.2.3.2. Working in impulsive or impact noise environments, requiring hearing protection (e.g., firing ranges, EOD detonations, etc.), should be avoided by pregnant workers.

3.2.4. Ototoxic chemicals present in the workplace may cause hearing loss, even when the noise levels are below the OEL. In hazardous noise areas, the chemicals may act in an additive or synergistic mode to increase the risk of hearing loss. Ototoxic chemicals include some pharmaceuticals and solvents, asphyxiants, nitriles, metals and metal compounds. Ototoxic chemicals are classified as neurotoxicants, cochleotoxicants, or vestibulotoxicants based on the part of the ear they damage. They can reach the inner ear through the blood stream and cause injury to inner parts of the ear and connected neural pathways. Extra caution should be used when recommending controls to personnel exposed to these substances in addition to hazardous noise. Workers exposed to ototoxic chemicals should be considered for enrollment in the HCP when airborne exposures are greater than 50% of the OEL or when there is significant dermal exposure (i.e. systemic dose equivalent to 50% of the OEL). Consult USAFSAM Technical Guide, Concurrent Noise and Ototoxin Exposures (AFRL-SA-WP-TR-2022-002) for a listing of ototoxic chemicals. This guide is available on the USAFSAM ESOH Service Center, <https://hpws.afrl.af.mil/dhp/OE/ESOHSC>.

3.2.5. Impulsive noise exposure will not exceed 190 dB peak unless an analysis of non-auditory damage risk is conducted for blast over-pressure to include but not limited to brain trauma, cognitive impairment, and lung injury. Exposure to impulsive noise will never exceed 197 dB peak.

**3.3. Noise Exposure Limits on Job Performance.** Noise exposure limits in this section are provided to maintain effective job performance. These limits should be used as design recommendations in the construction of new facilities or to address concerns or correct problems arising from present conditions that interfere with accomplishing current tasks or operations.

3.3.1. Quality of Person-to-Person Communication. The data shown in **Table 3.4** provides ranges of sound levels and the corresponding routine communication capability for several situations. When evaluating speech interference near small arms areas, or other areas where hearing protection is worn, the attenuation of the hearing protection will be considered.

**Table 3.4. Quality of Person-to-Person Voice Communication.**

Voice Levels				
Noise Level (dBA)	Normal Voice	Raised Voice	Shouting	Telephone Use
40 to 50	Satisfactory to 30 feet			Satisfactory
50 to 60	Satisfactory to 6 feet	Satisfactory		Satisfactory
60 to 70	Satisfactory to 3 feet	Satisfactory to 6 feet		Satisfactory to slightly difficult
70 to 80*	Satisfactory to 1 foot	Satisfactory to 3 feet		Slightly difficult

80* to 90		Satisfactory to 1 foot,	Slightly difficult	Difficult
90 to 95		Slightly difficult to 2 feet	Slightly difficult to 3 feet	Very Difficult
Above 95			Slightly difficult to 1 foot	Unsatisfactory
*Noise exposure limits may be exceeded by a combination of noise plus voice.				

3.3.2. Office and Work Space. Noise measurements made for comparing noise in an office with these criteria should be done with the office in normal operation, but with no one talking at the location where speech communication is being evaluated. Background noise with the office unoccupied should be lower by 5 to 10 dBA. Acceptable levels are at [Table 3.5](#) and [Table 3.6](#).

**Table 3.5. Noise Levels for Offices.**

Range of Levels (dBA)	Communication Environment
30 to 40	Very quiet office, telephone use satisfactory, suitable for large conferences.
40 to 45	Quiet office, satisfactory for conferences at a 15-foot table; telephone use satisfactory; normal voice 10 to 30 feet.
45 to 50	Satisfactory for conferences at a 6-to-8-foot table; telephone use satisfactory; normal voice 6 to 12 feet
50 to 60	Satisfactory for conference at 4-to-5-foot table; telephone use occasionally slightly difficult; normal voice 3 to 6 feet; raised voice 6 to 12 feet.
60 to 65	Unsatisfactory for conferences of more than two or three people; telephone use slightly difficult; normal voice 1 to 2 feet; raised voice 3 to 6 feet.
Above 65	Very noisy; office environment unsatisfactory; telephone use difficult.

**Table 3.6. Noise Levels for Workspaces.**

Range of Levels (dBA)	Communication Environment
70 to 80	Person-to-person communication with raised voice satisfactory 1 to 2 feet; slightly difficult 3 to 6 feet. Telephone use difficult.
80 to 90	Person-to-person communication is slightly difficult with raised voice 1 to 2 feet; slightly difficult with shouting 3 to 6 feet. Telephone use very difficult.
Above 90	Person-to-person communication is extremely difficult. Telephone use unsatisfactory.

3.3.3. Group Meeting, Study, and Rest and Relaxation Areas. Noise measurements made to compare the noise environment in an area with these criteria should include internal and external background noise. Acceptable levels are at [Table 3.7](#). **Note:** Expected voice represents the increase of voice level a speaker in a noisy field usually adopts. The communicating voice level is the voice level a speaker can produce over the range of sound levels shown when forced to communicate (achieve a 95 percent word score, with positive, instantaneous feedback).

**Table 3.7. Noise Levels for Group Meetings, Study, Rest and Relaxation.**

Range of Levels (dBA)	Type of Space and Activities
34 to 45	Group gatherings to listen to speech and music; low background noise and good hearing conditions required; sleeping.
45 to 55	Areas where some concentration and relaxed communication may be desirable; reading rooms, sedentary relaxation; radio and television listening.
55 to 65	Good communication conditions not essential; some distraction due to external noise can be permitted; internal noise generation due to other activities may be present.
* Based on recommendations outlined in ANSI S12.65, <i>American National Standard for Rating Noise with Respect to Speech Interference</i> .	

**3.4. Music Exposure Criteria.** Exposure to recreational music may lead to hearing damage; two groups are typically affected: the employees (occupational exposure) and customers (recreational exposure). The manager of each facility or activity where recreational exposure to loud music may occur should post or issue precautionary warnings. BE personnel may provide technical assistance in initial monitoring, interpreting results, and recommending controls.

3.4.1. Employees. For employees who have occupational exposure to music, the noise exposure limits and other provisions in this instruction apply as for any other group of occupationally exposed employees.

3.4.2. Customers. Entertainment planners and customers need some understanding of the hazards associated with recreational exposure to loud music. Air Force occupational noise exposure standards cannot be directly applied to recreational exposures. Assuming customer exposure to loud music is generally limited to 2-hours, once per week, the music level should not exceed an equivalent continuous level,  $L_{eq}$ , of 94 dBA for any continuous 2-hour period at any customer location. 94 dBA is a guideline and does not constitute a never to be exceeded sound level. The intent is to allow music to be entertaining within reasonable and safe limits.

3.4.3. When multiple worker days are used to determine the average daily ECL for an individual or group of individuals, the ECL can be used when formulating surveillance plans and will be calculated according to the formula at [Figure 3.6](#).

**Figure 3.6. Calculating Average Daily Equivalent Continuous Level.**

$$ECL = 10 \log \left[ \frac{1}{n} \sum_{i=1}^n 10^{0.1L_{eq,Di}} \right]$$

where:  
 ECL = average daily equivalent continuous level  
 $L_{eq,Di}$  = daily equivalent continuous sound level  
 n = number of workdays monitored.

### 3.5. Noise Surveys and Dosimetry.

3.5.1. Frequency of Assessments. Potential noise hazards will be identified, assessed, and controlled as an integral part of the assessments specified in DAFPD 48-1, AFI 48-101, *Aerospace Medicine Enterprise*, and DAFI 48-145. Specifically, the health effects of noise will be evaluated as part of routine and special assessments, and when operations change, or new operations start. Additionally, assessments are performed when specific requests address the potential for hazardous noise exposure or evaluation of other types of requests show there to be potential noise hazards (OSHA 29 CFR 1910.95).

3.5.1.1. An initial assessment will be conducted in all potentially hazardous noise areas. Representative 8-hr TWA noise measurements will be collected SEGs established according to DAFI 48-145 and DAFMAN 48-146, *Occupational Health Program Management*, for DAF employees working in hazardous noise areas.

3.5.1.2. An additional assessment should be accomplished within 30 days of any change in operations affecting noise levels.

3.5.1.3. When the noise exposures for a particular SEG are highly variable or not clearly well above/below the OEL, additional sample collection will be accomplished according to DAFI 48-145, DAFMAN 48-146, and **Chapter 8** to adequately characterize the noise hazard.

3.5.2. Noise Hazard Survey. A generalized process sequence, coupled with specified evaluation procedures, will be instituted to ensure a uniform approach to noise hazard assessment. The objective is to determine whether noise exposures pose a significant risk to the workers' hearing. There are three phases in the health risk assessment process: identification, analysis, and control.

3.5.2.1. Identification. In this phase of health risk assessment, the goal is to determine whether a potential or existing exposure poses a health threat to a specified population during a specified period and location. It is critical to understand the duties of the populations and sub-populations. BE will become familiar with the processes being performed in the workplace through firsthand observation, interviews with shop personnel, review of existing assessment data, and epidemiological summaries completed by PH. Potentially hazardous noise sources should be noted during this phase to identify the need for further consideration in the analysis phase.

3.5.2.2. Analysis. Three types of noise surveys are conducted to evaluate the noise environment: the noise source survey, the worker exposure survey, and the hazardous noise area survey. Data collection will be conducted when new processes are identified, or existing data is no longer current. Measurements will be made using equipment conforming to the appropriate ANSI standard in the references. All noise data used to characterize occupational exposures will be entered into DOEHRS-IH. Noise data collected from 711 HPW/RHWE (Human Performance Wing Cognition and Modeling Branch), or other independent source on behalf of the DAF, will be provided to USAFSAM/OE to disseminate to the BE career field for integration into DOEHRS-IH as appropriate.

3.5.3. Noise Source Survey. This survey is used to classify whether a particular noise source output is equal to or exceeds the criterion level of 85 dBA and could present a potential exposure hazard to workers. Sound level measurements will be made in accordance with DoDI

6055.12, using A-weighting with slow response. If the source is determined to be potentially hazardous, engineering controls will be considered before other control measures; an octave band analysis may be necessary. Historical data should be applied to sources of hazardous noise that have previously been well characterized, e.g., a generator for which the sound pressure levels are adequately assessed. Hazardous noise sources will be labeled where possible to warn operators of the need to wear hearing protection.

3.5.4. Worker Exposure Survey. Where the potential to exceed the limits as discussed under Noise Exposure Limits-Hearing exists, worker exposures will be evaluated by direct measurements with noise dosimeters, or indirectly with noise exposure calculations specified in [Table 3.2](#).

3.5.4.1. TWA noise levels will be determined for all DAF workers working in hazardous noise areas at least once and should be accomplished within 30 days of any change in operations affecting noise levels. In circumstances such as high worker mobility, significant variations in noise levels, representative personnel sampling will be conducted.

3.5.4.2. Impulsive noise and high level (>130 dB) continuous noise cannot be accurately measured using traditional SLMs or dosimeters because special instrumentation is required. If there is a request for additional information or impulsive noise measurement, or software modeling contact USAFSAM ESOH Service Center, 2510 Fifth Street, WPAFB, OH 45433, 1-888-232-3764, or 711 HPW/RHWE, 2610 Seventh Street, WPAFB, OH 45433.

3.5.4.3. Worker noise exposure will be computed and reported regardless of any attenuation provided by HPs. However, workers should understand how hearing protection devices affect their exposure levels.

3.5.4.4. The decision to place a civilian employee on the HCP will be based on the likelihood of exposure at or exceeding 85 dBA as an 8-hour TWA. The following conditions should be considered when estimating exposure for an individual or group of individuals assigned to a SEG. These conditions are based on the assumption of no exposure to hazardous noise in these environments:

3.5.4.4.1. Number of days spent in classroom training

3.5.4.4.2. Number of days spent on administrative tasks, medical appointments, other duties, etc.

3.5.4.4.3. Number of days detailed to wing support not related to primary duty

3.5.4.4.4. Number of days at formal training or temporary duty

3.5.5. Hazardous Noise Area Survey. These surveys are used to define work areas where noise exposures are assumed hazardous based on routine operations. Hearing protection requirements for these areas should be made clear to all personnel that might enter these areas.

3.5.5.1. These surveys can be used to define a work area enclosed by clear borders as a hazardous noise area or to identify a hazardous noise zone around a certain piece of equipment. When marking a hazardous noise zone around a piece of equipment, careful consideration must be given to noise production variables and the equipment's mobility.

3.5.5.2. Instrumentation used for these surveys must meet or exceed requirements for type 2 SLM as identified in ANSI Standard S1.4-1983 (R2006) and its most recent revision. Instruments must have been subjected to a complete electro-acoustic calibration based on manufacturers' specifications before survey. Acoustical calibration must be performed on the instruments before and after each day's measurements. The acoustical calibrator must be accurate to within plus or minus one dB and must have been subjected to a complete electro-acoustic calibration.

3.5.5.3. When personal noise dosimeters are used for worker exposure measurements, they must integrate all sound levels from 80 dB to 130 dB. Dosimeters must meet or exceed specifications in the latest approved ANSI Standard S1.25-1991 (R2007), Specification for Personal Noise Dosimeters. DAF components will use a time-intensity exchange rate of 3 dB. Noise dosimeters are authorized for use in Sensitive Compartmented Information Facilities, but local clearance will be obtained in advance through the facility Sensitive Compartmented Information Security Officer.

**3.6. Noise Control.** Engineering controls are the first choice to reduce hazardous noise exposures existing in the workplace. Due to cost and design limitations associated with some engineering control solutions, administrative controls and/or the use of personal protective equipment may be necessary. Noise limit recommendations should be included as part of the acquisition process. If the required equipment is not available within specified noise output limits, alternate methods of noise control may be necessary. This may also be the case when noise levels associated with existing equipment cannot be controlled cost effectively through engineering solutions. To obtain a more detailed description or other examples of sound reduction methods, consult the ESOH Service Center at website: <https://hpws.afrl.af.mil/dhp/OE/ESOHSC>.

## Chapter 4

### CERTIFICATION, EQUIPMENT STANDARDS, AND TESTING PROTOCOLS

**4.1. Certification.** Personnel performing audiograms as part of the USAF HCP will be trained as Hearing Conservationists as established by the CAOHC. AF trained individuals may apply to CAOHC to receive Certification. It is recommended that AF personnel obtain CAOHC- approved HC training at either USAFSAM or DoD component, as it includes training on the DOEHRS-HC software. Personnel who are CAOHC certified or receive training from a CAOHC-approved civilian agency must contact USAFSAM to receive an AF Certification number before performing audiometric testing because he/she will need to coordinate hands- on training with the DOEHRS-HC software. Personnel who are CAOHC trained by a DoD component will use the certification number issued by that Service. CAOHC-approved recertification is required at 5-year intervals for individuals active in hearing conservation testing.

4.1.1. CAOHC trained Hearing Conservationists, are not trained or permitted to conduct audiometric testing outside of requirements outlined in this instruction to include audiograms for diagnostic evaluations, school screenings, or hearing tests outside of the HCP with exception of Service annual readiness audiograms (including Sister Services) and threshold audiograms performed for the purpose of separation history and physical exams).

4.1.2. AF Certified Hearing Conservationists who perform audiograms must be responsible to an audiologist, otolaryngologists, or other provider, OSHA 29 CFR 1910.95, (g)(3).

**4.2. Audiometric Equipment Standards.** Audiometric testing done in support of the HCP will be conducted with audiometers meeting the standards of ANSI S3.6-2010 (or current ANSI standard). Audiometric testing room requirements are reflected in ANSI S3.1-1999 (R2008), Maximum Permissible Ambient Noise Levels for Audiometric Test Rooms.

4.2.1. Standardized HCP Audiometers. Routine pure tone air conduction testing is to be accomplished with standardized HCP audiometers. DOEHRS-HC is the authorized system for use in the HCP and provides input into the DoD-wide Occupational Health databases. Data from diagnostic clinical audiometers used by audiologists and boothless audiometers can be input manually. Questions concerning the DOEHRS-HC system should be directed to the DAF HCPM, USAFSAM/PHR.

4.2.2. Earphones. Only earphones meeting the requirements of ANSI Standard S3.6-2010, or current ANSI standard, will be used in the DAF HCP for screenings with DOEHRS-HC software. Earphones must only be used with the audiometer they were calibrated. Audiologists may use insert earphones that have been appropriately calibrated by Biomedical Equipment Technicians or equivalent civilian technicians. If the STS is due to collapsing canals, it is recommended to prevent the collapse of the canal by placing a disposable HP behind the pinna when using circumaural earphones.

**4.3. Calibration, Testing, and Functional Checks.** All audiometers and sound rooms must be tested and calibrated before use in the HCP.

4.3.1. Daily Functional Check. A daily functional check is required before each day's use. DOEHRS-HC software provides a functional check sequence. The examiner should listen to all frequencies at various intensity levels. This general check of the machine and its function will include listening for:

- 4.3.1.1. Crackling sounds or changes in loudness while moving the cord.
- 4.3.1.2. The presence of tones at all frequency settings.
- 4.3.1.3. Presence of tones only in the appropriate headphone.
- 4.3.1.4. Periods of silence while listening to the frequency and attenuation changes.

4.3.2. Daily Calibration Check. An examiner who operates the audiometer must perform the calibration check to verify the system is within calibration specifications every day that hearing tests are administered. DOEHRS-HC software provides a calibration check sequence. The calibration test subject can be an electroacoustic ear or someone with known stable hearing levels, free of ENT problems, and not routinely exposed to hazardous noise. Record the daily calibration results on the DD Form 2217, *Biological Audiometer Calibration Check*. Note: Contact servicing BMET when the equipment is not within specifications according to the daily calibration check.

4.3.2.1. If a change in threshold of more than plus or minus 5 dB at any frequency (except 6,000 Hz), or more than plus or minus 10 dB at 6,000 Hz occurs, repeat the calibration procedure. If the calibration standard is an electroacoustic ear, reset the headphones and repeat the procedure. If the calibration test fails a second time, test a person with known stable hearing thresholds.

4.3.2.2. Headphones are calibrated with a specific audiometer; do not mix and match headphones and audiometers that have not been calibrated together by BMETs. Out-of-calibration audiometers must not be used, checked by BMETs, and repaired or re-calibrated before being placed back in service.

4.3.2.3. Document all activities on the DD Form 2217. A new DD Form 2217 must be established when the audiometer is re-calibrated.

4.3.3. Annual Acoustic Calibration. Audiometers used in the HCP will be acoustically calibrated IAW DHA/USN MOA: DHA-2017-R-402 or appropriate provider of these services, annually. The calibration date, taken from the hearing conservation forms, will be stored at the DOEHRS-DR for 30 years.

4.3.4. Exhaustive Calibration. Performed IAW DHA/USN MOA: DHA-2017-R-402 and according to ANSI S3.6-2010, Specifications for Audiometers (or current ANSI standard). Test frequencies below 500 Hz and above 6,000 Hz may be omitted from this calibration for those audiometers used in the HCP.

**4.4. DOEHRS-HC/DR.** All hearing conservationists using DOEHRS-HC will have a DR account.

- 4.4.1. Prior to running a hearing test, previous tests must be inquired from the DR.
  - 4.4.1.1. If a previous reference audiogram has not been established, perform a reference audiogram (on DD Form 2215) using a type 1 reason, prior to noise exposure.
  - 4.4.1.2. If any type of hearing test has been accomplished previously, an annual test should be performed (on DD Form 2216).
  - 4.4.1.3. If a new reference is warranted, use a type 3 reason, reestablished after follow up.

4.4.1.4. If an individual has separated from military service but will continue in civil service in a noise-exposed job, a new reference will be established using a type 4 reason, change in service component. This reason will also be used if the individual changes from civilian to uniformed military service.

4.4.2. Hearing conservation technician or program manager must export data to the DR every day that individuals are tested using DOEHRS-HC data export function. Data must be backed up to a secure device or network drive daily. When a new back up file is created, previous files may be deleted. Only the most recent backup file is needed in case of a computer error or malfunction. Exporting data to the DR is not the same as backing up the database. Both must be accomplished.

## Chapter 5

### HEARING PROTECTION

**5.1. Use of Personal Hearing Protection.** The use of personal HP to limit noise exposure is an interim protective measure while engineering control measures are being explored, evaluated, and designed. Such devices will constitute a permanent measure only if the BE determines, in coordination with the workplace supervisor and the unit commander, that engineering controls are not technologically, economically, or operationally feasible.

**5.2. Hearing Protection Devices and Costs.** Personal HPs are provided at no cost to all DAF personnel who work in designated hazardous noise areas or operate noise-hazardous equipment.

5.2.1. The worker's organization will pay for the personal HPs (including custom molded hearing protection). However, if custom molded hearing protection is required as determined by the MTF, the MTF provides the initial set and the worker's organization is responsible for replacements.

5.2.2. The HPs provided must be capable of attenuating worker noise exposure below a TWA of 85 dBA. If HPs do not provide sufficient attenuation, further control of exposure will be necessary.

5.2.3. An earplug carrying case will be made available by the owning organization (initial issue and replacement based on normal wear and tear) for each set of pre-formed earplugs. It will be provided at no cost to the DAF personnel who work in designated hazardous noise areas or operate noise-hazardous equipment. This case can also be used for hand-formed earplugs. National stock numbers (NSN): Olive drab color, NSN 6515-01-100-1674 or Navy blue color, NSN 6515-01-533-6168.

**5.3. Estimating Noise Attenuation for HPs.** The noise attenuation provided by HPs varies between wearers, even when the wearers are highly skilled at fitting the HPs to their ears.

5.3.1. Multiple methods exist for selecting attenuation values; the recommended and most preferred to least preferred methods are listed in Table 5.1 and 5.2. The AFRL attenuation values along with other noise references can be found on the 711th portal/ESOH Service Center at <https://hpws.afrl.af.mil/dhp/OE/ESOHSC/>.

**Table 5.1. Preferred Methods for Selecting Attenuation Values for HPDs for Continuous Noise.**

Most Preferred	Field Attenuation Estimation System (FAES), to obtain a PAR
	Octave Band Method
	Laboratory or Manufacturer values utilizing ANSI S12.6
Least Preferred	Manufacturer values utilizing ANSI S3.19 derated by 50%

**Table 5.2. Preferred Methods for Selecting Attenuation Values for HPs for Impulse Noise.**

Most Preferred	Laboratory values utilizing ANSI S12.42
Least Preferred	Manufacturer values utilizing ANSI S3.19 derated by 50%

5.3.2. Methods for calculating effective noise levels at the ear. Apply hearing protector attenuation data (mean minus two standard deviations) to noise levels. Note: The octave band and noise reduction rating (NRR) attenuation data used for calculation of the effective noise level under the hearing protector shall be the mean minus two standard deviation attenuation data. This ensures that approximately 98% (single tail normal distribution) of the users should achieve the calculated attenuation value or more.

5.3.2.1. The preferred method for applying hearing protector attenuation is FAES. If using FAES is not feasible, default to using an octave band method. If the 8 hr TWA is greater than 92 dBA and FAES or octave band methods are not being used, the ESOH Service Center must be contacted for guidance.

5.3.2.2. A secondary method of calculating the effective noise level at the ear using the NRR is allowable but not preferable. A 7 dB correction factor will be applied to account for the de-emphasis of low-frequency energy inherent to the A-weighting scale. Following the 7 dB correction factor, an additional derating of 50% is required when ANSI S3.19 NRR values are used.

5.3.2.2.1. When using ANSI S3.19 NRR values use the following equation: Effective level at ear (dBA) = A-weighted level – ((NRR-7 dB) \* 0.50)

5.3.2.2.2. When using ANSI S12.6 NRR values use the following equation: Effective level at ear (dBA) = A-weighted level – (NRR - 7 dB)

**5.4. Limits of Hearing Protection Performance.** The maximum possible sound attenuation provided by HPs is limited by human body and bone conduction mechanisms. Even though a particular device may provide outstanding values of noise attenuation, the actual noise reduction may be less because the noise surrounding the head and body bypasses the hearing protector and is transmitted through tissue and bone pathways to the inner ear.

5.4.1. The term "double hearing protection" for earplug and earmuff combinations is misleading. The attenuation provided by earplugs and earmuffs will be less than the sum of their individual attenuation values. Never add individual HP attenuation values to derive a combination value. Consult the ESOH Service Center for information. If no data is available, add 5 dB to the highest NRR of the plug or muff to estimate combined protective rating.

5.4.2. Wear of dual hearing protection in various conditions. When earmuffs are not worn properly (i.e., airtight seal of the earmuff to the circumaural region surrounding the pinnae of the ear) the amount of protection provided by the earmuff is greatly reduced and it is impossible to determine how much protection the worker is receiving from the noise.

5.4.3. For other conditions where earmuffs can be worn but an airtight seal cannot be maintained (e.g., wearing of polar hood/balaclava for cold weather protection), then the sound attenuation provided by the earmuffs in combination with earplugs and the protective head gear will be assumed to equal the attenuation provided by the earplugs alone. Administrative controls will be required to reduce the 8-hr TWA to below 85 dBA. Shop supervisors will consult BE whenever such administrative controls are required.

5.4.4. If earmuffs cannot be worn due to other PPE being worn around the head (e.g., respirator with airline) then ear-inserted single hearing protection must be used. If single hearing protection does not provide enough protection to reduce the TWA 8-hr exposure below 85

dBA then administrative controls, such as reduced time in the hazardous noise area, are needed (assuming use of engineering controls has already been evaluated and is not feasible). Shop supervisors will consult BE whenever such administrative controls are required.

## **5.5. Fitting and Dispensing Earplugs.**

5.5.1. PH will maintain a variety of earplugs, from at least two manufacturers and including at least three sizes, as well as carrying cases. Individual units must purchase earmuffs, disposable plugs, and other hearing protection variations approved by BE, necessary to protect workers fully against hazardous noise.

5.5.2. PH will accomplish initial earplug fitting. PH will fit and dispense pre-formed earplugs and/or foam plugs at the time of the audiometric evaluation. At this time, PH will assess the conditions (e.g., cold weather) in which the HPs will be worn to ensure proper wear for sufficient sound attenuation. Each ear will be individually fit with earplugs (approximately 20 percent of the population requires a different size of earplug for each ear). Workers unable to be properly fit with pre-molded or foam HP will be referred by PH to an AF audiologist or a certified licensed civilian audiologist for custom molded earplugs at the DAF's expense.

5.5.3. Custom molded devices may be appropriate for special circumstances. For example, Service band personnel should be provided with pre-molded or custom molded musicians' earplugs, at their unit's expense. Audiologists or professionally trained medical or non-medical staff as defined in AFMAN 48-149, *Flight and Operational Medicine Program (FOMP)*, may take ear-mold impressions under the supervision of an audiologist or qualified physician, IAW DoDI 6055.12.


5.5.4. Workers may be fitted with pre-formed earplugs as determined by PH at the expense of the DAF. If workers request custom molded devices as a personal preference, the unit is not obligated to pay for any additional examinations and the fabrication of specialized plugs. However, if a unit chooses to purchase custom molded earplugs for their personnel, they must consult with BE, PH, and the OEM Consultant who will provide oversight of the brand/type selection, fitting, and monitoring of the custom devices. The MTF may or may not provide resources to conduct the fitting of custom molded earplugs for large numbers of personnel, depending on the availability of resources and personnel, and per the MTF commander's approval.

5.5.5. PH will examine the fit and condition of all HPs (certified for use by BE) during the annual audiogram, and whenever an effectiveness question exists as indicated in DoDI 6055.12. The worker will demonstrate proper fitting technique at the time of the audiogram. If a worker cannot be adequately fit with the earplugs recommended by the BE, an audiologist will determine an action plan that ensures the worker is adequately protected from occupational hazardous noise.

## **5.6. Types of Hearing Protective Devices.**

5.6.1. Insert Type Earplug. An insert earplug is designed to provide a seal with the ear canal. There are three types of insert earplugs: premolded, formable, and custom molded earplugs.

Figure 5.1. General Earplug Information.



**1. Roll** the earplug up into a small, thin "snake" with your fingers. You can use one or both hands.

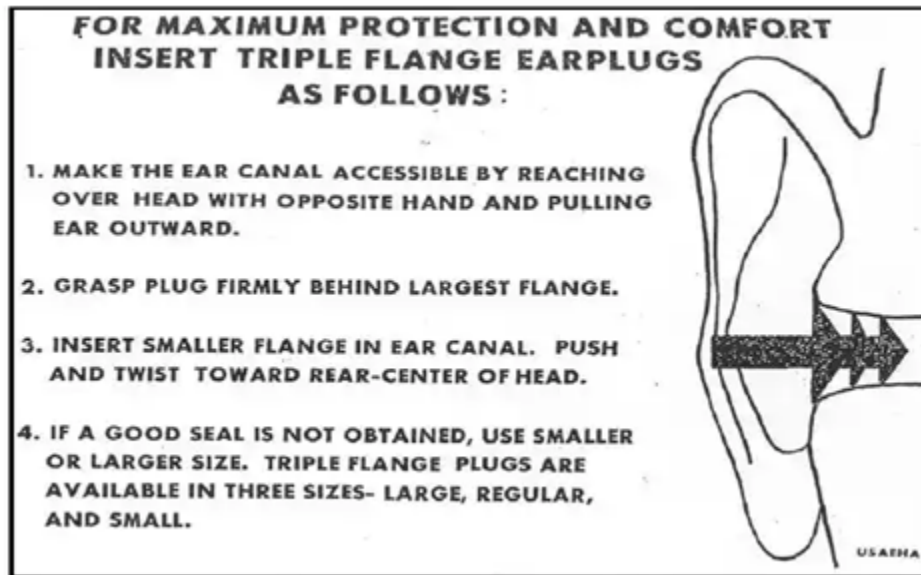
**2. Pull** the top of your ear up and back with your opposite hand to straighten out your ear canal. The rolled-up earplug should slide right in.

**3. Hold** the earplug in with your finger. Count to 20 or 30 out loud while waiting for the plug to expand and fill the ear canal. Your voice will sound muffled when the plug has made a good seal.

CDC

- Plugs tend to work loose as a result of talking and chewing and must be resealed.
- Little difficulty understanding speech should be experienced when plugs are being used if the voice of others is raised slightly above the level of ordinary conversation.
- Even a small air leak defeats the purpose of wearing plugs.
- Keep plugs clean with soap and water. Return them dry to their case and store until needed.
- Earplugs are for your personal use only.

5.6.1.1. Premolded Earplugs (e.g., triple flange, Quattro). Premolded earplugs are pliable devices of fixed proportions. Personnel fitting and dispensing earplugs will train users on proper insertion, wear, and hygiene. They are reusable but may deteriorate and need replacement. The earplugs should be discarded if they become brittle or torn, or if routine cleaning cannot remove debris.

**Figure 5.2. Instruction for Triple-Flange Earplugs.**

5.6.1.2. Formable Earplugs (e.g., foam). Formable earplugs are made of material that, after compression and insertion, expands to form a seal in the ear canal. When properly inserted, they provide noise attenuation values that are similar to those from correctly fitted premolded earplugs. Formable earplugs are usually considered disposable and therefore are more expensive for long-term routine use. Individual units may procure approved formable earplugs. Each earplug must be held in place while it expands enough to remain firmly seated. These earplugs may be washed and reused but should be replaced after one or two uses or when they no longer form an airtight seal when properly inserted.

**Figure 5.3. Instructions for Foam (Hand Formed) Earplugs.**

1. Ensure that your hands and earplugs are clean before using.
2. Roll, rather than squeeze, each plug into as small a cylinder as possible.
3. Access your ear canal by reaching over your head with the opposite hand and pulling your ear up and out.
4. Insert the earplug into the ear, gently insert the orange end first when using the orange and green Sound Guard™ foam earplug. Hold gently in place with your fingertip until expansion is complete.
5. When you have a good fit and seal, only the green color will be visible, and the orange portion of the earplug will be completely in the ear canal.
6. Do not use hand formed earplugs where hazardous chemical vapors can be absorbed into the plug.
7. Dispose of these earplugs after one or two uses.

5.6.1.3. Custom Molded Earplugs. A small percentage of the DAF population cannot be fitted, as determined by the MTF, with standard premolded or formable earplugs. Custom molded earplugs are made to fit the exact size and shape of an individual's ear canal. DAF Band personnel are authorized to obtain custom molded musician's earplugs without medical determination. All individuals needing custom molded earplugs will be referred

by Public Health to an AF audiologist or licensed civilian audiologist. The selected custom molded earplug must be reviewed by BE to confirm it meets the attenuation requirements of that individual's workplace.

5.6.2. Earmuffs. Earmuffs are devices worn around the ear (circumaural) to reduce the noise reaching the ear. Their effectiveness depends on a tight seal between the cushion and head.

5.6.2.1. Earmuffs and other HP with input capacity, such as for music players or built-in radios designed for recreational listening will not be used with or as protectors. Any HP with input capacity must be approved for use by 711 HPW/RHWE to evaluate the device to confirm the level of output is not harmful, or limit to non-harmful levels. Consult installation BE for more information.

**Figure 5.4. General Information on Earmuffs (e.g., noise muffs).**

1. Adjust the headband and strap to ensure earcup seals are in complete contact with the head.
2. Earcup seals must fit well around the temples of eyeglasses, when worn.
3. The type II noise muff can be worn over the head, behind the head, or under the chin.
4. When noise muffs are properly worn, our own voice should sound muffled to you as if talking inside of a barrel.
5. Do not bend, alter, or modify any part of the headband earcups (including the lining and the seal).
6. Replace earcup seals that become hardened, damaged, or otherwise unserviceable.
7. Even a small air leak eliminates the protection provided by the noise muffs.

5.6.2.2. Communication Earmuffs (Electroacoustic Devices). Personnel who must communicate in the presence of intense noise use these devices, as determined by BE. They are fitted with earmuffs and, if needed, a noise-shielding or noise cancelling microphone so voice communications can be achieved during various operations. Noise exposure limits may be exceeded by the combination of external noise plus voice. Sound levels produced by communication devices only need to be measured if they represent the primary noise exposure; communications are considered the primary noise source when background noise levels are 85 dBA or less.

5.6.2.3. Combination Communications Earmuff and Earplug. When extremely high noise levels are present and attenuation of communication earmuffs does not allow enough exposure time to complete the mission, earplugs can be worn in addition to the earmuffs. Custom molded earplugs can be made under the supervision of an audiologist. This combination of protection should provide a longer allowable exposure time for mission completion. Information on modifications of earmuffs and fabrication of custom molded earplugs can be obtained from USAFSAM/PHR and ESOH Service Center.

5.6.3. Active Noise Reduction (ANR) hearing protection may not be appropriate for all industrial and/or military environments. Before employing ANR hearing protection, contact ESOH Service Center to assist in determining the appropriateness and feasibility of ANR applications. Additionally, ANR device data used in the HCP should be IAW the most current ANSI standards, for measuring passive and active attenuation.

5.6.4. Communication headsets, typically used by flight crew as hearing protection during engine start up, are designed to provide hearing protection and simultaneous communication capability and are appropriate in some environments. Contact ESOH Service Center to assist in determining the appropriateness and feasibility of these applications. Additionally, communication measurements should be IAW with the most current ANSI standard.

5.6.5. Flight Helmets. Flight helmets used during ground or airborne operations provide varying degrees of protection from noise. The ear enclosures in these devices determine the degree of protection achieved. Generally, the amount of protection provided, primarily at frequencies below 1,000 Hz, varies with the condition of the ear enclosures and the acoustic seal. Headset ear enclosures and ear cushions must be maintained in good repair.

5.6.6. Hearing aids are not HPs. Certain hearing aids or surgically implanted devices may be used with over-the-ear HPs after evaluation and approval by an audiologist or otolaryngologist. If approved, the worker should be closely scrutinized on evaluation to determine an STS after occupational noise exposure.

## **5.7. Education and Training on Proper Use, Care, and Maintenance of HPs.**

5.7.1. PH will train personnel on the proper use and care of HPs at the time of audiometric testing. Personnel requiring earmuffs (in addition to earplugs) will be informed of this requirement and educated on the importance of using adequate protection.

5.7.2. Supervisors will instruct users on proper use and care of HPs in the workplace as part of the annual training program.

5.7.3. Reusable earplugs or formable devices should be washed in lukewarm water with hand soap, rinsed in clean water, and dried thoroughly. Wet or damp earplugs should not be worn or placed in their containers. Cleaning should be done as needed.

5.7.4. Earmuff seals should be kept clean. The plastic or foam cushions may be cleaned in the same way as earplugs, but the inside of the muff should not get wet. When not in use, earmuffs should be placed in open air to allow moisture that may have been absorbed into the cups to evaporate. Earmuff seals should be replaced as needed.

5.7.5. Anyone having difficulty in wearing HPs (i.e., irritation of the ear canal(s) or pain) should immediately report this to their supervisor. The supervisor should remove the worker from exposure to hazardous noise and contact their provider or PH.

## Chapter 6

### FITNESS AND RISK EVALUATIONS

**6.1. Job Functions and/or Safety Risks.** Personnel who cannot perform essential job functions and/or pose a safety risk to themselves or others because of a medical condition will be evaluated for fitness and risk. A fitness and risk evaluation may be requested by the medical provider or by line management. Clinical evaluations by a DoD, VA, or network audiologist are required as part of the fitness and risk evaluation. Personnel will be considered for a fitness and risk evaluation if they demonstrate any of the following:

- 6.1.1. Show a second PTS in either ear.
- 6.1.2. Exceed the H-1 profile and work in a hazardous noise area.
- 6.1.3. Complain of not hearing and/or understanding spoken communications, auditory cues, or signals.
- 6.1.4. Exhibit behavior resulting in invalid or unreliable audiograms. Failure to obtain accurate audiometric test data should result in a worker being removed from all hazardous noise environments due to an inability to accurately monitor hearing.
- 6.1.5. Exhibit behaviors that call into direct question the ability to work in the assigned job.
- 6.1.6. Cannot be fit with HPs.

**6.2. Flying and other Special Operational Duty.** Flying and other special operational duty personnel who meet the criteria above or exceed hearing standards for their flying class will be evaluated as directed in DAFMAN 48-123. Note: A fitness and risk evaluation is performed as part of the waiver process for flying and other special operational duty personnel who exceed hearing standards IAW the Medical Standards Directory. If there has not been a PTS since waiver approval, an additional fitness and risk evaluation is not warranted. However, if there has been a PTS since waiver approval, consult a flight surgeon for initiating a fitness and risk evaluation.

**6.3. Non-Flying Personnel.** For non-flying personnel, the provider initiates the fitness and risk evaluation in coordination with the installation Professional Supervisor.

- 6.3.1. The provider must address clinical status and job safety in the Reason(s) For Request section of AF Form 1754. The provider may include a job capability assessment in the informed medical recommendation.
- 6.3.2. The provider will perform a clinical examination. As a minimum, the routine clinical exam will be performed. A DAF Form 1753, Section II, could be used to perform this function. If other medical conditions affect the person's ability to perform the job capably or safely, they will be addressed in the clinical examination.

**6.4. The Job Capability and Safety Analysis.**

- 6.4.1. Base Personnel Flight must prepare a list, using the AF Form 1754, Part 2, of the minimum essential tasks and auditory requirements a worker must have for job qualification.
- 6.4.2. The installation Professional Supervisor completes the Job Capability Survey, using the AF Form 1754, Part 3. The installation Professional Supervisor interviews the worker, visits

the workplace, and for each task identified by the appointing official, makes a judgment if the worker will be able to capably perform the task.

6.4.3. When requested by the medical provider, the safety representative in conjunction with the shop supervisor will analyze job safety, complete AF Form 1754, Part 4, and return the form to the medical provider. The Job Capability Survey (Part 3) and the Job Safety Analysis (Part 4) should be performed at the same time.

6.4.3.1. In consultation with BE and PH, Safety officials interview the worker, visit the workplace, and for each task identified by the appointing official, make a judgment as to whether the worker should be able to reasonably perform the task without endangering themselves or others.

6.4.3.2. The safety analysis should address, but is not limited to, the following conditions:

6.4.3.2.1. Does the worker perform tasks alone or in-groups?

6.4.3.2.2. If group tasks are required, are visual cues available?

6.4.3.2.3. Does the worker need to communicate to perform tasks?

6.4.3.2.4. Do potential hazard signals exist that the worker needs to hear (forklifts, special machinery, announcements, etc.)?

6.4.3.2.5. Do the job tasks include confined space entry?

**6.5. Medical Determinations and Recommendations.** The medical provider will only make a recommendation whether the worker will be able to capably perform the task. The appointing official/commander makes the final decision.

6.5.1. To assist managers in making employment and placement decisions, medical recommendations will be one of the following:

6.5.1.1. Worker meets medical requirements of the position.

6.5.1.2. Worker meets medical requirements with an accommodation or restriction. (List recommended accommodations or restrictions and the expected therapeutic or risk avoiding benefit considering risk management decision-making process).

6.5.1.3. Worker is not fit to perform essential tasks, will pose an undue risk to themselves or others, or fails to meet medical requirements for the job. The medical provider must include reasonable justification for recommendations.

6.5.2. A determination of hearing profile might also be necessary IAW DAFMAN 48-123. AF Form 422, *Notification of Air Force Member's Qualification Status*, and H-1 profile designation are not appropriate for civilian employees. Hearing profiles are not appropriate for decisions concerning disposition and/or disqualification. Individual worker determinations are made on a case-by-case basis as outlined by the Fitness for Duty Evaluation.

6.5.3. The provider may assume a worker meets the minimum medical qualifications to perform a job in a hazardous noise environment if one of the following conditions is true:

6.5.3.1. The worker has an H-1 profile, can wear standard HPs, and does not report difficulty hearing and understanding routine spoken communications, auditory cues, or signals.

6.5.3.2. Worker has undergone a previous fitness and risk evaluation, hearing thresholds have not changed significantly (no STS compared to most current reference), medical condition that may affect job performance in a hazardous noise job has remained stable, and the worker's supervisor has not expressed any new concerns.

6.5.4. The medical recommendation for placement or continuation in a noise-hazardous job will include the following statement on the AF Form 422 or locally derived return to duty memo, "This worker meets medical standards to work as a [insert job title and occupation code] in [insert shop name and number]." If restrictions or accommodations are recommended, they should be listed on AF Form 422, or locally derived return to duty memo, along with the expected risk-reducing or therapeutic benefit.

6.5.5. A disqualifying medical determination is warranted if:

6.5.5.1. Allowing the worker to perform the job would exacerbate a preexisting medical condition and no reasonable accommodation would enable the worker to perform essential functions of the job without exacerbation or further damage to the known preexisting medical condition.

6.5.5.2. Allowing the worker to perform the job would endanger their safety, the safety and security of other workers, or the public.

6.5.5.3. The worker fails to meet a valid medical standard or physical requirement for placement in the position.

6.5.6. The worker determined to be medically disqualified because of reasons above must be individually evaluated.

6.5.7. A provider will prepare a summary of the fitness and risk evaluation using an AF Form 422 or locally derived return to duty memo, and it will contain the following minimum information:

6.5.7.1. Reason for the fitness and risk evaluation.

6.5.7.2. Clinical status (determination of whether a medical condition is temporary or permanent and has reached maximum medical benefit).

6.5.7.3. Safety assessment results.

6.5.7.4. Recommendations for accommodations and (or) restrictions in the particular job.

6.5.8. The completed AF Form 1754 will be forwarded to PH for inclusion in the individual's medical record.

## Chapter 7

### MRC/MAJCOM PROFESSIONAL SUPERVISOR AND/OR MTF AUDIOLOGIST

**7.1. Overview of Support.** An MRC/MAJCOM Professional Supervisor and/or MTF audiologist provides a wide range of diagnostics and treatments in support of clinical referrals for hearing conservation and provides services to all other personnel authorized medical care by AFMAN 41-210, *Patient Administration Support*.

7.1.1. The MRC/MAJCOM Professional Supervisor and/or MTF audiologist provides consultation and overview of referrals, so the management and disposition of patients meet current DAF standards. Guidance can be via “standing order” or record review. Record reviews should be accomplished in the electronic medical record. The reviewing audiologist must create an encounter in the electronic medical record to document that a record review was accomplished and provide a patient disposition to include recommendations for reference audiogram reestablishment, return to duty or restrictions, OSHA reporting requirements and any follow-up required. Reviews can be accomplished by fax or encrypted email if electronic health record is unavailable if Health Insurance Portability and Accountability Act (HIPAA) compliant.

7.1.2. At a minimum, testing capabilities will include diagnostic audiometer equipment sufficient to complete a full comprehensive hearing exam, a full range of immittance, electrophysiological, and otoacoustic emissions equipment.

7.1.3. Allocate resources to staff and equip the MRC/MAJCOM Professional Supervisor within their area of responsibility to provide regional hearing conservation referral support. Evaluations by certified military or state licensed civilian audiologists are permitted. All evaluations by non-DoD audiologists will be reviewed by the MRC/MAJCOM Professional Supervisor.

**7.2. Audiology Referrals.** Medical providers may validate a PTS, but the MRC/MAJCOM Professional Supervisor or OEM Consultant may be consulted to review problem audiograms to determine if further evaluation is required before reestablishing a reference audiogram. If the medical provider determines no further evaluation is required, then proper documentation in the electronic health record must be provided to explain why no further follow-up was required. Medical providers should use [Table 7.1](#) to determine if a referral is recommended. Note: Aircrew personnel who fail to meet the requirements for continued flight duty will be evaluated as specified in DAFMAN 48-123.

**Table 7.1. Referral Criteria to an Audiologist.**

<u>CONDITION</u>	<u>RECOMMENDED ACTION</u>
On pre-placement, have a hearing profile exceeding H-1 (reference the Medical Standards Directory).	Fitness and Risk Evaluation*
For medical reasons may not be able to perform the job capably or safely in a noise hazard environment.	Fitness and Risk Evaluation*

Have a PTS following required Noise Free evaluation. Audiologists and providers are permitted by OSHA regulations to reestablish reference audiograms without referrals, with appropriate electronic documentation of non-referral rationale.	Referral to Audiologist
Are unable to wear standard hearing protective devices.	Referral to Audiologist
Complaint of inability to correctly hear or understand routine spoken communications, auditory cues, and signals.	Referral to Audiologist
Need special hearing skills and complain of hearing problems. (For example, Morse or voice-intercept operators, air traffic controllers, etc.)	Referral to Audiologist
Are unable to test using standard procedures or equipment.	Referral to Audiologist
Have a 40 dB or greater difference between ears at any frequency. (Requires masked audiogram)	Referral to Audiologist
Have asymmetric hearing loss greater than or equal to 25 dB difference between the left and right ears at any two consecutive frequencies.	Referral to Audiologist (Once referral is completed annual follow-up not required if asymmetry is stable)
Exhibits behavior resulting in invalid or unreliable test results suggesting an exaggerated hearing loss or a problem unrelated to a known physical illness or disease.	Referral to Audiologist
Meet other referral criteria as determined by the consulting audiologist or program manager.	Referral to Audiologist
* Requires clinical evaluation by audiologist	

7.2.1. Processing Patient Referrals. Medical referrals for an STS should be completed as quickly as possible upon completion of the follow-up testing process and are the responsibility of the medical facility and will be completed within the designated referral timeframe.

7.2.2. Providers will complete an electronic referral to Audiology for further evaluation, indicating the reason for the referral and request of care, and send the patient to the appropriate administrative MTF function to schedule the referral appointment. The MTF scheduler arranges appointment and travel orders, and notifies the patient, the patient's supervisor, PH, and the referring provider of the date, time, and location of the appointment.

7.2.3. The patient's medical record and referral information must be available to the MRC/MAJCOM Professional Supervisor or OEM Consultant at the time of the examination.

7.2.4. When the local MTF does not have the capability to provide an examination (or a portion of the exam) for a civilian employee, the MTF may arrange to have the examination in the civilian sector (non-DoD) healthcare community after receiving authorization from the employee's unit commander. The employee's unit commander must also authorize payment for the examination. Payment is made from the same appropriation that funds the employee's salary IAW DAFI 65-601V1, *Budget Guidance and Procedures*. In cases where a civilian worker requests an audiological evaluation for other than an occupationally related condition, i.e., hearing aid assessment, the employee will pay for the evaluation at a civilian establishment and any associated costs (e.g., travel, etc.).

7.2.5. In cases where audiologist availability, travel restrictions, or finances prohibit referral to a military audiologist, the patient should be referred to a licensed and/or certified civilian audiologist. Providers may consult with the AF/SG Audiology Consultant on military or civilian audiology service selections and results interpretation. An AF audiologist is required to review/consult on all audiometric evaluations performed by non-DoD audiologists. See [para. 2.20.15](#) for a list of requirements.

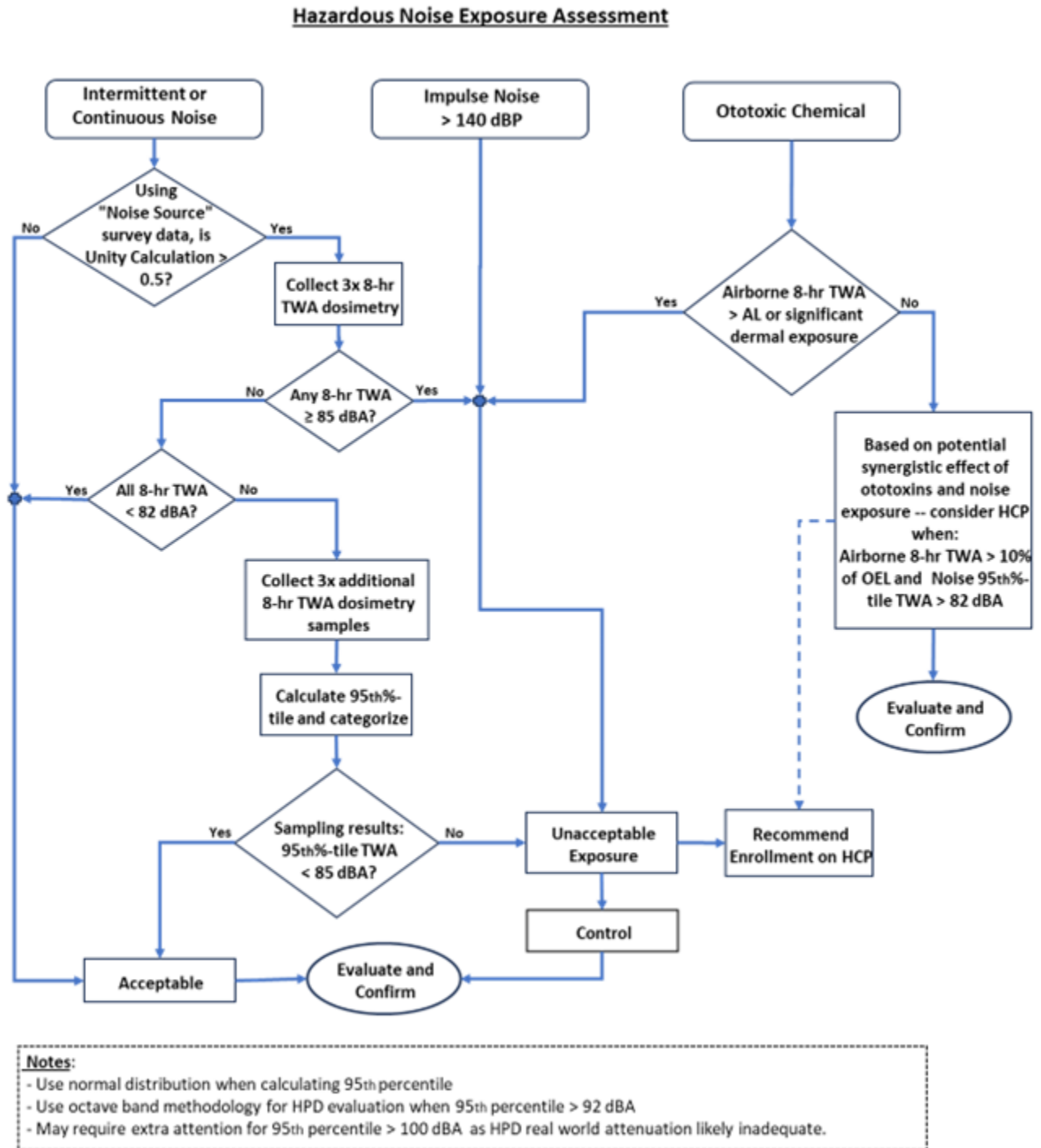
7.2.6. The DoD audiologist will enter the audiological evaluation results and patient disposition into the electronic medical record to include recommendations for reference audiogram reestablishment, return to duty or restrictions, OSHA reporting requirements, and any follow-up required.

## Chapter 8

### NOISE EXPOSURE ASSESSMENT STRATEGY

**8.1. Noise Exposure Assessments.** To ensure consistent noise exposure assessments, the DAF noise exposure assessment strategy (EAS) shall be used each time an exposure assessment is performed. The DAF noise EAS is presented in [Figure 8.1](#). See DAFMAN 48-146 for additional details on DAF EASs.

Figure 8.1. Noise Exposure Assessment Strategy.



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**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

Title 5, CFR, Volume 1, Part 339, *Medical Qualification Determinations*, 1 January 2012

Title 29, CFR 1904.10, *Recording and Reporting Occupational Injuries and Illness*, 13 March 2015

Title 29, CFR 1910.95, *Occupational Noise Exposure*, 13 March 2015

Title 29, CFR 1910.145, *Specifications for Accident Prevention Signs and Tag*, 13 March 2015

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DoDI 6055.01, *DoD Safety and Occupational Health (SOH) Program*, 14 October 2014

DoDI 6055.05, *Occupational and Environmental Health (OEH)*, 11 November 2008

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DoDD 5400.11, *DoD Privacy and Civil Liberties Programs*, 29 January 2019

DoDM 6025.18, *Implementation of the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule in DoD Health Care Programs*, 13 March 2019

DoDM 6055.05, *Occupational Medical Examinations: Medical Surveillance and Medical Qualification*, 27 July 2022

MIL-STD-1474E, *Department of Defense Design Criteria Standard Noise Limits*, 15 April 2015

AFI 25-201, *Intra-Service, Intra-Agency, and Inter-Agency Support Agreements*, 18 October 2013

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

AFI 48-101, *Aerospace Medicine Enterprise*, 8 December 2014

AFI 90-802, *Risk Management*, 1 April 2019

AFMAN 41-210, *Patient Administration Support*, 26 September 2025

AFMAN 48-149, *Flight and Operational Medicine Program (FOMP)*, 13 October 2020

AFPD 90-8, *Environment, Safety and Occupational Health Management and Risk Management*, 23 December 2019

DAFI 20-101\_63-101, *Integrated Life Cycle Management*, 16 February 2024

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DAFPD 48-1, *Aerospace and Operational Medicine Enterprise (AOME)*, 26 December 2024

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ANSI/ASA S1.4-2014, *Sound Level Meters*.

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ANSI S1.25-1991 (R2007), *American National Standard Specifications for Personal Noise Dosimeters*.

ANSI S3.1-1999 (R2008), *Maximum Permissible Ambient Noise Levels for Audiometric Test Rooms*.

ANSI S3.6-2010 (or most current edition), *Specification for Audiometers*.

ANSI/ASA 12.6-2008, *Methods for Measuring the Real-Ear Attenuation of Hearing Protectors*.

ANSI/ASA 12.68-2007 (R2012), *Methods of Estimating Effective A-Weighted Sound Pressure Levels When Hearing Protectors are Worn*.

ANSI S12.42-2010, *Methods for the Measurement of Insertion Loss of Hearing Protection Devices in Continuous or Impulsive Noise Using Microphone-in-Real-Ear or Acoustic Test Fixture Procedures*.

ANSI/ASA S12.65-2006 (R2011), *American National Standard for Rating Noise with Respect to Speech Interference*.

*Environmental Protection Agency Report 550/9-74-004, Information on Levels of Environmental Noise Requisite to protect Public Health and welfare with an Adequate Margin of Safety.*

*American Conference of Governmental Industrial Hygienists (ACGIH) TLVs and BEIs, Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices, Latest Edition.*

### ***Prescribed Forms***

DAF Form 1753, *Hearing Conservation Examination*

### ***Adopted Forms***

DD Form 2215, *Reference Audiogram*

DD Form 2216, *Hearing Conservation Data*

DD Form 2217, *Biological Audiometer Calibration Check*

DD 3126, *Hearing Protection Fit-Test Record*

AF Form 422, *Notification of Air Force Member's Qualification Status*

AF Form 1754, *Job Capability and Safety Analysis (LRA)*

DAF Form 55, *Employee Safety and Health Record*

DAF Form 847, *Recommendation for Change of Publication*

SF 600, *Chronological Record of Medical Care*

### ***Abbreviations and Acronyms***

**ACGIH**—American Conference of Governmental Industrial Hygienists

**AETC**—Air Education and Training Command

**AF**—Air Force

**AFMAN**—Air Force manual

**AFMC**—Air Force Materiel Command

**AFMEDCOM**—Air Force Medical Command

**AFPAM**—Air Force pamphlet

**AFPD**—Air Force policy directive

**AFRL**—Air Force Research Laboratory

**AFSAS**—Air Force Safety Automated System

**AFSEC**—Air Force Safety Center

**ANR**—Active Noise Reduction

**ANSI**—American National Standards Institute

**ARC**—Air Reserve Component

**ASIMS**—Aeromedical Services Information Management System

**BE**—Bioenvironmental Engineering

**BEI**—biological exposure indices (from ACGIH)

**BMET**—Biomedical Technician

**CAOHC**—Council for Accreditation in Occupational Hearing Conservation

**CFR**—code of federal regulations

**COHER**—clinical occupational health exam requirements

**COCOM**—Combatant Command

**DAF**—Department of the Air Force

**DAFI**—Department of the Air Force Instruction

**dB**—decibel

**dB<sub>A</sub>**—decibels A weighted

**dB<sub>C</sub>**—decibels C weighted

**DERG**—Data Entry and Report Guide

**DHA**—Defense Health Agency

**DoD**—Department of Defense

**DoDI**—Department of Defense Instruction

**DOEHRS-DR**—Department of Defense Occupational Environmental Health Readiness System-Data Repository

**DOEHRS-HC**—Department of Defense Occupational Environmental Health Readiness System-Hearing Conservation

**DOEHRS-IH**—Department of Defense Occupational Environmental Health Readiness System-Industrial Hygiene

**EAS**—exposure assessment strategy

**ECL**—equivalent continuous level

**EDF**—equipment data file

**EDHA**—Electronic Deployment Health Assessment

**ENT**—ear, nose, and throat

**EOD**—Explosives Ordnance Disposal

**ESOH**—Environment, Safety and Occupational Health

**FAES**—Field Attenuation Estimation System

**GSU**—Geographically Separated Unit

**HC**—Hearing Conservation

**HCP**—Hearing Conservation Program

**HCPM**—Hearing Conservation Program Manager

**HIPAA**—Health Insurance Portability and Accountability Act

**HP**—hearing protector

**HPW**—Human Performance Wing

**HPW/RHWE**—Human Performance Wing Cognition and Modeling Branch

**HTSA**—Host Tenant Support Agreement

**Hz**—hertz

**IAW**—in accordance with

**kHz**—kilohertz

**LEI**—lighted ear inspection

**MAJCOM**—major command

**MIL-STD**—Military Standard

**MOA**—Memorandum of Agreement

**MRC**—Medical Readiness Command

**MTF**—Medical Treatment Facility

**NFA**—noise-free audiogram

**NSN**—national stock number

**NRR**—noise reduction rating

**OEH**—Occupational and Environmental Health

**OEHED**—Occupational and Environmental Health Exposure Data

**OEHWG**—Occupational Environmental Health Working Group

**OEL**—Occupational Exposure Limit

**OEM**—Occupational and Environmental Medicine

**OPR**—Office of Primary Responsibility

**OSHA**—Occupational Safety and Health Administration

**PAR**—personal attenuation rating

**PCA**—permanent change of assignment

**PCS**—permanent change of station

**PESHE**—Programmatic Environmental, Safety and Health Evaluations

**PH**—Public Health

**PMAS**—Program Maturity Audit System

**POC**—Point of Contact

**PPE**—personal protective equipment

**PTS**—permanent threshold shift

**RAC**—Risk Assessment Code

**RMU**—Reserve Medical Unit

**ROTC**—Reserve Officer Training Corps

**SEG**—similar exposure group

**SG**—Surgeon General

**SGMED**—Surgeon General Policy and Resources Directorate

**SHPE**—Separations Health and Physical Examinations

**SLM**—sound level meter

**SORN**—System of Records Notices

**SPL**—sound pressure level

**Std**—Standard

**STS**—significant threshold shift

**TLV**—threshold limit values

**TTS**—temporary threshold shift

**TWA**—time-weighted average

**USAF**—United States Air Force

**USAFSAM**—United States Air Force School of Aerospace Medicine

**USAFSAM/OE**—United States Air Force School of Aerospace Medicine Occupational and Environmental Health Department

**USAFSAM/PHR**—United States Air Force School of Aerospace Medicine Epidemiology Consult Services Division

**USC**—United States Code

**VA**—Veterans Affairs

### *Office Symbols*

**AFMEDCOM**—Air Force Medical Command

**AFRC**—Air Force Reserve Component

**AFSEC**—Air Force Safety Center

**AF/SG**—Air Force Surgeon General

**SAF/AA**—The Administrative Assistant to the Secretary of the Air Force

**SAF/AQ**—Assistant Secretary of the Air Force for Acquisition

**SAF/IE**—Assistant Secretary of the Air Force for Installations, Environment and Energy

**SAF/IEN**—Deputy Assistant Secretary of the Air Force for Environment, Safety and Infrastructure

**SGMED**—Surgeon General Policy and Resources Directorate

### *Terms*

**Air Force Certified Hearing Conservationists**—Personnel that complete the USAFSAM Hearing Conservation Certification Course and are trained IAW the Council for Accreditation in Occupational Hearing Conservation to perform audiometric testing in support of the Air Force's Hearing Conservation Program. The USAFSAM Hearing Conservation Certification must be renewed every 5 years.

**Annual Audiogram**—An audiogram performed at least annually (also a periodic audiogram).

**Appointing Official**—Personnel officer or official authority to make management decisions concerning hiring, placement, accommodation, and termination of employees.

**Audiogram**—The measurement of a worker's hearing sensitivity expressed in decibels as a function of frequency. Data are reported in graphic or numeric form.

**Audiologist**—A clinician, researcher, or consultant, specializing in the preservation, evaluation, and rehabilitation of hearing.

**Close Scrutiny Audiogram**—Frequently administered audiograms used to closely monitor a worker or group. When, on whom, and how often to perform scrutiny exams is determined by the credentialed health care provider (provider, nurse practitioner, physician assistant or audiologist) who performs occupational health examinations, or as directed by the OEHWG.

**Criterion Level**—The sound level allowed for an 8-hour exposure, used as the basis for measurement of a noise standard. For the Air Force the criterion level is 85 dBA.

**Department of Defense Occupational and Environmental Health Readiness System-DR**—DOEHRS-HC data collection, retrieval and reporting site; used to submit, retrieve, and report DOEHRS-HC data; location for downloading updated DOEHRS-HC lookup table

**Department of Defense Occupational Environmental Health Readiness System-HC**—An automated audiometric system used by the military services for hearing conservation purposes.

**Exchange Rate (or doubling rate)**—The time-intensity exchange rate for determining length-intensity of equivalent exposure levels. The DAF uses a 3-dB exchange rate. Reference Hazardous Noise Surveillance Requirements.

**H Profile**—Hearing Profile threshold criteria (H-1 through H-4) are defined in DAFMAN 48-123 and the Medical Standards Directory. This criterion is used to identify workers for further evaluation to determine if they are able to capably and safely perform their job in a hazardous noise environment.

**Hearing Conservation Program Manager (HCPM)**—An appropriately trained audiologist appointed by the AFMC Commander or 711<sup>th</sup> HPW Commander. The HCPM serves as the primary DAF representative to the DoD Hearing Conservation and Readiness Working Group and the DoD DOEHRS-Hearing Conservation (HC) functional users' group and as the DAF consultant for DOEHRS-HC and DR. The HCPM is responsible for managing all aspects of the HCP while ensuring OSHA/DoD/DAFI compliance. However, HCPM access in DOEHRS-HC is often assigned to the senior NCO of PH for each installation.

**Hearing Conservationist**—Military or civilian personnel that are CAOHC trained.

**Impulsive or Impact Noise**—A short burst of acoustic energy consisting of either a single burst or a series of bursts. The pressure-time history of a single burst includes a rapid rise to a peak pressure followed by a somewhat lower decay of the pressure envelope to ambient pressure. A series of impulses may last longer than 1 second.

**Installation Professional Supervisor**—An individual appointed by the MTF Director or Ground RMU/GMU Commander for ARC. The installation Professional Supervisor, usually an audiologist or other qualified physician, is responsible for managing all aspects of the HCP while ensuring OSHA/DoD/DAFI compliance IAW DoDI 6055.12.

**Lighted Ear Inspection (Otoscope Examination)**—The act of viewing the external auditory canal to the tympanic membrane. This exam is accomplished with the use of an otoscope.

**MRC/MAJCOM Professional Supervisor**—An audiologist appointed by the AF/SG Audiology Consultant to oversee the command HCP. Provides consultation and overview of referrals and all evaluations by non-DoD audiologists to ensure management and disposition of patients meet current DAF standards.

**Negative Threshold Shift (Lower Hearing Threshold than Reference)**—Same criteria as STS calculations except negative shift represent improved hearing levels.

**Noise—Free Audiogram (NFA)**—An audiogram performed after a worker has not been exposed to noise greater than 72 dBA or impulsive noise greater than 120 dB peak for a minimum specified amount of time. (e.g., 14-hour NFA, requires a minimum of 14 hours noise-free prior to the test). HPDs cannot be used to reach this noise-free status. All noise-free follow-up audiograms must be completed within 30 days of the annual audiogram.

**Occupational and Environmental Medicine Consultant**—A provider, usually a Flight Surgeon that serves as consultant to primary care teams for operational health concerns, including review of problem audiograms, to determine if further testing is required before disposition. An audiologist can serve as a consultant for audiology/hearing conservation review/disposition concerns.

**OSHA Reportable Hearing Loss**—If a worker's current audiogram reveals that the worker has experienced a work-related STS (as defined) in one or both ears and the worker's total hearing level is 25 dB or more above audiometric zero (averaged at 2000, 3000, and 4000 Hz) in the same ear(s) as the STS, you must report the case to OSHA via AFSAS within 7 calendar days.

**Ototoxic Chemical**—Chemical with potential to cause hearing impairment alone or in combination with noise, even below 85 dBA. Ototoxic chemicals have been shown to adversely affect anatomical structure or auditory function, manifested as a permanent audiometric threshold shift and/or difficulties in processing sounds.

**Peak Pressure Level**—The maximum absolute level, in dB, achieved for any specified time interval.

**Permanent Threshold Shift (PTS)**—Any STS found on monitoring audiometry which is still present after required follow-up 14-hour NFAs is considered a PTS. An STS on an annual audiogram is also considered a PTS if follow-up testing is not conducted in the specified time.

**Positive Threshold Shift (Higher Hearing Threshold than Reference)**—Same criteria as STS calculations. Positive shifts represent poorer hearing levels.

**Potential Hazardous Noise**—Exposure to steady-state noise having an 8-hour TWA noise level greater than or equal to 85 dBA, or exposure to impulsive/impact noise levels greater than 140 dB peak SPL, regardless of duration.

**Potentially Hazardous Noise Area**—Any area where workers are likely to be exposed to noise levels equal to or greater than an 8-hour TWA of 85 dBA, or where impulsive noise levels exceed 140 dB peak SPL.

**Pre-placement Audiogram**—All persons entering employment in hazardous noise (greater than or equal to an 8-hour TWA of 85 dBA, the OSHA limit) will receive an audiogram prior to

beginning work. The results of the pre-placement audiogram, if meeting the requirements of a reference audiogram, may be used as the reference audiogram.

**Problem Audiograms**—Audiograms that show large differences in hearing thresholds between the two ears, audiograms that show unusual hearing loss configurations that are atypical of noise induced hearing loss, and/or audiograms with thresholds that are not repeatable. An MRC/MAJCOM Professional Supervisor can be consulted to review problem audiograms.

**Reference Audiogram**—An audiogram used as a baseline to compare subsequent audiograms against to determine if hearing loss has occurred. All persons entering employment in hazardous noise (greater than or equal to an 8-hour TWA of 85 dBA, the OSHA limit) should receive a pre-placement audiogram that should be used as the reference audiogram. Also called baseline audiogram by OSHA.

**Sound Level (Noise Level)**—The weighted sound pressure level measured by the use of a meter with characteristics and weighting A, B, or C, as specified in ANSI S1.4. The weighting must be indicated; otherwise, the A-weighting is understood.

**Sound Pressure Level**—The sound pressure level of a sound, in dB, which is 20 times the logarithm to the base ten of the ratio of the pressure of this sound to the reference pressure of 20 microPascals (uPa) (20 microNewton/m<sup>2</sup>) ( $2 \times 10^{-4}$  microbar).

**Speech Interference Level**—The arithmetic average of the sound pressure levels, in dB, of a noise in the four octave bands of center frequency 500, 1,000, 2,000, and 4,000 Hertz.

**Significant Threshold Shift (STS)**—A change in hearing thresholds relative to the reference audiogram. An average change of 10 dB or more at 2,000, 3,000, and 4,000 Hz in either ear, according to 29 CFR 1910.95. That is, if the sum of the shifts at 2,000, 3,000, and 4,000 Hz equals or exceeds 30 dB in either ear, an STS has occurred. Use of age corrections will NOT be applied when determining an STS. **Note:** OSHA terminology is standard threshold shift.

**Temporary Threshold Shift (TTS)**—A temporary loss of hearing due to noise exposure. Any positive STS that is not confirmed by the noise free follow-up test is considered a TTS, unless there is a resolved medical condition.

**Termination Audiogram**—A hearing test administered and recorded on DD Form 2216 when a worker discontinues employment involving hazardous noise exposure as defined in DoDI 6055.12. A Termination Audiogram shall be accomplished when a hazardous noise exposed worker, who has been included on the HCP, separates or retires from military/civil service. Individuals who are PCSing, PCAing, do not require a Termination Audiogram if a periodic audiogram was completed within 12 months.

**Threshold Level**—A sound level below, which exposures are not included in dose calculations or measurements. For this standard, the threshold is 80 dBA.

**Time-Weighted Average (TWA)**—The time-weighted average sound level or exposure for an 8-hour workday and 40-hour workweek.