



Interagency Aviation Accident Prevention Bulletin



No. IA APB 13-02

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Subject: Authorized Flight Helmet Parts
Area of Concern: Aircrew Safety – Personal Protective Equipment (PPE)
Distribution: All Aviation Users

Discussion: Some flight helmets may contain outdated components that don't afford the same level of protection as updated components. Additionally, some manufactures are misrepresenting their products by stating that they meet military specifications (milspec) or that they're "exactly the same" as mil-spec helmets and related components. **Wearing helmets that don't meet the agency requirements is not only against DOI and USFS policy, it's downright dangerous!**



In the 1980s, the Army conducted significant research into the injuries received in helicopter accidents. Their research showed that 30% of the most severe impacts were on the sides of the helmet which often resulted in basilar skull fractures. Lack of energy-absorbing earcups was listed as a major cause of injuries in 39 of 105 helicopter accidents studied. Flexible earcups crush upon impact and absorb energy in the same way a crumple zone functions on an automobile. The study concluded that energy-absorbing earcups offered significantly increased impact protection over the standard rigid earcup design and recommended that they be incorporated into all U.S. Army flight helmets. As a result, helicopter helmet specifications were later changed to the flexible earcup design however, some helmets and components that met the original (outdated) milspec criteria may still be in use.

The DOI Aviation Life Support Equipment (ALSE) Handbook and the Interagency Helicopter Operations Guide (IHOG) used by the USFS contain similar requirements in that **flight helmets must meet a U.S. military or ANSI standards. Flight helmets currently known to meet these requirements include: SPH-5, HGU-84P, SPH-4B, HGU-56P, Alpha 200, Alpha 400, Alpha Eagle (900), MSA Gallet LH050, LH150 and the LH250.** Helmets designed specifically for use in airplanes, such as HGU-33P, HGU-34P, and HGU-55P do not provide adequate protection for helicopter occupants and are not approved for helicopter use."

Although the ALSE Handbook and the IHOG authorize the SHP-4B helmet, the original version containing the Gentex SPH-4B earcups does not meet current agency standards due to their rigidity. The preferred equipment for the SPH-4B is the Thermal Plastic Lining (TPL) conversion kit which contains flexible earcups, improved retention system, and thicker energy absorbing liner. Even better... it's also more comfortable!

So, how can you tell if you have the preferred flexible earcups? Read on and find out!



Preferred Earcups (outer shell)



SPH-4B Only Earcups (outer shell)

1. If the eight retention fitting tabs on the earcup are glued to the earcup, then it's not the preferred earcup. The preferred earcup shells are injection molded as one part.

2. Hold the earcup with both hands so your thumbs are on the back and press down. If it barely flexes, then it's not the preferred earcup. The preferred earcups are quite flexible.

3. Hold the earcup with both hands so your thumbs are on the inner lip that goes over your ear and press down. If the lip barely flexes and feels rigid, it's not the preferred earcup. The inner lip on the preferred earcups are fairly flexible.



Preferred Earcup (outer shell)



SPH-4B Only Earcup (outer shell)



Preferred Earcup (Inner lip)



SPH-4B Only Earcup (Inner Lip)

4. Another difference between the two earcups is the location of the wire hole. The preferred earcup wirehole is drilled below the junction of the center and top tab on the outer shell vice the center of the middle tab on the outer shell for the obsolete earcup.

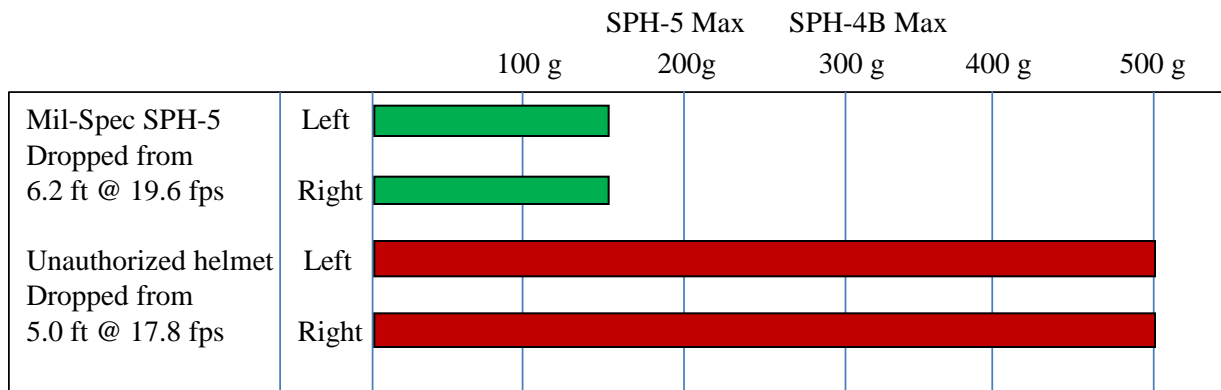


Mil-Spec Earcups (outer shell)



Obsolete Earcups (outer shell)

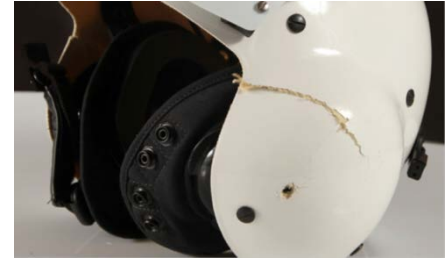
So what's the big deal about using outdated or noncompliant equipment? The chart below tells the story:



The unauthorized helmet allows a substantial amount of force to be transferred to the head whereas the agency standard compliant helmet reduces that force by two thirds.

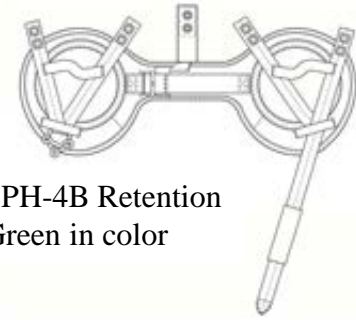


Damage to a non-approved helmet from a side impact force.

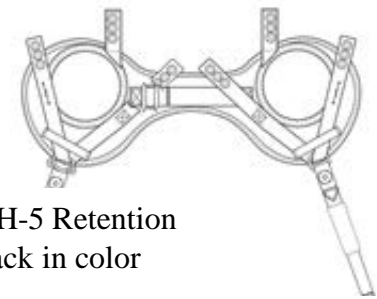


The retention system is also critical for reducing head impact forces by securing the helmet snugly to the wearer's head. Retention systems that don't meet the required mil-spec standards are prone to:

- Elongation (stretch) of the harness and chinstrap during an accident.
- Failure of the helmet attachment tabs that are sewn to the retention harness and where the chinstrap is attached to the retention harness.
- Unintended release of the pull-the-dot snaps on the chinstrap - **DOI or USFS helmets should not have pull-the-dot snaps. If it does, you should replace it immediately.**



SPH-4B Retention
Green in color



SPH-5 Retention
Black in color

Each helmet should be stored in a helmet bag when not in use and kept clean with mild soap and water only. Inspect and maintain the flight helmet in accordance with manufacturer's specifications.

Periodic/annual inspections by the manufacturer or a "properly trained" person and special inspections by a "technically qualified" person are required in accordance with the DOI Flight Helmet Users Helmet Guide: https://www.iat.gov/docs/ALSE_FHUG_2008.pdf BLM has factory trained technicians certified to work on Gentex helmets.

Here are some best practices in caring for the equipment that's there to protect you:

1. Inspect your entire helmet to determine if any parts require updating or repair. Replace unauthorized or obsolete parts with those that meet agency standards.
2. If you have a SPH-4B helmet, make sure the TPL conversion kit has been installed. If your SPH-4B helmet has the TPL layer assembly and impact liner but does not have the black retention system with crushable earcups, send it in for upgrade.
3. For assistance with helmet inspections, repairs and replacement parts, contact the manufacturer or Don Hubbartt, BLM Aircraft Attendant Training Leader, at 208-387-5529.

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