

REMOTE EARPLUG FABRICATION

A WEB BASED MANUFACTURE TECHNIQUE

Project funding provided by TATRC through the AMEDD Advanced Medical Technology Initiative

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The background of the slide is a blue-tinted photograph of a vast, calm ocean extending to a distant horizon. The sky is filled with soft, wispy white clouds. The overall mood is serene and expansive.

Hearing loss continues as one of the most common injuries
in the Department of Defense.

- In actual use, the NRR (noise reduction rating) is less than advertised.
- Fit, availability of size, correct instructions are reasons for reduced attenuation. One size does not fit all.
- The only method for insuring maximum comfort and attenuation is a custom earplug

- The current custom process is impractical:
 - Processing time
 - Shipping
 - Costs

- For the past four years Tripler Regional Medical Center has been using a computer aided design method for digitizing a custom earplug.

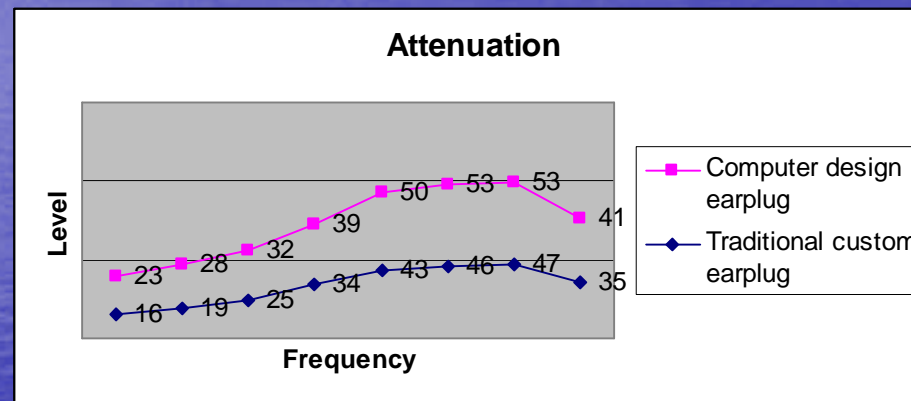
- The CAD custom plug utilizes a process currently used in hearing aid technology.
- Each impression is scanned and a custom plug is “printed” from this digital image.

- The advantages aside from cost:
 - Stocking of earplugs
 - Maximum attenuation
 - Custom design can be anything: improvement to combat earplug, a communication earplug, adapt to new technology.

- Once scanned, an ear impression is stored and can provide a custom ear piece (communication or protection).
- The real question is does the CAD earplug provide the same attenuation as the traditionally produced custom earplug.

- To answer this question: 20 soldiers were picked at random (clinic presentation)
- An impression was made of both ears
- Two sets of earplugs were manufactured from the same earmold impression
- Attenuation measures were taken in sound field using each type earplug

Attenuation comparison from same impression



- Implications:
- CAD designed earplugs provide a more uniform surface which results in improved attenuation
- A computer design can be anything, anywhere, anytime.