Memorandum from the Office of the Inspector General

February 25, 2010

Phillip L. Reynolds, LP 3A-C
John M. Thomas III, MR 3S 120

REQUEST FOR FINAL ACTION – AUDIT 2009-12292 – TVA’S HEARING CONSERVATION PROGRAM

Attached is the subject final report for your review and final action. Your written comments, which addressed your management decision and actions planned or taken, have been included in the report. Please notify us within one year from the date of this memorandum when final action is complete.

If you have any questions, please contact Noel K. Kawado, Senior Auditor, at (865) 633-7348 or Lisa H. Hammer, Director, Financial and Operational Audits, at (865) 633-7342. We appreciate the courtesy and cooperation received from your staff during the audit.

Robert E. Martin
Assistant Inspector General
(Audits and Inspections)
ET 3C-K

LHH:JP
Attachment
cc (Attachment):
Ralph E. Dudley, BR 3B-C
Peyton T. Hairston, Jr., WT 7B-K
Tom D. Kilgore, WT 7B-K
Richard W. Moore, ET 4C-K
Emily J. Reynolds, OCP 1L-NST
Joyce L. Shaffer, WT 9B-K
Scott W. Tiemeyer, BR 3D-C
OIG File No. 2009-12292
Audit Report

To the Vice President, Human Resources
Shared Services and Employee Relations,
and to the Executive Vice President,
People and Performance

TVA'S HEARING CONSERVATION PROGRAM

Audit Team
Noel K. Kawado
Melissa L. Conforti

Audit 2009-12292
February 25, 2010
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APPENDIX

MEMORANDUM DATED JANUARY 11, 2010, FROM JOHN E. LONG, JR., TO
ROBERT E. MARTIN
EXECUTIVE SUMMARY

Tennessee Valley Authority's (TVA) Hearing Conservation Program (Program) was established to "prevent employee hearing loss from exposure to high noise levels," by "reduc[ing] noise levels where feasible and...provid[ing] the means for protection from noise in areas where the levels remain high." In general, TVA's Hearing Conservation Program has four major components: (1) the development and implementation of a noise monitoring (sound level survey) program; (2) the provision for adequate hearing protection devices and its proper use; (3) the development and implementation of an audiometric testing program; and (4) regular training and education.

All employees and former employees who sustain injuries, including hearing loss, while in the performance of duty are entitled to the benefits of the Federal Employees' Compensation Act (FECA). FECA provides for the Office of Workers' Compensation Programs of the U.S. Department of Labor to make all claim decisions and payment of benefits. Approximately $33.6 million were paid to TVA claimants (representing 3,734 claims) for hearing losses during the 5-year period ending September 30, 2008. During this same 5-year period, there were 1,316 new hearing loss claims filed.

As part of our fiscal year (FY) 2009 audit plan, we reviewed TVA's Hearing Conservation Program to determine whether: (1) it complies with Occupational Safety and Health Administration's (OSHA) regulations and (2) TVA organizations are in compliance with Program guidelines. We also reviewed a prior Office of the Inspector General (OIG) report to determine whether its recommendations had been implemented.

In summary, we found:

- TVA's Hearing Conservation Program, as written, complies with the significant provisions of 29 CFR Part 1910.95, "Occupational Noise Exposure," issued by OSHA.

- Certain TVA sites did not (1) perform and/or use sound level surveys in accordance with the Program; (2) adhere to Program hearing protection requirements and/or discipline employees when hearing protection was not worn in designated areas; (3) ensure Program individuals' annual audiogram

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1 Successful claimants may be awarded medical or compensation payments, or a combination of the two. In addition, the awarded claim may be paid out as a scheduled award (installment payments over time) or as a lump sum amount. Therefore, the total amount paid from fiscal year 2004 through fiscal year 2008 also includes claims that were filed and decreed upon prior to fiscal year 2004.

2 Audit 2003-043P – TVA's Hearing Conservation Program.

3 TVA's Hearing Conservation Program is embodied in TVA's Safety Manual as Procedure 310.
and training requirements were met; and (4) record loggable Standard Threshold Shifts (STS)\(^iv\) on the OSHA 300 log.

We also found TVA's current organizational structure does not allow for enforcement of the Program by Corporate Health and Safety.

Finally, our review confirmed the existence of an employee culture which promotes the filing of hearing loss claims. The OIG reported this culture in a separate report issued in March 2009.\(^v\)

We provided a draft of this report to TVA's Chief Administrative Officer (CAO) and Executive Vice President, Administrative Services, and TVA's Senior Vice President, Corporate Governance & Compliance. TVA's CAO and Executive Vice President, Administrative Services, responded to the draft (see Appendix) and generally agreed with our recommendations. TVA's Senior Vice President, Corporate Governance & Compliance, did not provide a response.

\(^{iv}\) An STS is loggable if the employee's STS is "confirmed." An STS may be "confirmed" through a retest audiogram within 30 days of the initial audiogram. However, if a retest is not performed within 30 days, the loss is also considered "confirmed."

\(^{v}\) Audit 2007-11474 – Review of TVA's Workers' Compensation Program.
BACKGROUND

Tennessee Valley Authority's (TVA) Hearing Conservation Program (Program) was established to "prevent employee hearing loss from exposure to high noise levels," by "reduc[ing] noise levels where feasible and...provid[ing] the means for protection from noise in areas where the levels remain high." In general, TVA's Hearing Conservation Program has four major components: (1) the development and implementation of a noise monitoring (sound level survey) program; (2) the provision for adequate hearing protection devices and its proper use; (3) the development and implementation of an audiometric testing program; and (4) regular training and education.

TVA's Hearing Conservation Program requires the implementation of a noise monitoring program when information indicates that any employee's noise exposure may equal or exceed an 8-hour time-weighted average of 85 decibels (dBs). Two types of noise monitoring surveys are performed: area noise monitoring and personal noise monitoring. Area monitoring measures noise at one specific area at one point in time. Personal noise monitoring uses a noise dosimeter attached to a person and stores and integrates sound level measurements over time, providing an average noise exposure reading for a given period of time, such as an 8-hour workday. Both types of monitoring are required to be performed at least every five years, or when a significant change affecting noise takes place (e.g., new machinery). The Program requires that affected employees or their representatives be afforded the opportunity to observe any sound level surveys conducted. In addition, the Hearing Conservation Program requires that the employees selected for personal noise monitoring surveys constitute a representative sample of each of the classification of employees who work in high noise areas and that such employees be notified of the results of the personal noise monitoring. Protection against the effects of noise exposure is required when the sound level equals or exceeds 85 dBs. TVA's Hearing Conservation Program also states that hearing protection should be selected from among those approved by the TVA Audiologist and as listed on the Master List of Standards (Master List).

Finally, the Hearing Conservation Program requires individuals included in the Program to receive an audiogram annually after obtaining a baseline audiogram and that an audiogram also be performed at termination, retirement, or upon transfer from a location with high noise to a work location with low noise. If an employee has a Standard Threshold Shift (STS) which is confirmed, TVA is required to log the STS on the Occupational Safety and Health Administration (OSHA) 300 log ("loggable" STS). Annual training covering TVA's Hearing Conservation Program is also required for all Program participants.

1 "High noise," as used in this report, refers to areas that have recorded sound measurements equal to or greater than 85 dBs.

2 Also called the "Log of Work-Related Injuries and Illnesses."
All employees and former employees who sustain injuries, including hearing loss, while in the performance of their duties are entitled to the benefits of the Federal Employees' Compensation Act (FECA). FECA provides for the Office of Workers' Compensation Programs of the U.S. Department of Labor to make all claim decisions and payment of benefits. Approximately $33.6 million were paid to TVA claimants (representing 3,734 claims) for hearing loss claims during the 5-year period ending September 30, 2008.³

During the same 5-year period, there were 1,316 new hearing loss claims filed, some of which were awarded and paid during this period.

TVA’s Chief Administrative Officer (CAO) and Executive Vice President, Administrative Services, is TVA’s Designated Agency Safety and Health Official (DASHO). The DASHO assists the Board of Directors and senior managers in the management and administration of TVA’s health and safety program. The General Manager of Health and Safety assists in carrying out the DASHO responsibilities. The Corporate Safety staff provides oversight of the overall safety program and assists TVA organizations with Program implementation. TVA’s Hearing Conservation Program is a component of TVA's comprehensive safety program and must comply with 29 CFR Part 1910.95, "Occupational Noise Exposure," issued by OSHA.

TVA’s Hearing Conservation Program is promulgated in TVA’s Safety Manual, Procedure 310 – Hearing Conservation. Corporate Health Services (Health Services) is responsible for management of the Program, oversight of the audiometric testing program, approval of hearing protection devices, and program evaluation. The business units are responsible for noise control

³ Successful claimants may be awarded medical or compensation payments, or a combination of the two. In addition, the awarded claim may be paid out as a scheduled award (installment payments over time) or as a lump sum amount. Therefore, the total amount paid from fiscal year 2004 through fiscal year 2008 also includes claims that were filed and decreed upon prior to fiscal year 2004.
engineering, identifying employees to be included in the Program, audiometric testing, completion of sound level surveys, and enforcement in the use of hearing protection devices.

In December 2003, the Office of the Inspector General (OIG) issued a report on TVA's Hearing Conservation Program.\textsuperscript{4} The report provided management with recommendations related to hearing protection usage/availability, the performance of noise monitoring surveys, identification of employees who should have been included in the Program, and TVA's calculation of STSs.

**OBJECTIVES, SCOPE, AND METHODOLOGY**

As part of our fiscal year (FY) 2009 audit plan, we reviewed TVA's Hearing Conservation Program to determine whether: (1) it complies with OSHA regulations and (2) TVA organizations are in compliance with Program guidelines. To achieve our objectives, we:

- Obtained and reviewed TVA's written Hearing Conservation Program and OSHA regulation, 29 CFR Part 1910.95, to determine TVA and OSHA requirements with respect to hearing conservation.
- Compared TVA's Hearing Conservation Program, as written, to OSHA regulation, 29 CFR Part 1910.95, to determine whether TVA's Program contained all the required OSHA elements.
- Interviewed personnel from Human Resources and the CAO organization to obtain information related to TVA's Hearing Conservation Program.
- Visited judgmentally selected\textsuperscript{5} sites (Shawnee, Widows Creek, Colbert, Kingston, John Sevier, Johnsonville, Cumberland, Paradise, and Allen Fossil Plants; Watts Bar, Browns Ferry, and Sequoyah Nuclear Plants; Muscle Shoals Power Service Shops; and Watts Bar Heavy Equipment Division (HED)) to determine whether (1) appropriate hearing protection was available, (2) appropriate and adequate signage was posted in high noise areas, and (3) employees were using hearing protection in designated high noise areas.
- Obtained and reviewed the following for all selected TVA locations to determine if TVA organizations were adhering to Program guidelines:
  - Sound level surveys (area and personal monitoring)
  - Industrial hygiene plans

\textsuperscript{4} Audit 2003-043P – TVA's Hearing Conservation Program.

\textsuperscript{5} Sites were selected based on the number of claims filed from FY 2004 through FY 2008 and the number of Program participants as of February 28, 2009, whose most recent audiogram exam date was January 1, 2008, or later.
− Audiometer certifications
− TVA and mobile clinic\(^6\) nurses' Occupational Hearing Conservationist certifications

- Obtained and reviewed documentation for a sample of Program participants across all of TVA, as of February 28, 2009, to determine whether (1) annual audiometric tests were administered in accordance with the Program and (2) Program training requirements were met by the selected participants. Our sample was selected from a report provided by TVA's Health Services and included individuals whose most recent annual exam date was January 1, 2008, or greater. We did not independently verify the population.

- Obtained and reviewed the prior OIG audit report related to hearing conservation to determine whether the findings issued in connection with that audit have been addressed.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We do not express an opinion on TVA's internal control structure because this audit was not designed to identify all material weaknesses in TVA's Hearing Conservation Program. Our test for compliance with laws and regulations was limited to OSHA regulations as described earlier in this section. We found that TVA's Hearing Conservation Program, as written, complies, in all material respects, with OSHA regulations. However, we did identify certain weaknesses relating to the Program that are discussed in the Findings and Recommendations sections.

**FINDINGS**

We compared TVA's Hearing Conservation Program, as written, with OSHA regulation 29 CFR Part 1910.95 and determined that TVA's Hearing Conservation Program addresses all significant provisions of that regulation. However, during our testing, we found that certain TVA sites did not (1) perform and/or use sound level surveys in accordance with the Hearing Conservation Program; (2) adhere to Program hearing protection requirements and/or discipline employees when hearing protection was not worn in designated areas; (3) ensure Program individuals' annual audiogram and training requirements were met; and (4) record loggable STSs on the OSHA 300 log.

\(^6\) Certain TVA sites utilize the services of the Mobile Health Clinic (MHC) for conducting hearing exams, especially if the site has limited/no medical staff and/or large number of employees requiring hearing exams. The MHC and all equipment on the MHC is owned and maintained by TVA but staffed and operated by Concentra.
We also found TVA's current organizational structure does not allow for enforcement of the Program by Corporate Health and Safety. Finally, our review confirmed the existence of an employee culture which promotes the filing of hearing loss claims. The OIG reported this culture in a separate report issued in March 2009.7

PERFORMANCE AND USE OF SOUND LEVEL SURVEYS

We found that certain TVA sites did not perform area monitoring and personal noise monitoring surveys in accordance with the Hearing Conservation Program or utilize such surveys to determine which employees/job titles should be included in the Program. As noted below (see Administration and Enforcement of Program Requirements), TVA sites are responsible for completing the sound level surveys in accordance with the Program.

Area Noise Monitoring

Comprehensive area monitoring reports were not performed in the past five years by Shawnee, Johnsonville and Paradise Fossil Plants, and Watts Bar HED. At one of the plants, the Safety Consultant stated there is no noise monitoring program in place and that the Industrial Hygiene (IH) plan, which documents the site's IH requirements for the year including the performance of sound level surveys, does not receive high priority. Another site's Safety Consultant stated that he was not aware of the 5-year requirement because it was not included in the IH plan. The third site's Safety Consultant indicated that he was waiting for a new replacement to be hired before performing the survey. Another site's Safety Consultant stated a comprehensive area noise monitoring survey was not performed in the past five years because a personal noise monitoring survey performed in 2003 on two people showed that those individuals were not exposed to an 8-hour time-weighted average at or above 85 dBs.

Because of the highly dynamic nature of the operating environment at plants throughout TVA, the identification of high noise areas subject to Program protection is critical to help ensure adequate signage and hearing protection is available in and around high noise areas. Area monitoring surveys can serve as an effective screening tool to target job titles subject to personal monitoring and could also be crucial when challenging hearing loss claims to demonstrate that claimants were not exposed to high noise levels during their TVA employment.

Personal Noise Monitoring

Comprehensive personal noise monitoring surveys were not performed in the past five years at Widows Creek and Johnsonville Fossil Plants, Watts Bar and Sequoyah Nuclear Plants, and Watts Bar HED. At three of the plants, we reviewed, the sites’ Safety Consultant had been at the site for less than a year and did not know whether such a survey had been performed or needed to be performed. Another Safety Consultant stated that personal noise monitoring surveys were components of the Industrial Hygiene plan, which does not get high priority.

In addition, seven sites (Shawnee, Colbert, John Sevier, Cumberland and Allen Fossil Plants, Muscle Shoals Power Service Shops, and Browns Ferry Nuclear Plant) that performed comprehensive personal noise surveys in the past five years did not maintain documentation supporting the rationale for employees selected for personal noise monitoring. Therefore, at these seven sites, we were unable to determine whether the sampled employees constituted a representative sample. TVA’s Hearing Conservation Program states that personal noise monitoring should be performed "for a representative sample of each of the classification of employees that work in one or more areas where the sound level equal or exceeds 85 dBA\(^8\) and should also include "10% of employees in classification groups that are not normally in areas exceeding 85 dBA, but may infrequently work in or travel through these high noise areas."

These two issues are similar to a finding contained in Audit 2003-043P which stated, "TVA could not provide personal noise sampling results for five of the nine sites visited and the personal noise sampling for two other sites was not representative of the workforce."

Finally, the Safety Consultant at one site stated that the results of the personal noise monitoring survey were not provided to all the sampled employees because of the difficulty in contacting employees, and another site’s Safety Consultant indicated that employees were not notified that sound level surveys would be taking place.

Due to the deficiencies in personal noise sampling, TVA may not have identified all job duties which are exposed to high noise areas or have sufficient documentation which could be used to validate or challenge hearing loss claims.

Integration of Sound Levels

Audit 2003-043P stated, "TVA does not have valid sound level survey information for identifying high noise levels at some plants." Specifically, TVA’s Hearing Conservation Program states that "all continuous, intermittent and impulsive sound levels from 80 to 130 decibels should be integrated into the noise measurements." With respect to area monitoring, we found that only one site’s area noise monitoring survey documented the sound levels that were integrated

\[^8\] Decibels when measured on the A scale of a standard sound level meter at slow response.
into the noise measurements that was consistent with the requirements of the Program. For personal noise monitoring, we found that five sites documented the sound levels that were integrated into the noise measurements (in accordance with the Program) in their personal noise monitoring sound level survey results. At the remaining sites that performed area and/or personal noise monitoring surveys, we were unable to determine whether the appropriate sound levels were integrated into the noise measurements, based on our review of the area monitoring and/or personal noise monitoring surveys that were provided.

**Use of Noise Monitoring Surveys**

At Kingston, John Sevier, and Johnsonville, the site's Safety Consultant stated that all the site's employees were included in the Program, including administrative personnel and individuals who are not normally exposed to high noise levels, based on site management directives. Three sites (Muscle Shoals, Watts Bar Nuclear, and Browns Ferry Nuclear) stated that site personnel are included in the Program by Corporate Human Resources, based on the employee's job title, without consideration of the results of the site's sound level surveys. The Safety Consultant at Colbert stated that individuals can be included in the Program at the site's direction or automatically through Corporate Human Resources. In addition, our review of a listing of individuals included in the Hearing Conservation Program provided by TVA's Health Services included job titles that may not need to be in the Program, such as (with quantities in parentheses): Occupational Health Nurse (4); Manager, Employee Concerns (1); Financial Representative (1); Financial Consultant (5); and Human Resources Associate (1).

While the Hearing Conservation Program does not specifically exclude certain job titles, according to Health Services the intent of the Program is to protect employees who are normally exposed to high noise levels during their workday. Furthermore, according to TVA's Hearing Conservation Program, noise monitoring surveys should be used to identify employees for inclusion in the Program. Inclusion of employees in the Program who are not normally exposed to high noise levels could result in unnecessary costs to administer the Program to those employees, including costs to administer audiograms and training.

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9 This listing was generated from MEDICS, and we reviewed the job titles of individuals whose most recent annual audiogram was performed on or after January 1, 2008.
TVA'S COMPLIANCE WITH ITS HEARING CONSERVATION PROGRAM AUDIOGRAM, TRAINING, AND RECORDING REQUIREMENTS

We selected a random sample of 59 Program participants included in the Medical Evaluation Data and Imaging System (MEDICS) as of February 28, 2009\(^\text{10}\) to test relevant provisions of TVA's Hearing Conservation Program. Based on the documentation reviewed in connection with this sample, we found:

- Annual audiograms had not been timely performed in the past three years for 46\(^\text{11}\) of the 59 individuals.
- Loggable hearing losses were not documented on the OSHA 300 log for 3 of the 59 individuals.
- The Hearing Conservation Program annual training was not performed for 12 of the 59 individuals.

In addition, based on discussions with the site nurse, we noted that four sites did not perform transfer audiograms\(^\text{12}\) in accordance with the Program. Specifically, one site only performed transfer audiograms when the nurse was made aware an employee transferred to another facility, one site performed transfer audiograms only when requested, and two sites did not perform any transfer audiograms.

Also, we compared the number of recorded hearing losses on the OSHA 300 log to the audiogram results in HearTrak and identified additional loggable hearing losses that were not documented on the OSHA 300 log. Subsequently, Health and Safety personnel indicated they were recording 96 STSs as a result of our review.

HEARING PROTECTION REQUIREMENTS AND ENFORCEMENT

TVA had hearing protection available at certain sites that were not included on the Master List, and hearing protection available at certain sites (even when worn with earmuffs) did not reduce the highest documented noise levels at the plant to below 85 dBS, based on the most recent area noise or personal monitoring survey. We also observed several individuals without hearing protection in designated areas and found two sites that did not enforce hearing protection in

\(^{10}\) We selected our sample based on a listing of Program participants listed in MEDICS as of February 28, 2009. MEDICS is a Windows-based application for the collection of administrative medical data along with images of medical records. Because the listing we were provided could have included individuals who were no longer in the Program as of that date, we selected our sample from a population of individuals in the listing whose most recent annual audiogram exam date was January 1, 2008, or later.

\(^{11}\) We compared the job titles for each of the 46 individuals to TVA's Hearing Conservation Program Web site (which includes a listing of job titles that should be included in the Program) and found that 38 had job titles that were included on that listing. Eight individuals had job titles that were not on the Program job title listing, one of which worked at a fossil plant that included everyone in the Program.

\(^{12}\) TVA's Program requires the performance of an audiogram when an employee transfers from a location with high noise to a location with low noise.
areas designated with signs requiring hearing protection, if the area was not currently in operation. In addition, TVA does not have a disciplinary policy for employees who are working in high noise areas without hearing protection.

**Availability and Adequacy of Hearing Protection**

As previously stated, TVA's Hearing Conservation Program requires that hearing protection should be selected from among those approved by the TVA Audiologist and as listed on TVA's Master List. However, we found 12 types of hearing protection that were available for use at TVA sites that were not included on the Master List. Thirteen of the fourteen sites visited had at least one type of hearing protection available for use that was not on the Master List. While we were not provided with written evidence that the hearing protection on the Master List had been approved, the TVA Audiologist stated that all hearing protection included on that list appeared satisfactory.

In addition, at 13 of the 14 sites visited (see Figure 2), using double hearing protection (i.e., earplugs and earmuffs) with the lowest rated\(^{13}\) hearing protection available at the sites did not reduce the highest documented noise level to below 85 dBS. At 8 of the 14 sites, using double hearing protection with the highest rated hearing protection available at the sites did not reduce the highest documented noise level to below 85 dBS. For example, at Cumberland Fossil Plant, the highest noise level documented in the most recent area monitoring survey was 107 dBS. The highest-rated hearing protection available had a manufacturer Noise Reduction Rating (NRR) of 33. Earmuffs provide an additional decrease in noise levels of 5 dBS. By using the calculation as recommended by OSHA for double hearing protection, the noise level in this particular area at Cumberland would be reduced to 89 dBS, still more than the 85 dBS as prescribed in the Program.

We also found that several of the Safety Consultants we interviewed were not aware of the OSHA-recommended calculation for the noise attenuation (reduction) provided by hearing protection (see footnote 18 for calculation). Three of the Safety Consultants believed that the reduction afforded by earplugs is calculated as the manufacturer's NRR less 7. One Safety Consultant stated that the reduction is equal to the manufacturer's stated NRR. Another Safety Consultant calculated the reduction as the manufacturer's NRR divided by 2. Finally, one Safety Consultant referred us to another Safety Consultant for the noise reduction calculation.

\(^{13}\)Manufacturers of hearing protection provide information about the noise reducing capability of a hearing protector as a Noise Reduction Rating (NRR) number. The NRR ratings are based on noise reduction obtained in laboratory conditions. However, according to OSHA, their own experience and the published scientific literature have shown that laboratory-obtained real ear attenuation for HPDs can seldom be achieved in the workplace, and OSHA recommends applying a 50 percent correction factor when estimating field attenuation, hence the calculation is Estimated Exposure (dBA) = Time Weighted Average (dBA) - [(NRR - 7) x 50%].
### Figure 2

TVA's Health Services personnel acknowledged that several sites have locations that have noise levels that are over 85 dBs (even after considering the use of double hearing protection). However, according to TVA's Health Services personnel, site employees are not normally exposed to such noise for eight hours, and thus higher NRR hearing protection devices are not necessary. TVA's Hearing Conservation Program states that "[h]earing protectors must attenuate employee exposure at least to an 8-hour time-weighted average of 85 decibels or below."

As noted above, several TVA sites did not perform comprehensive area and/or personal noise monitoring surveys in the past five years and/or did not adequately document the rationale for selecting individuals included in the personal monitoring surveys performed. As such, at those sites, we were unable to determine whether certain individuals could have been exposed to noise levels above an 8-hour time-weighted average of 85 dBs (with double hearing protection). Until such surveys are completed to verify the actual noise exposures, we believe that TVA should provide adequate hearing protection to employees, assuming employees can be exposed to the highest documented noise levels for eight hours or more.
Without adequate hearing protection, affected employees are at greater risk of sustaining hearing impairments. Furthermore, the lack of adequate hearing protection could be used against TVA to substantiate hearing loss claims.

Use and Enforcement of Employee Hearing Protection

We observed employees not wearing hearing protection in designated areas at 5 of the 14 plants visited. TVA does not formally discipline employees for not wearing hearing protection in designated areas. Only 1 of 14 sites has a formal disciplinary policy in place for not wearing hearing protection in designated areas. TVA's Program states that "all employees shall comply with the requirements of the hearing conservation program" and "appropriate disciplinary action shall be taken whenever requirements of the hearing conservation program are violated."

Payments for approved hearing loss claims constitute a significant cost to TVA. Where warranted, documentation of employees found without adequate hearing protection in high noise areas could assist TVA in successfully challenging claims. While TVA's Health Services could not definitively state whether such documentation would assist TVA in successfully challenging hearing loss claims, a 2001 conference on state workers' compensation laws provided, "although many workers' compensation laws do not address the question of personal HPDs, approximately 40% of U.S. states indicated that claims would be denied or an award penalty assessed if an individual was found to have willfully disregarded a requirement to wear hearing protection devices."

We also noted that 2 of the 14 sites visited did not enforce the use of hearing protection in areas designated as requiring hearing protection if the area was currently not in operation. The Program states that locations identified as high noise areas shall be identified with signs and that employees shall use hearing protection devices as required and as posted at the plants.

Making such an exception to the Program could result in employee confusion as to when use of hearing protection is actually required. In addition, many of the individual fossil plant units are immediately adjacent to each other and not separated by barriers. Therefore, at sites that do not require hearing protection in nonoperational units, it would be difficult to determine at what point hearing protection would be required when approaching an operational unit.

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14 According to TVA's Health Services, TVA can only challenge (or controvert) a claim once unless new information becomes available.

ADMINISTRATION AND ENFORCEMENT OF TVA's HEARING CONSERVATION PROGRAM REQUIREMENTS

TVA's current organizational structure does not allow for optimal administration and enforcement of the Hearing Conservation Program. As noted above, we found that certain TVA sites did not (1) perform and/or use sound level surveys in accordance with the Program; (2) adhere to Program hearing protection requirements and/or discipline employees when hearing protection was not worn in designated areas; (3) ensure Program individuals' annual audiogram and training requirements were met; and (4) record loggable STSs on the OSHA 300 log.

However, TVA's Health Services is a corporate function and is responsible for the development and management of the Program and Program evaluation. Corporate Safety is responsible for communicating the requirements and changes to the Program to affected TVA sites and also assists sites in implementing the requirements of the Program. The business units, which fall under the Chief Operating Officer's (COO) organization, are responsible for noise control engineering, identifying employees to be included in the Program, audiometric testing, completion of sound level surveys, and enforcement in the use of hearing protection devices. Because they report to different organizations, Program requirements are often difficult to enforce. In addition, on-site Corporate Safety Consultants, who assist sites in implementing the Hearing Conservation Program, have no enforcement powers at TVA plants because of this organizational structure. Consequently, sites that do not meet all the requirements of the Program do not face any real disciplinary action.

TVA EMPLOYEE CULTURE AND OTHER FACTORS THAT HAVE LED TO THE FILING OF HEARING LOSS CLAIMS

In March 2009, our office issued Inspections Report 2007-11474, "Review of TVA's Workers' Compensation Program," where key TVA personnel stated that an excessive amount of hearing loss claims were being submitted and that employees view hearing loss awards as "an entitlement and a 'lottery' to be won." During the current review, we were similarly informed by Safety Consultants and on-site nurses of a long-existing culture where employees believe they are entitled to a hearing loss award at the end of their TVA career, without regard to whether the employee believed such loss was work-related, nonwork-related, or due to the natural aging process. According to these contacts, this culture, coupled with union practices, has led to a number of hearing loss claim filings and payments over the years.

While the close-knit, almost familial, structure present at most, if not all, of the TVA plants fosters a foundation for teamwork and collaboration, it also allows for individuals to quickly learn about how coworkers have benefitted from filing
hearing loss claims. According to the site contacts we interviewed, as plant workers began hearing about other individuals being awarded for hearing losses, more plant workers began filing such claims upon retirement or termination from TVA, with the expectation that an award would be paid. Furthermore, the worst case scenario for most claimants is the denial of a claim.

We also learned from the site contacts that, in the past, union representatives distributed hearing loss claim forms and assisted TVA employees in completing such forms at union meetings, which tended to encourage the filing of such claims.

**CONCLUSION AND RECOMMENDATIONS**

Payments related to hearing loss claims cost TVA a lot of money—more than $33 million over the 5-year period ending September 30, 2008. Remediation of the instances of noncompliance with the Program requirements noted this report could reduce these costs and reduce the risk of employee hearing losses. Moreover, certain of these issues, in particular a culture of entitlement to hearing loss claim benefits, have been raised in previous Office of the Inspector General reports.

We recommend TVA's DASHO and Vice President, Human Resources, coordinate with the COO organization to:

- Ensure sound level (area and personal noise monitoring) surveys are performed and documentation is maintained in accordance with TVA's Hearing Conservation Program (including documentation of sound levels that were integrated into the noise measurements).
- Ensure employees sampled in conjunction with personal noise monitoring surveys are timely notified of the results.
- Include site employees in the Program in accordance with the intent of the Program and in conjunction with current personal noise monitoring surveys.
- Ensure employees included in the Program (1) have audiograms annually and each time the employee transfers from a high noise area workplace to a low noise area workplace and (2) complete annual Program training.
- Record all loggable hearing losses on the OSHA 300 log.
- Provide approved and adequate hearing protection at all TVA sites assuming the worst case scenario of employee noise exposures where comprehensive area and/or personal monitoring surveys have not been performed in the past five years.
- Ensure a consistent methodology for calculating the noise attenuation afforded by hearing protection devices is utilized across all TVA locations.
• Require employees working in areas designated as high noise wear adequate hearing protection in accordance with the Program.

• Implement a disciplinary policy for employees found not wearing hearing protection in designated areas.

In addition, we recommend TVA's Senior Vice President, Corporate Governance & Compliance, as part of the ongoing cultural change effort at TVA,\textsuperscript{16} assess and implement strategies to reduce or eliminate the culture of entitlement related to hearing loss claim benefits cited previously.

**MANAGEMENT'S COMMENTS AND OUR EVALUATION**

TVA's CAO and Executive Vice President, Administrative Services, in conjunction with TVA's Health and Safety organization, responded to our report on January 11, 2010. Based on their response, the following actions (through Problem Evaluation Reports) will be taken by TVA consistent with our recommendations:

• Confirm that noise monitoring (area and/or personal) surveys have been performed at sites identified in the audit report, and assess the extent of this condition at sites not visited by the OIG audit team.

• Include the scheduling of noise monitoring surveys at affected locations by incorporating such surveys in the respective FY 2010 IH Sampling Plans.

• Revise TVA Safety Procedure 310 to address the requirements for sound level integration, employee notification instructions, and documentation requirements related to personal and area noise monitoring. In addition, TVA Safety Procedure 310 will be revised to include the roles and responsibilities of managers and supervisors to observe, where necessary, coach, and correct employees who violate hearing protection requirements.

• Determine the worker population that should be included in the Hearing Conservation Program, using qualitative and quantitative processes, noise survey and monitoring results, and review of job classifications.

• Ensure performance of required testing and training for employees included in the Program by implementing monitoring procedures and notifying plants, facilities, and organizations of its roles and responsibilities with respect to the Hearing Conservation Program.

• Log cases on the OSHA 300 log which meet the recordability criteria.

• Develop policy guidance to include use of administrative controls (work rotation/stay times) and a chart for stay times at certain levels of sound

\textsuperscript{16} At the July 2009 TVA Board meeting, the Board of Directors directed management to develop an extensive remediation plan to ensure best practices in areas such as governance and accountability, corporate culture, and organizational effectiveness.
intensity levels to ensure employees do not exceed the 85 dBA time-weighted average.

- Review the Master List of Standards for hearing protectors and revise as deemed necessary.
- Develop hearing protection attenuation policy guidance to include OSHA methodology for calculating NRR and to address the adequacy of hearing protection consistent with the intent of OSHA regulations, including double hearing protection.
- Perform communication efforts through various means which emphasize employees’ and management's roles and responsibilities related to hearing protection usage and disciplinary actions where Hearing Conservation Program requirements are violated.

In its response, TVA management stated that the portion of our report related to the availability and adequacy of hearing protection did not consider the actual exposure time of employees. In fact, our report recognized the Program requirement that "[h]earing protectors must attenuate employee exposure at least to an 8-hour time-weighted average," but found that several locations did not perform comprehensive area and/or personal monitoring surveys. Therefore, at those locations, we were unable to determine whether employees at such locations could have been exposed to noises above the 85 dBA 8-hour time-weighted average. Our recommendation was intended to ensure that employee hearing was protected where noise level surveys were inadequate to conclude that available hearing protection, without other administrative controls, was sufficient. Notwithstanding, we concur with TVA management's proposed actions to utilize administrative controls, in conjunction with hearing protection, to reduce noise exposures to an acceptable level at those locations.

TVA's Senior Vice President, Corporate Governance & Compliance, did not provide a response to our recommendation related to the assessment and implementation of strategies to reduce or eliminate the culture of entitlement related to hearing loss claim benefits.
January 11, 2010

Robert E. Martin, ET 3C-K

RESPONSE TO REQUEST FOR COMMENTS - DRAFT AUDIT 2006-12292 - TVA’S HEARING CONSERVATION PROGRAM

This is in response to your November 12 request for comments to the draft report and recommendations made by the Office of the Inspector General’s (OIG) audit of TVA’s Hearing Conservation Program (HCP).

OIG Draft Report

In the Findings section of the report, under the section heading Availability and Adequacy of Hearing Protection (paragraphs 2 and 4), the report discusses the failure of plant personnel to be equipped with hearing protection necessary to reduce the on-site highest documented noise level to below the 85dB threshold.

Health and Safety’s Response

This portion of the report does not take into account the actual exposure time of employees and reflects the unclear requirement by OSHA within the part of the regulation that addresses Hearing Protectors. OSHA simply states that employees who are exposed to >85 dB on an 8-hour Time Weighted Average (TWA) must wear ‘adequate’ hearing protectors. Industry, including TVA has adopted the policy to require the use of hearing protectors at noise intensity levels of 85 dB regardless of the amount of time and regardless of whether or not those workers would exceed the 85 dB TWA for the work shift.

OSHA and TVA policy state that the hearing protectors used in the workplace must attenuate employee exposure to <90 dB TWA. This assumes that the exposures are such that attenuation alone would suffice for ensuring the 90 dB TWA is not exceeded. In fact, the Noise Reduction Rating (NRR) of the best available hearing protectors on the market may not (due to exposure being time dependent) keep the exposure to less than the acceptable Permissible Exposure Limit (PEL) of <90 dB when workers are in elevated noise areas e.g. areas with noise intensity levels >101 dBA. While OSHA expects employers to protect employees to less than the 8-hour TWA limitations, there is no discussion in the regulation as to ‘administrative controls’ such as worker rotation and time limitation within elevated noise areas. Such industry ‘accepted practices’ would and will eliminate overexposures to workers and will act to enhance worker protection from the adverse effects of elevated noise in the workplace. The corrective action for this finding will not provide a better hearing protector since those are not currently available. The corrective action will, however, provide the means and mechanism within the
policy to ensure that the ‘intent’ of the regulation and the TVA policy are met, that is to ensure occupational noise exposures are maintained to less than the acceptable PEL, based upon an 8-hour TWA.

OIG’s Recommendations:

- Ensure sound level (area and personal noise monitoring) surveys are performed and documentation is maintained in accordance with TVA’s Hearing Conservation Program (including documentation of sound levels that were integrated into the noise measurements).
- Ensure employees sampled in conjunction with personal noise monitoring surveys are timely notified of results.
- Include site employees are in the program in accordance with the intent of the [HCP] and in conjunction with current personal noise monitoring surveys.
- Ensure employees included in the Program (1) have audiograms annually and each time the employee transfers from a high noise area workplace to a low noise area workplace and (2) complete annual Program training.
- Record all Recordable hearing losses on the OSHA 300 Log. Action COMPLETE.
- Provide approved and adequate hearing protection at all TVA sites assuming the worst case scenario of employee noise exposures where comprehensive area and/or personal monitoring surveys have not been performed in the past five years.
- Ensure consistent methodology for calculating the noise attenuation afforded by hearing protection devices is utilized across all TVA locations.
- Require employees working in areas designated as high noise [areas] wear adequate hearing protection in accordance with the Program.
- Implement a disciplinary policy for employees found not wearing hearing protection in designated areas.

Health and Safety Responses to OIG Recommendations:

In response to the OIG’s recommendations, Health and Safety has reviewed, consolidated, and initiated Problem Evaluation Reports (PER) as appropriate. The PER titles, descriptions, and actions are listed below. PER numbers will be added once they are assigned.

A final report reviewing Health and Safety’s actions taken in response to the OIG’s recommendations will be issued by Health and Safety on or before November 5, 2010.

OIG Recommendation Bullets #1 and #2: Ensure sound level (area and personal noise monitoring) surveys are performed and documentation is maintained in accordance with TVA’s Hearing Conservation Program (including documentation of sound levels that were
integrated into the noise measurements), and ensure employees sampled in conjunction with personal noise monitoring surveys are timely notified of results.

- **SR# 101217 PER# TBA**. OIG Audit 2009-12202 - Noise monitoring not completed in accordance with TSP-310, Hearing Conservation.
  - DESCRIPTION. During the recent OIG audit 2009-12292, it was found that some stations had not performed area noise surveys and/or personal noise monitoring as required by TSP 310. The policy calls for this survey and monitoring to be performed at least every five years. Noted opportunities exist to improve documentation of survey and monitoring criteria. In addition, the timeliness and documentation of employee notification of sampling results must be improved.
  - ACTIONS:
    - 001 - Confirm noise monitoring has been performed at stations noted in the Audit as follows: Comprehensive area monitoring reports were not performed in the past five years by Shawnee, Johnsonville and Paradise fossil plants, and Watts Bar HED. Comprehensive personal noise monitoring surveys were not performed in the past five years at Widows Creek and Johnsonville fossil plants, Watts Bar and Sequoyah nuclear plants, and Watts Bar HED. In addition, perform an extent of condition confirm noise monitoring has been performed at stations not visited by the audit team.
    - 002 - Based upon findings from extent of condition in action 001, ensure noise surveys and monitoring as appropriate to meet the policy requirements are included in the IH Sampling Plans for the FY 2010 at affected stations and facilities.
    - 003 - Revise TSP-310 to include the following items:
      - Develop an Appendix B for TSP-310 for developing survey strategy for conducting ‘Area’ Noise Surveys.
      - Revise Appendix A in TSP-310 to address only ‘Personal Noise Monitoring’ and include all continuous, intermittent, and impulsive sound levels from 80 decibels to 130 decibels must be integrated into the noise measurements. Also include employee notification instructions.
      - Develop an employee notification document inclusive to the HCP. Required action is to notify employees of the intent to survey or monitor and offer availability to view as well as notify affected employees of any personal monitoring results.
      - Develop a survey documentation/check sheet with inclusion of criteria to meeting the requirements of area surveys and that of personal monitoring.
      - Change policy to reflect OSHA requirements for when surveys and personal noise monitoring are required (time frames, e.g., five-year requirement).
The above actions are owned by Doug Mills (dfmills) with due dates of March 31, 2010 for actions 001 and 002; due date of April 30, 2010 for action 003.

**OIG Recommendation Bullet #3:** Include site employees in the program in accordance with the intent of the [HCP] and in conjunction with current personal noise monitoring surveys.

- **SR# 101226 PER# TBA:** OIG Audit 2009-12292 - Opportunities exist with respect to employee selection into the Hearing Conservation Program.
  - **DESCRIPTION:** A review on participants in the HCP is necessary to ensure employees are in the program in accordance with the intent of the HCP and are in conjunction with current area noise surveys and personal noise monitoring.
  - **ACTIONS:**
    - 001 - Using qualitative and quantitative processes, determine the worker population that should participate in the Hearing Conservation Program.
    - 002 - Utilize the noise survey / monitoring data and consider use of job classifications for development of similar exposure groups (SEGs).

The above actions are owned by Doug Mills (dfmills) with due date of June 30, 2010 for action 001 and due date of April 30, 2010 for action 002.

**OIG Recommendation Bullet #4:** Ensure employees included in the Program (1) have audiograms annually and each time the employee transfers from a high noise area workplace to a low noise area workplace and (2) complete annual Program training.

- **SR# 101231 PER# TBA:** OIG Audit 2009-12292 - Employees testing and training not completed in accordance with TSP-310: Hearing Conservation.
  - **DESCRIPTION:** OIG audit 2009-12292 revealed that testing and training for employees in the hearing conservation program were not always performed as required by TSP-310. Employees included in the hearing conservation program (HCP) shall receive an audiogram annually after obtaining the baseline audiogram. Employees included in the HCP shall receive an audiogram at termination, rehirement or upon transfer from a location with high noise levels to a work location with high noise levels. Employees included in the HCP shall be required to receive annual training (Hearing Conservation, ATIS 00059129) which informs employees of the effects of noise on hearing; information about hearing protectors, including the advantages, disadvantages, attenuation, and instructions on the care, use, and fitting, the purpose of audiometric testing, and information concerning the test procedures.
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○ ACTIONS:
  ● 001 - Ensure the performance of testing and training for employees included in the HCP as per TSP-310 by confirming findings of OIG audit team and determine the extent of the condition to include sites not assessed by the OIG audit team. This action will include:
    ○ Notify plant/facility/organization management of:
      ▪ Requirements of TSP-310 for testing and training
      ▪ Roles and responsibilities of each plant/facility/organization manager for establishing a HCP at their facility and ensuring requirements of TSP-310 are implemented
    ○ Monitor testing compliance by performing quarterly verifications that employees in the HCP are meeting the requirements of TSP-310
    ○ Monitor training compliance by performing quarterly verifications that employees in the HCP are meeting the requirements of TSP-310
    ○ Identify those employees who have exceeded the annual requirement for completing required training “Hearing Conservation,” ATIS 00059129
    ○ Generate report showing all employees in the HCP
    ○ Identify those who exceeded the annual requirement for completing a hearing test
    ○ Notify appropriate management to assess situation and seek resolution
  ○ TIMELINE:
    ▪ Immediately begin reviewing, verifying and assessing audit findings
    ▪ Perform review and assessment of testing and training quarterly at a minimum.

The above action is owned by Scott Tiemeyer with due date of September 30, 2010.

OIG Recommendation Bullet #5 (Action COMPLETE as of September 25, 2009):
Record all Recordable hearing losses on the OSHA 300 Log.
  ● SR# 101237 PER TBA: Some Hearing loss cases were not logged on the OSHA 300 Log.
    ○ DESCRIPTION: Some hearing loss cases that met OSHA Recordable illness criteria were found to have not been placed on the appropriate facility OSHA 300 log.
    ○ ACTIONS:
      ▪ 001 - Log the cases meeting recordability criteria as an illness under OSHA 29CFR1904
      ▪ 002 - Review other cases and determine if they meet OSHA recordability criteria. If so, place on the appropriate OSHA 300 Log.
The above actions are owned by Doug Mills (dfmills) with due date of January 31, 2010 for actions 001 and 002.

**OIG Recommendation Bullet #6 and Bullet #7:** Provide approved and adequate hearing protection at all TVA sites assuming the worst case scenario of employee noise exposures where comprehensive area and/or personal monitoring surveys have not been performed in the past five years, and ensure consistent methodology for calculating the noise attenuation afforded by hearing protection devices is utilized across all TVA locations.

- SR# 101235 PER# TBA OIG Audit 2005-12292 Hearing Protection Availability/Adequacy and effective Noise Reduction Ratings (NRR) determination needs improvement.
  - **DESCRIPTION:** An evaluation is needed to ensure that hearing protection (ear plugs) is adequate for the worse case in noise intensity levels. At some TVA sites there are hearing protectors available that are not on the master list of standards. In some cases it was not immediately evident that the hearing protectors used would suffice for maintaining noise exposure levels to <85 dBA for workers in the various noise intensity levels at the station. **NOTE:** Ear plugs alone with muffs as doubles are not available in an NRR that would reduce, e.g., 107 dBA levels to <85; thus stay times for these areas would need to be established as allowed by the OSHA regulation under administrative type controls. Awareness to the NRR of hearing protectors and the calculation for determining the effective NRR needs to be improved.
  - **ACTIONS:**
    - 001 - Review the Master List of Standards for hearing protectors and revise as deemed necessary. Use a minimum of 28 NRR (unadjusted to C weighted vs. A weighted) for ear plugs and 25 NRR unadjusted for ear muffs. **NOTE:** The use of ear plugs with an NRR of 33 dB reflects the best available hearing protectors of this type and should be used where possible to improve the adequacy of protectors.
    - 002 - Develop a policy guidance to include use of administrative controls (worker rotation/stay times) and a chart for stay times at certain levels of sound intensity levels for meeting the <85 dBA TWA.
    - 003 - Develop policy guidance for hearing protection attenuation and use of OSHA requirements for calculating NRR and ensuring adequacy of hearing protectors in order to meet the OSHA intent of maintaining exposures to <85 dBA TWA. (Include double hearing protection—not currently addressed in policy # 310.)

The above actions are owned by Doug Mills (dfmills) with due date of March 31, 2010 for actions 001 and due date of April 30, 2010 for actions 002 and 003.
OIG Recommendation Bullet #8: Require employees working in areas designated as high noise [areas] wear adequate hearing protection in accordance with the Program.

- SR# 101241 PER# TBA OIG Audit 2009-12292 - Require and enforcement of employee use of hearing protection needs improvement
  - DESCRIPTION: Opportunities exist to improve the requirement of employee's working in areas designated as high noise areas to wear adequate hearing protection in accordance with the HCP and for enforcement of the related expectations with regards to hearing protection usage
  - ACTIONS:
    - OUI - Revise policy TSP 310 to include the roles and responsibilities of Managers and Supervisors to observe, coach, and correct on the use of hearing protection and include “enforcement of the expectations related to use of hearing protection.”
    - 002 - Provide a talking points information sheet to COO Safety which will be provided to Supervisors and Managers relating the expectations related to the HCP. Explain roles and responsibilities. Utilize communications on the new ‘tools’ within the written Program that will include stay time charts, worker rotations, etc., in order to maintain exposures ≤8-hour TWA limits
    - 003 - Perform communications efforts through the COO Safety organization and assist with communications to COO Safety committees related to hearing protection usage explaining the responsibilities of Employee's and Management. Include and highlight the potential for disciplinary action under the Program.

The above actions are owned by Doug Mills (dfmills) with due date of April 30, 2010 for actions 001, 002 and 003.

OIG Recommendation Bullet #9: Implement a disciplinary policy for employees found not wearing hearing protection in designated areas.

- SR# 101244 PER# TBA OIG Audit 2009-12292 - No disciplinary action for employees found in non-compliance with TSP-310.
  - DESCRIPTION: OIG audit 2009-12292 revealed that employees found not wearing hearing protection in designated areas as required by TSP-310 were not subject to disciplinary action as stated in the roles and responsibilities of TSP-310.
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- ACTIONS
  - 301. In partnership with COO Safety and through a communication tool such as a Safety Bulletin or similar conveyance, provide an awareness to remind employees and management that appropriate disciplinary action shall be taken whenever requirements of the HCP are violated
  - Consider use of a letter to SBU leadership for dissemination throughout their organizations in association and prior to the issuance of the safety bulletin.

The above action is owned by Scott Tiemeyer with due date of March 4, 2010.

[Signature]

John E. Long, Jr.  
Executive Vice President  
Administrative Services  
WT TB-K

SWT ALH