Interagency Aviation
Accident Prevention Bulletin

No. APB 13-02 April 15, 2013 Page 1 of 3

Subject: Authorized Helicopter Helmet Parts

Area of Concern: Aircrew Safety

Distribution: All Aviation Users

Discussion: Your flight helmet may not fully protect you in an accident. Companies are selling helmets and parts and often misrepresent their products by saying that they meet military specifications or that they are “exactly the same” as mil-spec helmets and parts. Wearing unauthorized helmets or using unauthorized parts is not only against DOI and USFS policy, it is 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 resulting 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, absorbing impact energy in the same way as a crumple zone 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. Helicopter helmet specifications were changed and required manufacturers to install flexible earcups.

The DOI Aviation Life Support Equipment (ALSE) Handbook and the Interagency Helicopter Operations Guide (IHOG), used by the USFS, agree that for Helicopter flight helmets, “Flight helmets conforming to a U.S. military standard or otherwise approved for use in helicopters by a branch of the U.S. Military … are approved for DOI use in helicopters. Flight helmets currently known to meet this requirement 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 authorizes the SHP-4B helmet, the initial mil-spec compliant OEM Gentex SPH-4B earcups are rigid and are still in service today. The preferred equipment for the SPH-4B is the Thermal Plastic Lining (TPL) conversion kit which includes flexible earcups, improved retention system and thicker energy absorbing liner. But wait, there’s more - it’s also more comfortable!

So, how can you tell if you have the flexible, or preferred earcups? Read on and you will find out!
Subject: Authorized Helicopter Helmet Parts

If the eight retention fitting tabs on the earcup are glued to it, it is not the preferred earcup and are only authorized in the original SPH-4B helmet. The preferred earcup shells are injection molded as one part.

Hold the earcup with both hands so your thumbs are on the back. Press down. If it barely flexes, it is not the preferred earcup. The preferred earcups are quite flexible.

Non-Gentex made earcups are molded after the older SHP-4B earcups. The difference is that the wire hole is drilled below the center of the middle tab on the outer shell vice below the junction of the center and top tab on the outer shell.

You’re probably asking yourself “So what’s the big deal about using knock-off helmets or parts?” Well, take a look at the chart below and you’ll see.

<table>
<thead>
<tr>
<th></th>
<th>100 g</th>
<th>200 g</th>
<th>300 g</th>
<th>400 g</th>
<th>500 g</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPH-5 Max</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SPH-4B Max</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Impact to a Head Form for Mil-Spec SPH-5 and unauthorized Helmet and Earcups

Now, we know that some of you have really hard heads, but not hard enough to withstand the impact G force associated with an unauthorized helmet.
Subject: Authorized Helicopter Helmet Parts

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

While we are on the subject, let’s talk about the retention used in unauthorized helmets. As you know, the helmet retention system is critical for head impact safety 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.
- Breaking of the points at which the helmet attachment tabs were sewn to the retention harness and where the chinstrap is attached to the retention harness.
- Early release of the pull-the-dot snaps used on the chinstrap (no DOI or USFS helmets should have pull-the-dot snaps. If you do, replace it immediately).

Periodic/annual inspections by a “properly trained” person, and special inspections by a “technically qualified” person are required in accordance with the helmet guide. BLM has factory trained technicians certified to work on Gentex helmets.

So, what do you need to do? Glad you asked:

1. Inspect your entire helmet to determine if any parts are unauthorized.
2. Have all unauthorized or obsolete parts replaced with those that meet ALSE standards.
3. During the one year inspection cycle, if you have a SPH-4B helmet, have the TPL conversion kit installed if not already done. 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.
4. For assistance with DOI and USFS helmet inspections, repairs and replacement parts, contact Don Hubbartt, BLM Aircraft Attendant Training Leader, at 208-387-5529.

/s/ Keith Raley
Chief, Aviation Safety and Program Evaluations

/s/ Gary Sterling
Acting Chief, Aviation Risk Management and Training Systems