Improving the bottom line for pilot comfort

Company devises new seat cushion

The development of the OH-58D Helicopter seat cushion was inspired by a large number of Army pilots suffering back pain caused by flying extensive hours. Extended missions required during Iraqi Freedom emphasized this problem.

This pain could have an adverse impact on operational readiness, crew effectiveness and flight safety during flight missions. Poor posture during flight has been a contributing factor in pilot lower back pain. Logistics Management Engineering Inc. has been contracted to develop a seat cushion that improves comfort and reduces incidence of lower back pain without adversely affecting airworthiness.

A survey of materials identified foams for the seat cushions which best satisfy lower back, thigh and lumbar support during extended missions. Laboratory testing of foams was conducted to better compare the final candidates and aided in determining optimal thickness and density to be used for the bottom cushion. A fit and function evaluation determined appropriate size range of adjustments required for each postural/comfort aid. Prototype cushions were designed, fabricated and used in dynamic crash tests and in Army conducted evaluations.

Courtesy photo

KIOWAS— The OH-58D Kiowa Warrior helicopter dates back to the Vietnam War and continues with extensive flying hours in the global war on terrorism. In November, the OH-58D Program Manager selected the LME seat cushion as the replacement seat cushion for all the OH-58D aircraft in the Army inventory.

The fatigue reducing proprietary "slow-flow" comfort foam conforms to body contours for uniform weight and pressure distribution. It withstands impact, repeated shocks, and constant vibration. The viscoelastic chemistry of the foam and its controlled cell structure result in impact energy absorption of approximately 90 percent. The lower back and thigh support bladders are constructed of urethane-coated nylon cloth used in life preserver bladders. The degree of inflation is controlled by the aircrew member by use of separate hand pumps to personalize the firmness and support of the seat cushions. Optional cushion covers are made of sheepskin/wool and all waterproof materials for use in a high exposure environment.

The LME seat cushion meets crewmember needs by providing: inflatable lower back support (lumbar pad) enhances flight posture; lower back support can be personalized by adjusting inflation level and up or down on seat back; dryness and breathability are achieved by sheepskin covers; contoured seat bottom sides give improved lateral support; multi-layered seat bottom foam construction provides vibration dampening; internal, inflatable thigh support bolsters legs and improves flight posture.

The LME OH-58D seat cushion has been environmentally tested in accordance with Military Standard 810F. Testing included altitude, high temperature, low temperature, temperature shock, solar radiation, blowing rain, humidity, fungus, salt fog, blowing dust, and blowing sand. In November, the OH-58D Program Manager selected the LME seat cushion as the replacement seat cushion for all the OH-58D aircraft in the Army inventory. *(Aviation Engineering Directorate/Camber Corp. release)*