



Experiences With Fit Testing Hearing
Protection Devices

API IH Task Force Workshop
May 17th, 2011

COP Hearing Conservation Program Improvement Initiative

Engineering Controls

- Additional or Improved Noise Abatement Equipment
- “Buy Quiet” Effort for New / Replaced Equipment

Improved Sound Level Surveys

- Identify Areas / Equipment for Noise Abatement
- Improved Worker Hazard Communication

Improve Individual Hearing Protection Device (HPD) Performance

Individual HPD Improvement

HPD Fit Testing

- Same philosophy as a respiratory fit test
- Determine a person's specific fit and attenuation
- Ideal for training and HPD selection

HPD Fit Testing Devices

- Available for Several Years
- Previous Equipment / Methods Difficult to Administer

Individual HPD Improvement (cont.)

Scheduling Priority

- Recordable Hearing Losses
- Standard Threshold Shifts
- Similar Exposure Groups with Highest Noise Exposure as Identified by the site Exposure Assessment Plan

Fit Test Administration

- Varied by Facility Logistics
- HSE during Annual Workgroup HSE Training
- Occupational Nurse During Annual Audiometric Exams
- HSE by individual scheduling

Individual HPD Improvement

Two COP Business Units Utilizing different HPD Fit Test Methods

- E&P: Quantitative using 3M E.A.Rfit™
- Transportation: Qualitative using Howard Light Veripro™

Quantitative HPD Fit Testing

E&P - Alaska



May 17th, 2011

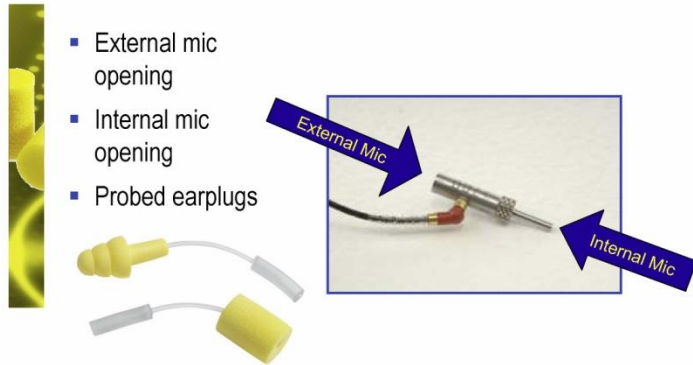
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Quantitative HPD Fit Testing (cont.)

3M E-A-Rfit™

Dual-Element Microphone

- External mic opening
- Internal mic opening
- Probed earplugs



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E-A-Rfit

E-A-R™ Products for Use with E-A-Rfit™ Validation

- Classic™, Classic™ Small, & Classic™ Plus
- E-A-Rsoft™ Yellow Neons™
- E-A-Rsoft™ FX™
- TaperFit™ 2
- E-Zfit™
- Push-Ins™
- UltraFit™
- Express™ Pod Plugs
- E-A-Rcustom™

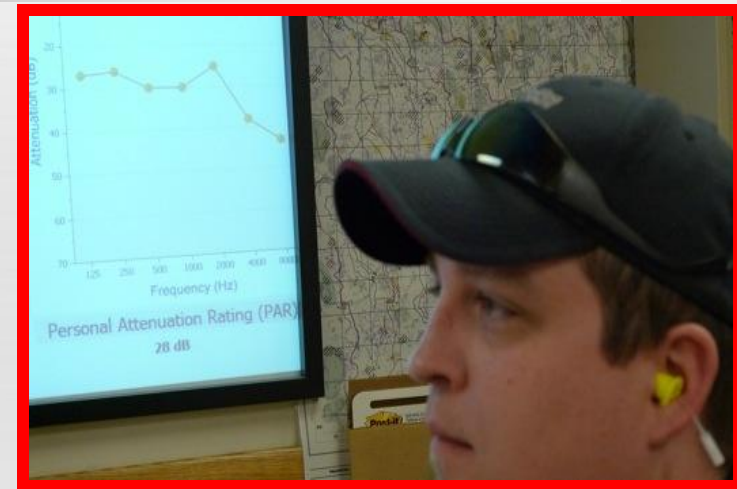


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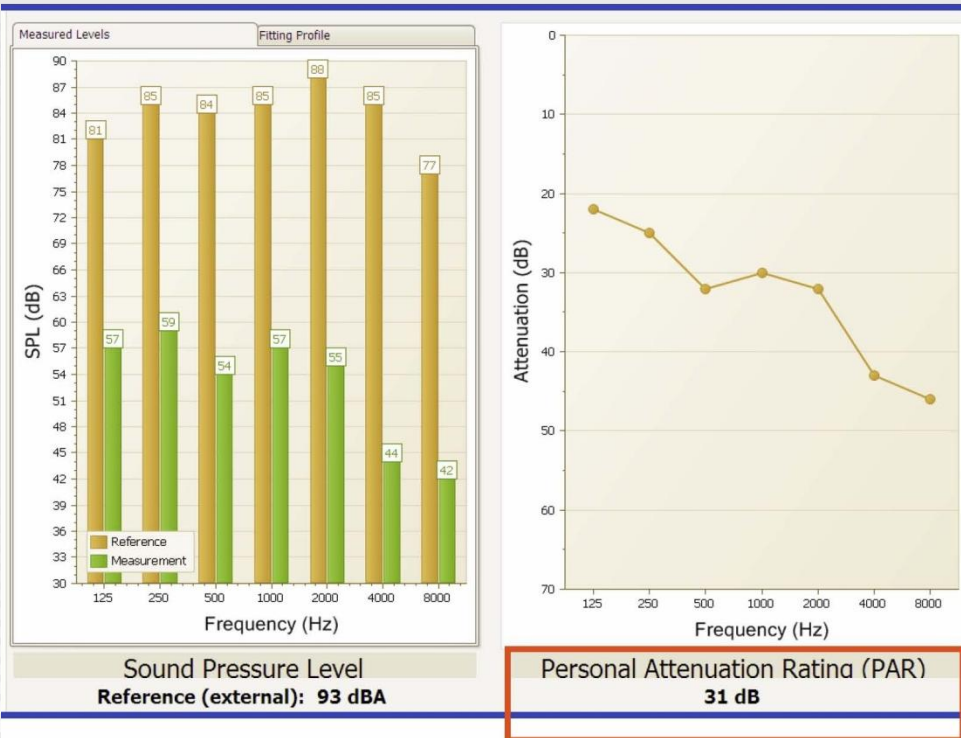
E-A-Rfit

Quantitative HPD Fit Testing (cont.)

- Probe & Reference Microphones
- Software and noise source speaker
- Adaptation of Hearing Aid testing technology
- Simultaneously tests range of frequencies in 8 seconds
- No subjective HPD wearer response used.



Quantitative HPD Fit Testing (cont.)



- Worker Shown Their Personal Attenuation Report
- Excellent Communication Tool
- Personal Attenuation Does Not Supersede NRR of HPD

Quantitative HPD Fit Testing (cont.)

Job Class	3M HPD	Binaural dBA	Published NRR
Operator	FX ®	13	33
Operator	UltraFit®	6	25
Operator	Classic®	24	29
Operator	FX ®	10	33
Operator	Push-Ins ®	14	28
Sfty Spec	FX ®	8	33
Sfty Spec	Taper Fit ®	12	32
Sfty Spec	Classic® (Sm)	13	29
Sfty Spec	EZ Fit ®	23	28

Qualitative HPD Fit Testing

- **Transportation: Pipelines & Terminals**
 - Howard Leight - VeriPRO™



Qualitative HPD Fit Testing (cont.)

Howard Leight - VeriPRO™

- Consists of Software and Headset
- Quick Check at 500 Hz For Screening
- Complete Check over 5 Frequencies for a Personal Attenuation Rate (PAR) – Approximately 10 minutes
- Device Not Limited to a Single HPD Manufacturer

Can be performed with some ear plugs using standard audiometer equipment

- Flat speaker muffs interfere with many HPDs
- Can not test Ear Muffs



Qualitative HPD Fit Testing (cont.)

- Individual HPD Fit Report
- Reviewed with Worker Immediately After Test
- Very Effective Communication and Training Tool

Hearing Protector Individual Report



User: Clovis Gorman
 Test Date: December 08, 2009
 Department:
 ID #: 133925
 Exposure: 100 dBA
 Earplug: Max®



Quick Check Result

The amount of protection provided by the earplug.

Left Ear
24 dBA

Right Ear
32 dBA

Published Attenuation
33 dB

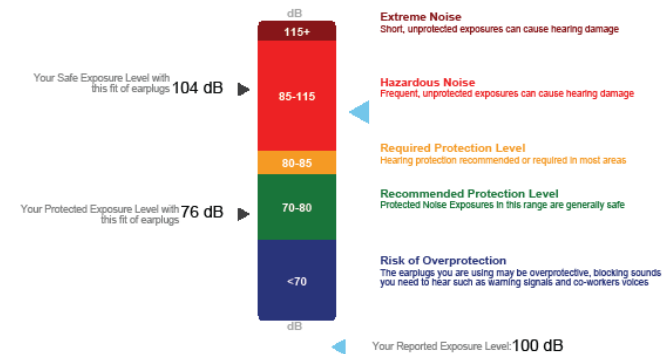
Safe Exposure Level

The highest level of noise to which a worker can be safely exposed with this earplug fit.*

Protected Exposure Level

The estimated noise level reaching this worker's eardrum with this earplug fit.†

76 dB



* Calculated from the protection level of the least protected ear.
 † Calculated by subtracting the latest PAR from the exposure level in the employee's profile.



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Signature

Date

Qualitative HPD Fit Testing (cont.)

Results

- 50-60%: Obtained NRR without Intervention
- 30%: Required Refresher Training to Obtain NRR
- 10-15%: Changed brand/model to Obtain NRR

Questions?

