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Operations: HSE

Health and Industrial Hygiene

Noise & Hearing Conservation Safe Work Practice

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5	4/11/19	Revised - Issued for GoM Use	Cheryl Metzler	Valerie Murray
4	4/1/16	Revised - Issued for GoM Use	Industrial Hygiene Advisor	Health Manager
3	08/08/12	Revised - Issued for GoM Use	Health and Industrial Hygiene Team Leader	Director Health and Safety
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Rev	Date	Document Status	Custodian/Owner	Authority

AMENDMENT RECORD

Amendment Date	Revision Number	Amender Initials	Amendment
04/04/2019	5	CMetlzer, VMurray, MGlencross	FlowChart clarified, Removed RA800 information. Added RA660 information. Added reference to physician supervision of testing. • 4.2.4 A Added inclusion of matching sound levels & octave band analysis to hearing protection assessment • 4.2.4 C Added section on overprotection • 4.3.5 Added IRIS field names and suggested text for each, as applicable. • 11 Appendices A – edited to refer to Occupational Health Database. D – Updated Health Team info. • 2.6 and 4.3.1 Added cofirmatory baseline audiogram using offshore audiometer.
4/1/16	4	A. Syverson, D. Liu, V. Murray	Updated Authority and Custodian. Added additional information on key elements of the program, role & responsibilities, medical surveillance (audiograms done offshore by Medic, and validation of sick bay for noise levels per OSHA Criteria for test rooms). Added appendices: Post-Threshold Shift Hearing Conservation Training and BP Audiogram Testing with the RA800 Audiometer. Removed Appendix entitled ENT Referral Letter. Transferred the whole document to the new GoM SWP template. Replaced the 105 dBA trigger to 100 dBA for double hearing protection. Modified review frequency to every 3 years to align with upstream. Aligned background noise levels for offices and accommodations and noise control recommendations with GP 15-01 Noise Control and EP-GIS 15-011 Specifications for Noise Control.
08/08/12	3	Authority: Director of Health and Safety	In heading, adjusted Authority and Custodian titles as well as revision and next review date. In section 3.0, second bullet, added “and Measurement Tech, Offshore Facility

		Custodian: Health and Industrial Hygiene Team Leader	Engineers, Office H&S Advisors and Team Leaders and Industrial Hygienist" to included job titles. In section 3.0, added 50% dose to consider an employee in the HCP and removed the 82 dBA 12 hour recommendation because we are comparing our dosimeter results to 8-hour TWA. In section 4 revised responsibilities to include Medics instead of H&S Site Lead. In section 5.2 reworded third bullet and added 2 more bullet points to clarify where confirmed STSs are entered and by whom. Section 5.3, HPD attenuation calculations added. In section 5.6 second bullet, the title for who keeps records was clarified to be "GoM Occupation Health". In section 6.1 updated hyperlinks for 29CFR1910.95. Added section 7.0, to include attachments. Replaced TWA with LAeq, 8. Replaced GHHS with the Medgate in section 5.6.

Amendment Date	Revision Number	Amender Initials	Amendment
08/15/08	2	Authority: GoM HSSE Director Custodian: GOM HSSE Programs Manager	Added double hearing protection requirement for areas over 100 dBA. Changed will to shall through-out document. Updated 1.0 Purpose/scope. Added definitions. Included job titles included in HCP. Changed Authority and Custodian.
01/31/06	1	Authority: S. Garner/S. Tink/C. Jackson/R. DeLeonardis Custodian: Jack Kogut	Clarification that program applied to BP personnel. Changed CD # from 10039 to UPS-US-SW-GOM-HSE-DOC-00110-2 to conform to new numbering nomenclature in the new GoM HSSE doc base. Changed 3 authorities and 1 custodian. Removed references to the Industrial Hygiene Manual in Section 3 and 5.
01/24/02	0	Authority: S. Garner/B. Herbert/ R. White/S. Flynn Custodian: Ray Britt	Initial issue as controlled document. Prior revision history located in hard-copy consolidated manual.

Table of Contents

1 Purpose / Scope

This Noise and Hearing Conservation Program (HCP) applies to BP GoM personnel with noise exposures equal to or greater than 85 decibels (dBA) as a time-weighted average (TWA) for an 8-hour workshift, without regard to hearing protector attenuation. The purpose of this Safe Work Practice (SWP) is to protect against the effects of noise exposure by maintaining personnel noise exposure below 85 dBA in accordance with the Occupational Safety and Health Administration's (OSHA) 29 CFR 1910.95 Occupational Noise Exposure Standard, International Organization for Standardization (ISO) 1999, and BP's Operating Management System (OMS) Framework.

2 Key Responsibilities

2.1 Offshore Installation Manager (OIM), Person in Charge (PIC) or Designate

The person having overall responsibility for the implementation of the Control of Work Policy at the installation.

- Verifies that noise assessments are conducted to identify activities and work areas with the potential for elevated noise exposure.

2.2 Issuing Authority (IA)

Issuing authorities are responsible for management of the Permit to Work process within their defined area and skill set.

- Ensure that the team understands the aim to recognize, prevent, and reduce risks associated with noise for the task to be completed safely or, if risks cannot be adequately controlled, to prevent the task from taking place.

2.3 Performing Authority (PA)

The Performing Authority is the responsible person for the activity being carried out under the Permit to Work. The Performing Authority may be the person carrying out the task or may be supervising a group of people conducting the job.

A. Inspect the worksite, either alone or preferably with the IA to identify the hazards associated with noise and planned controls prior to completion of the risk assessment for the task being planned. Include elevated noise, risks and controls, jobsite and process safety hazards on the -Permit with input from the IA.
B. Document the task hazards associated with elevated noise, risks and controls on the -Permit with input from the IA.

C. Conduct a pre-job toolbox talk with the work crew to communicate the -Permit content and requirements and verify their understanding before the Work Crew sign the work party declaration section of the -Permit.

2.4 Health, Safety, and Environmental (HSE) Site Advisor

A. Assist in identifying and predicting noise hazards and take prompt corrective actions or measures to eliminate/reduce potential exposures.
B. Inform the Industrial Hygiene Team if any equipment has been altered that may affect noise levels.
C. Assist management, supervisors, and personnel with requests regarding training and Hearing Protection Device (HPD) use/supply when working with elevated noise.
D. Consult with the Occupational Health and Industrial Hygiene Team on training, work practices, and protective measures for activities with elevated noise exposure potential.
E. Participate in risk/hazard assessments for activities with potential for noise exposure.
F. Verify "hearing protection required" signs are posted in areas with noise levels at or above 83 & 100 decibels measured on the A scale (dBA).
G. Verify facility noise contour maps are posted for personnel reference.
H. Responsible to enter confirmed work-related Standard Threshold Shifts (STSs) in Traction.
I. Responsible for documenting Recordable STSs on the OSHA 300 log within 7 calendar days of the determination.
J. Review the Employee Notification Letter of dosimetry test results with the person monitored, have the person sign the letter and scan a copy and email to Industrial Hygiene Team and return the original letter to the person monitored.

2.5 Industrial Hygiene Team

A. Review and update this SWP, training materials, Compliance Tasks, and Work Orders every 3 years per the document management control system review process and cycle.
B. Provide technical support on noise control work practices, (i.e.: engineering and administrative controls), and protective measures.
C. Conduct and/or support personal and area noise monitoring, as requested and to comply with OSHA regulations.
D. Update facility noise contour maps every three years or when changes to equipment or the facility are reasonably expected to change area noise levels. Provide maps to the facility for posting.
E. Communicate noise monitoring and survey results to affected personnel and facility leadership.
F. Determine which workers and/or job categories must be included in the HCP based on exposure monitoring results. Provide a list of employees and/or job categories requiring annual audiometric testing to the Occupational Health Team.

G. Enter noise dosimetry data into Occupational Health Database.
H. Maintain facility noise contour maps.

2.6 Occupational Health Team

A. Develop/maintain a list of employees and/or job categories to be included in the HCP, based on consultation with the Industrial Hygiene Team, site supervisors, etc. and provide to the Medic and Training Team.
B. Verify initial audiometric testing of employees new to BP or to a job category covered by the HCP, on a 6 month basis. To ensure consistent comparison with the offshore audiometer, all offshore new hires and transfers included in the Hearing Conservation Program (HCP) should receive confirmatory baseline audiograms within 6 months of arriving offshore for their first rotation using the offshore audiometer.
C. Verify annual testing of employees in the HCP.
D. Verify entry of audiometric tests in Occupational Health Database by Medics.
E. Coordinate annual calibration of audiometric testing equipment with Medics. An exhaustive calibration shall be performed at least every two years in accordance with the American National Standard Specification for Audiometers, S3.6-1969.
F. Coordinate with Medics that STS confirmation testing is completed within 30 days of the initial test. If the follow-up test offshore indicates a Suspected STS, arrange for confirmation testing onshore, within 30 days of the initial test. Refer to the Appendix: Audiometric Testing Flow Chart.
G. Inform employee of a Confirmed STS within 21 days of the determination.
H. Review relevant information (noise data, personal and work noise exposure history, etc.) and obtain Occupational Health Physician or other specialist opinion when applicable to determine if the confirmed STS is work related and/or OSHA recordable.
I. Trend temporary hearing shifts to identify whether an employee or job category is at risk of developing a recordable STS.
J. Identifies an audiologist, otolaryngologist or physician who supervises the audiometric testing, reviews problems audiograms, and determines whether there is a need for further evaluation.

2.7 Medics

A. Obtains a list from the Occupational Health Team of employees requiring annual audiometric testing. Medic performs employee audiometric testing offshore. Refer to Appendix: BP Audiogram Testing with the RA660 Audiometer. Medic may use the Hearing Test Instructions Power Point slide to assist employees prior to testing.
B. Responsible for ensuring that the audiometric testing equipment is calibrated annually and maintained for accurate audiometric testing. Coordinate annual calibration with the Occupational Health Team.

C. Responsible for performing the Daily Biological Test before testing, the equipment system self-check and the Listening Check.
D. Responsible to check and record that the testing room does not have background sound pressure levels exceeding those in Table D-1, Appendix D of the OSHA Occupational Noise Exposure Standard, 29CFR1910.95 using the Audiometric Testing Room Validation spreadsheet. Provide spreadsheet to the Occupational Health and Industrial Hygiene Team.
E. Observe how employees use their HPD when in for annual audiometric testing and re-train as needed. Use the Fitting Hearing Protection Poster and the Hearing Conservation Training Power Point presentations for re-training.
F. Responsible for Suspected STS retests. Schedule testing at the beginning of the employee's shift. Refer to the Appendices: Employee Hearing Test Instructions and Audiometric Testing Flow Chart.
G. Inform employees that they are required to wear hearing protection after experiencing a confirmed STS. Re-train employees on the use, selection, limitations, etc. of hearing protection after a recordable STS. Medics will scan and upload the employee-signed Post-Threshold Shift Hearing Conservation Training Form to Occupational Health Database and send the original to the Occupational Health Team.
H. Notify supervisors of employees who are not following the requirements of the HCP.
I. Review the audiometric test results with tested employee(s).

2.8 Personnel

A. Understand the hazards associated with noise and follow the appropriate controls defined in this SWP, such as the use of HPD.
B. Complete annual Hearing Conservation training.
C. Complete annual audiometric testing within the required month.
D. Complete a retest if required, at the beginning of your workshift, within 30 days of the initial test, as directed by the Medic or the Occupational Health Team.

3 General Requirements

3.1 Applicability

Although oil and gas well drilling and servicing operations are exempt from the OSHA Occupational Noise Exposure Standard requirements 1910.95 (c) through (n), BP chooses to implement a hearing conservation program including audiometric testing. According to OSHA 1910.95 (a) and (b), drilling and servicing operations ***are required*** to conduct sound level surveys, personal noise dosimetry, and protect personnel from noise exposure through the use of engineering controls and/or hearing protection

GoM facilities shall comply with this SWP regarding the protection of personnel from occupational noise exposure. This SWP applies to those locations where personnel are exposed to noise levels at or above an 8-hour TWA of 85 dBA, which equates to 50% dose. BP employees whose noise exposures equal or exceed those exposure levels shall be included in the facility HCP.

3.2 Elements for Managing Elevated Noise Risks

A. Initial workplace sound level surveys and subsequent resurveys when significant process or equipment changes occur that may increase/decrease the noise level or the number of persons exposed. The process or equipment changes are identified in the management of change (MOC) process.
B. Representative noise dosimetry monitoring to determine if personnel will be included in the HCP. The monitoring strategies shall be designed to identify personnel for inclusion in the HCP and to enable the selection of appropriate hearing protection.
C. Proper selection and fitting of personnel with HPDs that reduce exposure levels to below 8-hour TWA of 85 dBA.
D. Annual audiometric testing for employees included in the HCP.
E. Annual HCP training for employees included in the program.
F. Assessment and implementation of feasible engineering and/or administrative controls to reduce noise exposure. The assessment shall be documented and retained in the facility HSE files.
G. A "Buy Quiet" program to specify acceptable noise levels in new equipment purchases and new facility construction plans.
H. Evaluation of engineering and administrative control feasibility over the use of PPE.
I. Implementation of Noise Engineering Technical Programs for noise control.

4 Process

Per BP Policy, engineering and administrative controls shall be utilized to reduce noise exposures below 85 dBA as an 8-hour TWA. Under federal regulations, when sound levels exceed the OSHA permissible exposure limit (PEL) of 90 dBA as a TWA for an 8-hour workshift, feasible engineering and administrative controls shall be utilized. Noise control measures should be utilized to reduce levels to as low as reasonably achievable.

Job titles for inclusion in the HCP are established by the Occupational Health and Industrial Hygiene Team and are updated as needed, based on noise exposure evaluations.

Noise levels in any facility work area shall not exceed 115 dBA at 1 meter (3.3 feet) from the source as an absolute noise limit. Continuous and intermittent noise levels from existing or

new/replacement equipment and piping should not exceed 83 dBA beyond a 1 meter perimeter around the equipment.

Components of the Noise Exposure and Hearing Conservation Program (HCP) will address:

- Evaluating Noise Exposure
- Controlling Noise Exposure
- Medical Surveillance (Audiometric Testing)
- Recordkeeping
- Hearing Conservation Training
- Program Evaluation

4.1 Evaluating Noise Exposure

4.1.1 Exposure Monitoring (Sound Level Surveys and Dosimetry Testing)

A. Sound Level Surveys
   1. Sound level surveys shall be conducted in areas where sound levels exceed or are anticipated to exceed 85 dBA. These surveys are updated every 3 years or periodically as part of the Health Risk Exposure Assessment Process.
   2. Calibrated sound level meters shall be used, set to the A scale, slow response.
   3. Sound level surveys shall be conducted on each class of facility to determine areas which exceed 85 dBA. Operating conditions at the time of the survey will be documented.
   4. Results of surveys shall be documented and posted at the facility where personnel can identify work areas requiring hearing protection.
   5. Hearing protection signs are posted in areas where noise levels are equal to or exceed the sound level applicable to workshift duration. Personnel can observe noise measurements being taken.
   6. A sound level resurvey shall be completed shortly after new equipment installation is complete if expected to contribute to the noise in the area. These surveys need to be repeated if the equipment is removed or if the noise is attenuated by engineering means that might lower the facility's original noise level.
   7. New equipment should not exceed 83 dBA beyond a 1 m (3 ft.) perimeter for equipment surfaces. Refer to GP 15-01, Noise Control, for more information when adding new equipment.

B. Personnel Noise Exposure Monitoring (Dosimetry)

1. Dosimetry shall be used to determine which personnel or job classifications are to be included in the HCP. Personnel may be included in the HCP based upon sound level meter survey results until such time as proper dosimetry evaluation can be made.
2. Dosimetry shall be conducted to determine whether personnel noise levels exceed 85 dBA over an 8-hour TWA. The noise dosimeters will be set using the ISO noise collection criteria: 3 dBA exchange rate and no threshold.
3. Continuous, intermittent and impulsive sound levels from 80 decibels to 130 decibels shall be integrated into the noise measurements.
4. Bayesian Decision Analysis will be used to analyze dosimetry results to determine inclusion in the HCP.
5. Dosimetry results shall be documented in Occupational Health Database.
6. Dosimetry testing shall be repeated whenever a change in production, process, equipment or controls increases noise exposure to the extent that additional personnel may be exposed at or above 85 dBA. Dosimetry may also be repeated when the increase in exposure might be sufficient to make the attenuation offered by hearing protection inadequate.
7. Personnel shall be notified in writing of the results of their dosimetry monitoring via a notification letter.

4.1.2 Area and Personal Noise Exposure Monitoring Equipment

A. At a minimum, an American National Standards Institute (ANSI) approved Type II sound level meter that has been calibrated according to manufacturer recommendations shall be used. Sound level meters measure sound intensity at a specific point in time. The meter will be set to slow response and A-weighting and an initial and final meter calibration will be performed. When evaluating noise levels by frequency, a sound level meter equipped with an octave band analysis attachment will be utilized.

B. An American National Standards Institute (ANSI) approved Type II noise dosimeter that has been calibrated according to manufacturer recommendations shall be used at a minimum. Noise dosimeters store and integrate sound level measurements over a period of time (i.e., 8-hour workshift). Using the noise collection criteria outlined in the ISO Standard, the meter will be set to slow response, 3 dBA exchange rate, no lower threshold, and A-weighting and an initial and final dosimeter calibration will be performed at each use.

4.1.3 Contractor Noise Exposure Monitoring

Contract companies should conduct sound level surveys of their own equipment (i.e., drilling rigs). Industrial Hygiene or the HSE Site Advisor may conduct area sound level surveys of drilling equipment and provide the results to the contract company. Similarly, contract companies should conduct personnel noise exposure monitoring of their employees and determine hearing conservation program inclusion. BP employee noise

exposure monitoring is conducted by job category. Therefore, contract personnel performing in a job category along with BP employees may be monitored to assess exposures for that job category. HCP inclusion recommendations will only be made for BP employees. Contract personnel will be provided their noise monitoring data results. It is the responsibility of the contract company to provide training and audiometric testing, as necessary, for their employees.

4.1.4 Background (Other than Equipment or Machinery Spaces) Noise Levels for Work and Accommodations Areas

Speech, hearing, sleep, and relaxation can be impacted by elevated noise levels and cause individual annoyance. Background and work area noise at the facility should be considered to evaluate worker ability to detect warning and emergency signals. The impact of noise levels on personnel during maintenance activities, startup/shutdown, and demolition activities should also be considered. Tables 1 and 2 provide the maximum allowable sound levels for work and accommodations areas for GOM facilities per reference document GP-15-01.

Table 1. Background Sound Levels in Work Areas

Work Area	Maximum Allowable Sound Level
Maintenance Shops	70 dBA
Unmanned Control Rooms, Change Rooms, Wash Areas and Toilets	60 dBA
Production Area Supervisor Offices	55 dBA
Manned Control Rooms, Open Plan Offices, Lunch Rooms	50 dBA
Offices, Conference Rooms, Training Rooms	45 dBA

Table 2. Background Sound Levels in Accommodations Areas

Accommodations Area	Maximum Allowable Sound Level
Unmanned Control Rooms, Change Rooms, Wash Areas and Toilets	60 dBA
Lunch Rooms, Recreation Areas	50-55 dBA
Meeting Rooms, Sleeping Areas, Medical Rooms	45 dBA

4.2 Controlling Noise Exposure

Engineering or administrative controls shall be utilized to reduce noise exposures below 83 dBA. Consult with the Industrial Hygiene Team for assistance in scheduling noise feasibility studies.

When implementing engineering and/or administrative controls, noise sources to be controlled should be prioritized based on their actual contribution to worker noise exposure. Engineering evaluations and studies shall be documented in facility files. GP 15-01 and Group Note (GN) 15-02 provide noise feasibility study requirements and tools to estimate noise exposure. As facility equipment is replaced, engineering and/or maintenance supervision should consider options for quieter equipment prior to purchasing equipment per the “Buy Quiet” program.

If engineering and/or administrative controls are not feasible, personal protective equipment such as hearing protection shall be provided to reduce sound levels.

4.2.1 Engineering Noise Control

Engineering noise controls are the preferred means to prevent hearing loss. Controls should reduce average noise exposures to less than 83 dBA. Noise reduction can be accomplished by treating the source, sound transmission path, receiver, or a combination. Additionally, regular maintenance and equipment repair can also reduce noise levels.

During the design stage of new facilities and/or equipment modification, noise levels of relief valve discharges, control valves, fans, pipes, flares, compressors, pumps, and other equipment should be reviewed. Locations should establish a "Buy Quiet" program for new facilities or equipment which should include specifying noise criteria in purchase orders, etc. per GP 15-01.

Continuous and intermittent noise levels from equipment and piping should not exceed 83 dBA beyond a 1 meter perimeter around the equipment. This level applies to the entire piece of equipment, not the individual components or in work areas having several pieces of equipment or packages. In some instances, it may not be economically feasible to comply with the 83 dBA for large equipment installations having multiple components. In this case, efforts should be made to verify that equipment noise levels are below 87 dBA. Consideration should be given to the additive effects of noise from multiple components as well as the noise variability over the operating range of the equipment. If equipment exceeds 83 dBA, alternate equipment shall be evaluated. Refer to EP-GIS 15-011 Specification for Noise Control for additional information on equipment noise test requirements and acceptance testing.

4.2.2 Administrative Noise Control

Administrative noise controls involve changing personnel work routines (i.e., rotating personnel, work scheduling). Although job rotation distributes noise exposure across personnel and lowers the overall exposure received to single workers, the number of workers exposed increases.

4.2.3 Hearing Protection

Personnel who work 8-hour shifts shall wear hearing HPDs when they enter areas of 85 dBA or greater and/or when specific tasks are identified as needing hearing protection. HPD with a Noise Reduction Rating (NRR) of 33 dBA is recommended.

4.2.4 HPD Attenuation

A. HPD attenuation shall be evaluated for sound levels in the noise environment, including octave band analysis, if possible. Octave band analysis is used to match appropriate hearing protection to specific noise environments, by comparing the published attenuation values [found on boxes or bulk packages of hearing protectors] with noise levels at each octave band of noise. A variety of hearing protectors is available that attenuate fairly uniformly across all frequencies; a response called uniform attenuation. A hearing protector with *uniform attenuation* will reduce all incoming noise fairly equally, regardless of frequency. Protection must reduce noise levels to at least 85 dBA as an 8-hour TWA for personnel, including individuals experiencing a standard threshold shift. The adequacy of hearing protector attenuation shall be re-evaluated when noise levels increase to determine if a device with a higher NRR is necessary.

B. To determine the effectiveness of HPD's the following equations should be used:
   - **Single Protection (Foam Earplugs)**
     - Estimated Exposure (dBA) = TWA (dBA) - [(NRR - 7) x 50%]
     - For Example, Estimated Exposure = 98 - [(33 - 7) x 50%] = 85 dBA
       - ✓ NRR is the Noise Reduction Rating
   - **Double Protection (Earplugs and Ear Muffs)**
     - Estimated Exposure (dBA) = TWA (dBA) - [(NRRh- 7) x 50%] + 5}
     - For Example, Estimated Exposure = 100 - [(33 - 7) x 50%] + 5} = 82 dBA
       - ✓ NRRh - is the highest NRR of the two types of HPDs.
       - ✓ Refer to Appendix IV: C. Methods for Estimating HPD Attenuation, from the Hearing Conservation Program, OSHA eTools website and https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=1548

C. Overprotection - Even in noisy environments, there are sounds we want to hear clearly - warning signals and alarms, voices of co-workers, even maintenance sounds from

machinery. Just as hearing protectors may not provide enough attenuation, there are many instances where they provide too much attenuation. Workers who are overprotected say they feel isolated and cut off from their work environment - and not as safe. While there are no U.S. standards defining overprotection, a comparable European guidance document [EN 458] recommends that attenuated noise levels [under hearing protectors] should be no lower than 70-84 dB for ideal communication in noise.

D. Personnel shall be given the opportunity to select their hearing protection from a variety of suitable HPDs provided by the facility. As a minimum, two types of plugs and a type of muff shall be made available at BP facilities. Personnel shall be given the option of using the HPD that is most comfortable as long as the attenuation value is not compromised. The use of muffs over large temple bars from glasses may interfere with the seal of the muff, decreasing the attenuation provided by the HPD.
E. The Medic should observe how employees use their HPD when in for annual audiometry and re-train as needed.
F. Hearing Protection shall be worn in and around operating helicopters.

4.2.5 HCP & Hearing Protection Signage

A. The OSHA HCP standard must be posted in the workplace for personnel reference.
B. Areas that require hearing protection must have a posted sign. The following wording is recommended: **"Caution – Hearing Protection Required"**. Double hearing protection is required in areas where the sound level is greater than or equal to 100 dBA and double hearing protection required signage shall be posted in areas greater than or equal to 100 dBA. The following wording is recommended: **"Caution - Double Hearing Protection Required"**.
C. Signs may be posted at the main facility entrance, directly on the equipment, and access points to areas within the facility. In the event that a facility chooses to have a more conservative program in which areas outside of offices and living quarters are hearing protection required areas, the need for signage may be reduced. Note that signage is still required for areas requiring double hearing protection.

4.3 Medical Surveillance (Audiometric Testing)

A. Personnel in the HCP shall receive annual audiometric testing.
B. The Medic is responsible for coordinating and conducting the audiometric testing for personnel included in the HCP.
C. Employees must not have their audiometric test on the day they traveled by helicopter.
D. The annual audiometric test must be completed within the required month.
E. Audiograms test at a frequency range of 500 – 6000 Hertz in both ears.
F. Employees may be required (as determined by the Occupational Health Team) to have an exit audiogram before leaving BP.

G. Refer to the Audiometric Testing Flowchart that details the medical surveillance process.

4.3.1 Baseline Audiograms

A. Baseline audiograms are required for personnel within six months of the first exposure to noise at or above 85 dBA as an 8-hour TWA.

   a. Establishing an accurate baseline is necessary for comparison with subsequent audiograms to identify hearing loss. To ensure consistent comparison with the offshore audiometer, all offshore new hires and transfers included in the Hearing Conservation Program (HCP) should receive confirmatory baseline audiograms within 6 months of arriving offshore for their first rotation using the offshore audiometer.

   b. Personnel shall be notified to avoid workplace noise 14 hours prior to audiometric testing. If workplace noise cannot be avoided for 14 hours, HPD can be used as a substitute for this requirement.

   c. The Occupational Health Team determines every 6 months whether any new hires or transfers into GoM's HCP need to be included in the HCP.

B. A Revised Baseline may be used for future STS evaluations if the employee's annual audiogram shows a persistent STS or if it indicates significant improvement over the baseline.

4.3.2 Annual Audiograms

A. Annual audiograms are required following the initial baseline audiogram for personnel with noise exposures at or above 85 dBA as an 8-hour TWA. An annual audiogram can be considered the baseline audiogram when a standard threshold shift is persistent or the hearing threshold has improved and is significantly better than the baseline.
   a. There may be certain employees who are not able to test effectively with the offshore audiometric machine, these individuals will be scheduled for their annual audiogram at an onshore clinic or audiologist due to auditory changes or significant medical history.
B. Audiometric testing should be discontinued when personnel move to a job category not included in the hearing conservation program or leave the company.
C. The Occupational Health Team tracks and monitors hearing conservation program participants in Medgate and notify personnel, their supervisors and the Medic of the annual testing requirement.

4.3.3 Standard Threshold Shifts (STS)

A. Personnel audiograms are evaluated for STSs according to OSHA criteria.
B. If a STS is measured, the employee shall be retested. If retest indicates a STS, which is potentially recordable, the Occupational Health Nurse will coordinate onshore audiometric testing.
    a. If the retest offshore continues to show an STS, the OHN will contact the employee to schedule an onshore audiogram.
    b. The employee may be asked to pay at the time of the appointment and then submit the cost as an expense for reimbursement.
C. Audiometric re-tests must be conducted within 30 days of the initial test.
D. The Occupational Health Team shall review confirmed STSs to determine the need for further evaluation and inform the employee of the need for further evaluation.
E. The Occupational Health Team shall send letters of notification of STSs directly to affected personnel within 21 days of the date the STS is determined.
F. The Occupational Health Team will determine if confirmed STSs are work-related. Confirmed work-related STSs shall be entered in traction by the HSE Site Advisor. A confirmed STS is a 10 dB shift as an average in either ear at 2000, 3000 or 4000 Hertz. An age adjustment correction to the audiogram may be made based on contribution to the loss of hearing from aging.
G. Personnel identified as having a STS will be refitted for hearing protection and trained by the Medic, Industrial Hygienist, or the Occupational Health Team. Additional testing may be recommended if there is a medical condition of the ear related or unrelated to the use of hearing protection. Hearing protection with a greater attenuation (i.e., higher NRR) may be necessary if it is determined that the current hearing protection available does not provide adequate protection.
H. Audiometric tests are also reviewed for changes in hearing to identify personnel who are at risk of developing an STS. At risk personnel should be made aware of their potential to develop an STS, receive additional training, and have their hearing protective device fit and attenuation evaluated.

4.3.4 OSHA Recordable STSs

A work-related STS in one or both ears and a total hearing level of 25 dB or more above audiometric zero (averaged at 2000, 3000, or 4000 Hertz) in the same ear(s) as the STS is considered an OSHA recordable shift. If the initial test reveals a suspected STS, the employee can be retested within 30 days. If the re-test confirms the STS or a re-test is not completed, the hearing loss illness shall be recorded within 7 calendar days on the OSHA 300 Log. If the re-test does not confirm an STS, there is no requirement to record the illness on the OSHA 300 Log. Confirmed work-related STSs shall be entered in the OSHA log within 7 days of the re-test by the Medic

Confirmed shifts recorded on the OSHA 300 Log may be evaluated by a physician or other licensed healthcare professional to determine work-relatedness. If the shift is not work-related, the shift can be lined-out on the OSHA 300 Log. Personnel identified as having a work-related STS will be refitted for hearing protection and trained by the Medic, Industrial Hygiene Team, or the Occupational Health Team.

4.3.5 IRIS Documentation of OSHA Recordable STSs

OSHA recordable shifts must be **individually** recorded in IRIS. Please include the information below, as applicable, in the IRIS data fields.

3. Short title: GoM Hearing Loss - Standard Threshold Shift

Was there an impact to health? Yes Hearing Loss

Please share the facts about what happened: Per the regulatory requirements of BP GoM Noise & Hearing Conservation Safe Work Practice, the employee is included in the GoM Hearing Conservation Program (HCP) based on noise dosimetry and job classification.

Per the regulatory requirements of the GoM HCP, the employee was given an annual audiogram at the [Platform] Sickbay on [Date] and found to have a Standard Threshold Shift (STS) in the [Left/Right] ear. Per the GoM HCP, the employee was re-tested at the [Platform] Sickbay on [Date]. The re-test confirmed the STS, and the employee was referred to an ENT for follow-up. The follow-up evaluation confirmed an age corrected STS in the [Left/Right] ear. Audiometric test data were sent on [Date] to an audiologist (Precision Hearing Conservation) for analysis to assist in determining work-relatedness.

An evaluation of the noise history, work site exposure history of the employee and the audiologist analyses was conducted. Based on the review, this case was determined to be noise induced and work related. The magnitude of the shift met the OSHA recordkeeping criteria for logging as a recordable illness. No acute event was associated with the hearing threshold shift.

4. Immediate actions: Re-test, medical evaluation and audiologist data review. Employee was re-trained on hearing conservation and donning of hearing protection.

5 Record Keeping

A. The Occupational Health & Industrial Hygiene Team establishes and maintains exposure and medical records of measurements according to the OSHA Hearing Conservation Standard and Access to Employee Exposure and Medical Records Standards.

B. HCP assignment protocols are maintained in Occupational Health Database by the Occupational Health Team. The database includes personnel included in the hearing conservation program, audiogram test dates, and audiogram results.
C. Hearing conservation training is documented in My Learning.
D. Sound level surveys are maintained in Atlas and personal exposure monitoring results are maintained in Occupational Health Database. Some facilities also maintain surveys and monitoring results in onsite electronic and/or paper files.
E. The Industrial Hygiene Team shall ensure that accurate records of personnel exposure measurements (personnel dosimetry and sound level surveys) are maintained. These records shall be entered into Occupational Health Database by the Industrial Hygiene Team. NOTE: Noise dosimetry data will be stored in Occupational Health Database.
F. Noise exposure and audiometric records are required to be maintained for duration of employment plus 40 years. Personnel must have access to their exposure and medical records within 15 working days upon request per OSHA 29 CFR 1910.1020 Access to Employee Exposure and Medical Records.
G. Audiometric test records are retained by the Occupational Health Team for duration of employment plus 40 years.
H. In instances where the need for engineering controls has been evaluated and not selected, the facility must keep documentation of the evaluation.

6 Hearing Conservation Training

A. BP GOM personnel included in the HCP must complete hearing conservation training annually.
B. At a minimum, the training must include:
   a. the requirements of OSHA and BP regarding occupational noise exposure,
   b. how the ear hears and the effects of noise exposure on hearing,
   c. The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care
   d. The purpose, procedure, results, and evaluation of audiometric testing.
   e. Job activities and areas of high noise at the facility
   f. Noise control measures
C. Training shall be documented in My Learning.

7 Program Evaluation

The Occupational Health & Industrial Hygiene Team shall review this Noise Exposure and Hearing Conservation Program Practice every 3 years. The review shall include input from site HSE Site Advisors and HSE Team Lead, Occupational Health & Industrial Hygiene Team, Medics, and Operations personnel.

8 Task Summary Table

	Task Description	Regulatory Citation	Responsible Party	Frequency	Recordkeeping	Retention
1.	Establish and maintain this written hearing conservation program to include: noise exposure monitoring, audiometric testing, hearing protective devices, and employee training. This practice serves as the GOM written Noise & Hearing Conservation Program.	1910.95(c)	Industrial Hygiene Team	Initial; 3-year Periodic Review	Atlas	Until Superseded + 10 years
2.	Conduct facility sound level surveys to determine areas where noise levels exceed 85 dBA as an 8-hour TWA.	1910.95(a)	Industrial Hygiene Team	Initial; New Equipment; Per Health Plan	Atlas; Site HS files	Life of Corporation + 40 years
3.	Conduct personal noise exposure monitoring to determine employee and/job categories whose noise levels exceed 85 dBA as an 8-hour TWA.	1910.95(d)	Industrial Hygiene Team	Initial, New Equipment, Per Health Plan	Atlas, Occupational Health Database	Duration of Employment + 40 years
4.	Coordinate annual audiograms and/or retests for employee included in the HCP.	1910.95(g)	Occupational Health Team, Medic	Annual	Occupational Health Database	Duration of Employment + 40 years
5.	Provide annual audiogram and/or retest reports to employee in the HCP.	1910.95(g)(8)	Occupational Health Team, Medic	Annual	Occupational Health Database	Duration of Employment + 40 years
6.	Input and maintain audiometric test protocols for employee included in the HCP.	1910.95(g)	Occupational Health Team	Annual	Occupational Health Database	Duration of Employment + 40 years
7.	Coordinate and schedule annual hearing conservation training for employee included in the HCP.	1910.95(k)	Training Department	Annual	My Learning	Duration of Employment + 10 years

9 Definitions/Acronyms

Terms	Description
Action Level	An 8-hour TWA of 85 dBA or a dose of 50 percent. Noise exposures above 80 dB or greater are used to calculate the TWA. Exposure at this level initiates medical surveillance and exposure monitoring. The AL is 83 dBA for a 12-hour shift.
Audiogram	A chart, graph, or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.
Attenuation	The reduction of sound intensity by a medium such as: air, humidity, porous materials, sound transmission loss materials, hearing protection devices, distance, etc.
Baseline Audiogram	The audiogram against which future audiograms are compared
dBA	Decibels, measured on the A Scale. It is a single-number measurement based on the decibel but weighted to approximate the response of the human ear with respect to frequencies by filtering very high and very low frequencies.
Dose	The ratio, expressed as a percentage, of (1) the time integral, over a stated time or event, of the 0.6 power of the measured SLOW exponential time-averaged, squared A-weighted sound pressure and (2) the product of the criterion duration (8 hours) and the 0.6 power of the squared sound pressure corresponding to the criterion sound level (90 dB).
Dosimetry	Measurement of personnel/worker exposure to noise and calculation of worker's noise dose over time
Exchange Rate	The relationship between intensity and dose. OSHA uses a 5-dBA exchange rate and the ISO uses a 3-dBA exchange rate. As the intensity of an exposure increases by 5 or 3 dBA, the dose doubles.

	This is also referred to as the doubling rate.
International Organization for Standardization (ISO) Exposure Limit	The maximum level of noise that personnel may be exposed to under the ISO Standard
NRR	Noise Reduction Rating which is a unit of measurement in Decibels, used to determine the effectiveness of hearing protection devices to decrease sound exposure within a given working environment.
OSHA Recordable Shift	A work-related standard threshold shift in hearing in one or both ears where the total hearing level is 25 dB or more above audiometric zero (averaged at 2000, 3000, and 4000 Hertz) in the same ear as the standard threshold shift.
Permissible Exposure Limit (PEL)-TWA	An 8-hour TWA of 90 dBA or a dose of 100 percent. Noise exposures above 80 dB or greater are used to calculate the TWA. Exposure at this level shall not be exceeded during an 8-hour workshift of a 40-hour workweek; adjustments to the TWA PEL may be made for workshifts greater than 8 hours. A 12-Hour TWA of 87 dBA is the PEL for a 12 hour shift.
Standard Threshold Shift (STS)	An average change of 10 dB or more of hearing threshold relative to the baseline audiogram at 2000, 3000, or 4000 Hertz in either ear.
Time-Weighted Average (TWA)	An 8-hour TWA of 85 dBA or a dose of 100 percent. Noise exposures are used to calculate the TWA, there is no lower threshold. A 12-hour TWA of 83 dBA is used for a 12 hour shift. Exposure at this level initiates medical surveillance and exposure monitoring.

10 References

A. OSHA (29 CFR 1910.95), Occupational Noise Exposure
B. GP 15-01 Noise Control
C. EP-GIS 15-011 Specification for Noise Control

D. Berger, E. H., W. D. Ward, J. C. Morrill, and L. H. Royster, eds. Noise and Hearing Conservation Manual. 4th ed. Akron, OH: American Industrial Hygiene Assoc., 1986.
E. EP SG 3.4-0001 Hearing Conservation and Noise Control Guide
F. EP SG 3.4-0001 Hearing Conservation and Noise Control Guide Self-Verification Checklist
G. Group HSE Reporting Definitions, FIN-RD 4.4-0001

11 Appendices

A. Audiometric Testing Flow Chart

Audiometric%20Testing%20Flow%20Ch

B. Employee Hearing Test Instructions

Hearing Test instructions.ppt

C. RA 660 Quick Guide and Manual

QuickGuide RA660.pdf

OperatingManual RA660.pdf

D. Hearing Conservation Training

Hearing Conservation Training

E. Fitting Hearing Protection Poster

Fitting Hearing Protection Poster_1.p

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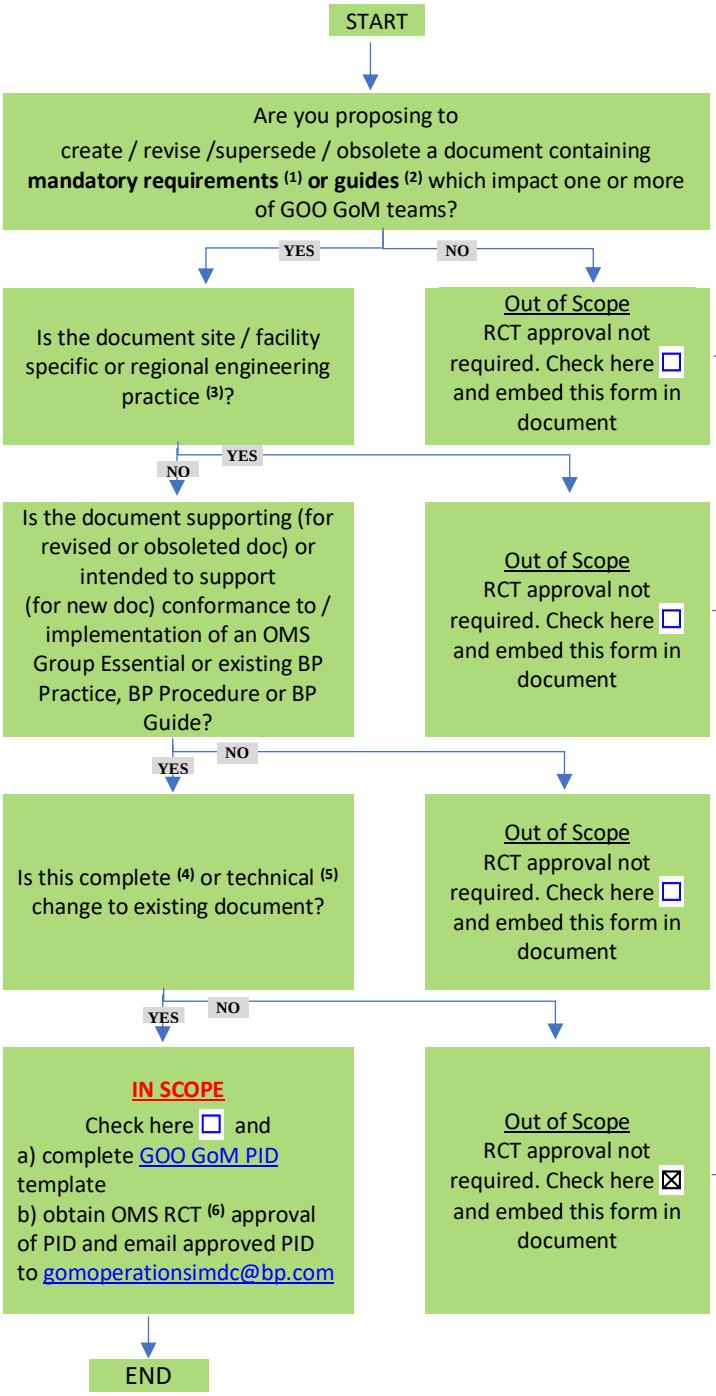

(1) Mandatory requirements are: 'Shall', 'Must', 'Need to' or 'Required to' type statements.
(2) Guides containing 'Should' or 'Recommended that' type statements.

(3) E.g.: Site Operating Procedures (SOPs), Emergency Response Plans (ERPs), REP, Maintenance and Inspection documents.

(4) Complete - New or significant changes to existing document (incl. superseding, obsoleting) (5) Technical - Changes impact the intent of one or more requirements

(6) Identify GoM OMS RCT here. RCT approved PID needs to be emailed no later than two weeks before quarterly DGB Meeting to be considered for review. See DGB meeting schedule here.

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Document Details			
Document Number	UPS-US-SW-GOM-HSE-DOC-00110-2	**Revision**	5
Document Title	GoM Region Noise & Hearing Conservation Safe Work Practice		
Next Review Date	04/01/2022		
Reason for Issue: (check applicable)	☐ New ☒ Revise ☒ Supersede ☐ Obsolete		

Document Sign Off

	Print Name & Title	Signature	Date
Reviewer(s) (If not applicable, put N/A in front of Name & Title, then sign and date)	Cheryl Metzler	DocuSigned by: Cheryl Metzler	
	Mark Glencross	April 11, 2019	
Training Completed (If not applicable, put N/A in front of Name & Title, then sign and date)	N/A, Cheryl Metzler, Industrial Hygienist	DocuSigned by: Cheryl Metzler	
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Authority - Name & Title, then sign and date)	Valerie Murray, Health Manager	DocuSigned by: Valerie Murray	April 11, 2019
Document Posted - Name & Title, then sign and date)	Debe Edwards, GOC & IMDC Document Controller	DocuSigned by: Debe Edwards	April 12, 2019

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