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R.I.D. THIS WEEK

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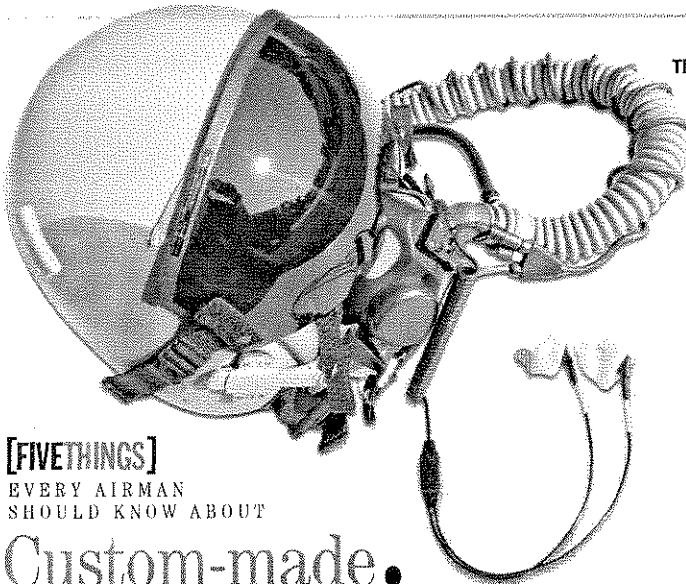
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[FIVETHINGS]
EVERY AIRMAN
SHOULD KNOW ABOUT

Custom-made earpieces

Sometimes, those foam earplugs just won't do.

The noise levels can reach 130 decibels inside military aircraft and even 145 decibels on the flight line, levels loud enough to permanently damage your inner ear over time. To reduce the risk of hearing loss, the Air Force Research Laboratory's 711th Human Performance Wing has created custom-made earpieces.

The Air Force developed the Attenuating Custom Communications Earpiece System with Westone Laboratories, manufacturer of earplugs and earpieces.

The U.S. Patent and Trademark Office has awarded the Air Force a patent for the earpiece system, the service announced last month.

Here's what you need to know about the custom-fitted ear protection:

1 Noticing a problem. Research and development began in 2000, after F-22 air and ground crews complained about trouble communicating inside and outside of the aircraft.

"This issue was not unique to the F-22," John Hall, technologist and test director with the 711th Human Performance Wing, said in an e-mail. "It has been a consistent issue for most military aircraft environments for decades, but the F-22 was the first program to go on record and document the deficiency."

2 Fitting the military. The concept of a custom-poured earpiece has been around for a while in music and motorsports, Hall said.

But military environments are louder, making it challenging to fit an earpiece comfortably but still deep enough to seal out the more extreme decibels. Researchers also

The U.S. Patent and Trademark Office has awarded a patent to the Air Force for its Attenuating Custom Communications Earpiece System. The system uses custom-molded earpieces to protect the wearer's hearing.

AIR FORCE

had to find a way to accommodate the rise and drop in cabin pressure when altitude changes rapidly.

3 How it works. The custom earpiece has a vent that automatically adjusts to cabin pressure changes. Hall said in an e-mail that the earpiece reduces outside noise while delivering clear radio communication signals through a small cell phone-type speaker.

"The result is the crew receives less noise to the ear and can understand the radio signals at lower volume settings," Hall said.

The earpiece system is also available for ground crews. That version doesn't have the pressure relief vent since ground crews don't experience dramatic altitude changes; it also uses a different type of communication cables.

4 Getting you fitted. To capture impressions of the ear, a medical person supporting the unit must be trained.

The cost of each unit varies depending on application, but Hall estimates one would cost several hundred dollars. Hall said since the training and the gear is on the General Services Administration's list of approved products, units have used operations and maintenance funding to pay for them.

5 Who's using it. Nearly 5,000 of the earpiece systems have been sold since 2005. It's approved by Air Combat Command aboard all fighters and bombers, and testing is underway for use aboard airlift and rotary-wing aircraft.

—Jill Laster

[BYTHE NUMB]

A look inside this issue

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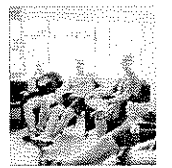
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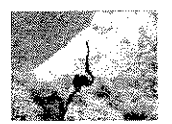


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[ROLLCALL]

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[MULTIMEDIA]



[NEWSMAKER]

