



CENTER OF OUR STRENGTH

Program Executive Office Soldier



Head Protection

Advanced Planning Brief to Industry

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Agenda



- Head Protection Improvements
- Combat Helmet Evolution
- Advanced Combat Helmet (ACH)
- Enhanced Combat Helmet (ECH)
- Helmet Sensor Gen II
- Improved Helmet Suspension System
- Technology Needs
- Questions



Head Protection Improvements



ACH Fielding (initial)



Helmet weight Decrease from 3.5 lb to 3.0 lb (approx.)

Nov 2002

ACH Cover in universal print with IFF introduced



Jan 2005



Pad improvement impact level increase to 150g max at 10 fps

Dec 2006

NAPE Pad



Mar 2007



Helmet Sensor Gen I

Sep 2007

Oct 2011

Helmet Sensor GEN II



Improved Helmet Suspension system 150g max at 14.1fps(O)



Jan 2012

Apr 2012



ECH w/ increased protection against "select small arms threats"



Combat Helmet Evolution



M1 Steel helmet
1942 - 1980

Increased Frag protection
>25% weight loss



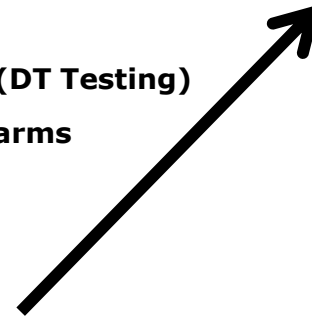
PASGT Helmet
1980 - 2002

>10% Fragmentation protection
>10% weight loss



ACH
2002- Present

>35% Fragmentation(DT Testing)
+select small arms
=weight



ECH
2010 - Future



Advanced Combat Helmet (ACH)



System Description:

- ACH: A modular helmet with suspension and neck protection pads provides improved fragmentation, ballistic, and impact protection while reducing weight, improving fit, and increasing comfort.
- NAPE Pad: Provides fragmentation protection to the nape area of the neck, and improves overall stability of ACH.
- Pad Suspension System: Modular, lightweight, flame retard, and moisture resistant series of pads that act as the suspension system between the wearer's head and the helmet.

Objective:

- To improve the Soldier's survivability on the battlefield

BOI:

- ACH: Based on guidance from VCSA will replace PASGT helmet as a one-for-one replacement system.

DLA TS Sustainment:

- DLA is in the process of awarding a follow on sustainment contract – Market Surveys have been sent to industry. The LW ACH is not going to be included at this time

Capabilities:

- ACH: 9mm protection and increased fragmentation protection; Low velocity impact protection; improves field of view, stability, hearing and interface with other individual equipment items
- NAPE Pad: fragmentation protection for the neck and increased stability
- Pad Suspension System: Blunt impact force protection level of 150g max at 10 fps
- Helmet Sensor: Measure helmet acceleration and pressure associated with concussive events



Enhanced Combat Helmet (ECH)



System Description:

- The ECH is a USMC led program in partnership with the Army to deliver improved ballistic protection against select small arms threats, fragmentation protection >35% over the ACH; Improved blunt impact protection; improved field of view, stability, hearing and interface with other individual equipment items
- The CURRENT ECH design uses advanced thermoplastic materials that require different manufacturing processes than those associated with thermosetting resin-impregnated para-aramid fiber composites. The base material is an Ultra High Molecular Weight Polyethylene (UHMWPE) fiber composite.

Capabilities:

- NAPE Pad: fragmentation protection for the neck and increased stability
- Pad Suspension System: Blunt impact force protection level of 150g max at 10 fps
- Helmet Sensor: Measure helmet acceleration and pressure associated with concussive events

Objective:

- To improve the Soldier's survivability on the battlefield

BOI:

- One per deploying/deployed Soldier based off an Army directed requirement for 200K helmets



Helmet Sensor Generation II



▪ **BAE HEADS HS**



▪ **Allen Vanguard SHAKR HS**

▪ **SYSTEM DESCRIPTION:** The GEN II HS is a small, lightweight, low power sensor assembly that mounts inside the crown of ACH or CVC Helmet to measure, record and store both linear and rotational accelerations; and over pressures when soldiers are exposed to high energy induced blasts impulse and impacts

▪ **ACTIONS:**

- Contract Award - 30 JUNE 2010
- FUE – 1Q12

▪ **OBJECTIVE:** GEN II Helmet Sensor technology deployed as unobtrusive data collection system that stores attack incidents to help determine if soldiers were exposed to concussive events, to support MRMC development of an objective exposure monitor/head injury screening tool

▪ **BOI:** DAMO-CIC Memo dated 7 OCT 08 - One sensor per Soldier (6 BCT)

▪ **NSNs:** TBD



Improved Helmet Suspension System



ACH /ECH Suspension System

- **SYSTEM DESCRIPTION:** Improved helmet retention and suspension system with increased blunt impact protection 150g max at 10fps(T) and 14.1fps (O) at all required temperature ranges, increased stability and Soldier comfort. Compatible with the ACH and ECH.

- **ACTIONS/ PATH FORWARD:**

- IPT formed and initial acquisition strategy – JAN 11
- RFI to industry – 15 APR 11
- Industry Day – 10 MAY 11
- RFP to industry – 3Q11
- Impact and Human Factors Testing – 3-4Q11
- Identify an improved Helmet Suspension – 1Q12

- **OBJECTIVE:** To provide improved blunt impact protection, stability, and comfort for Soldiers

- **BOI:** 1 per ACH/ECH through sustainment and deploying Soldiers



Technology Needs



- Improved Blunt Impact Performance
 - Reduce Threat and Mitigate Impact Related Head Injuries
 - Current pad meets blunt impact of $\leq 150g$'s at 10 fps
 - Increase performance from $\leq 150g$'s at 14.1 g's fps
 - Ultimate goal is \leq at 17.3 fps
 - Develop pad(s) to be compatible with ACH and ECH
 - Reduce concussive forces and mitigate mTBI injuries

- Facial Protection
 - Provide Facial Protection
 - Prevent maxillofacial injuries
 - Compatible with the ACH/ECH and CVC
 - Provide blunt and ballistic protection with an objective weight of $< 1Lb$

Technology Needs



- Screwless Retention System
 - Retention design that will attach to and be compatible with the ACH/ECH
 - Improves the ballistic performance consistency of the ACH
 - Eliminates the hardware from the ACH
 - Reduces the weight of ACH
 - Standardization of the ACH

- Appliqué Blunt impact protection



Questions?