

Navy's Aging Aircraft

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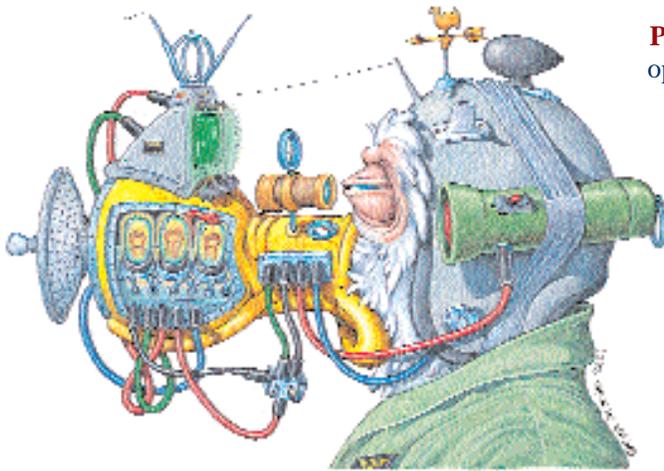
A Stitch in Time. Because the problems associated with aging aircraft plague all military and civilian aviation communities, the Joint Council on Aging Aircraft has been created to more effectively deal with areas of mutual concern. The council consists of technical experts from the Navy, Air Force, Army, Coast Guard, Federal Aviation Administration and Defense Logistics Agency. This expertise has been stitched together into a grassroots coalition focused on dealing with formidable but under-appreciated concerns.



AAIPT Mascot. The average age of the Navy's aircraft fleet is over 17 years and growing. In spite of the physical condition, we still expect these aircraft to continue to perform their operational functions. The Naval Air Systems Command's (NAVAIR) Aging Aircraft Integrated Product Team (AAIPT) "mascot" incorporates the five key types of issues facing the U.S. military's steadily aging fleet of airborne warriors: degraded and abused wiring; outdated or unserviceable avionics; pneumatic and hydraulic dynamic components (such as valves and pistons); power plants and propulsion systems; and materials corrosion and degradation.



Chiropractics. Dynamic components include hydraulic and pneumatic aircraft elements that translate force into motion. Continuous cycling under extreme loading conditions takes a significant toll on these elements over an aircraft's lifetime and many are reaching their rework limit. Specific problems include arthritis of wing fold, blade fold and control surface actuation mechanisms; canopy hazing; landing gear strut cracks and leaks; leaking seals for hydraulics and fuel tanks; popped and worn out fasteners; environmental control system inadequacy; and heat-dirt-contamination effects.



Paleotronics. Aging aircraft are performing their operational missions with dated electronic systems that are often several generations behind the state of the art. The obvious problems are inferior performance (such as sensor capabilities, display resolution and computing power) and difficulty in replacing or repairing damaged electronic elements. More subtle, but equally significant, are problems associated with systems interoperability between different platforms and different generations of electronics. Paleotronics are also incapable of transforming overwhelming amounts of raw data from today's combat environment into usable situational awareness for aircrew.

Expiring Wiring. There are two fundamental wiring concerns for aging aircraft: insulation degradation due to old age and chemical attack, and insulation damage due to physical actions, such as abrasion, cuts, pinches and other maintenance wear and tear. In addition to the wiring itself, the AAIPT is attempting to mitigate the potential effects of wiring damage by detecting and isolating electrical short circuits and limiting the effects of short circuits on system operation.



What's eating you? Corrosion is insidious and ever present. It acts on all physical elements of an aircraft. Corrosive action comes from many potential sources: exhaust gases, hydraulics, fuels, cleaning fluids, solvents and salt atmosphere. Specific problems include internal corrosion, especially in hard-to-access areas; dissolved honeycomb in structural panels; delamination of composite structures; moisture entrapment; and band-aid and spray-paint fixes resulting from inadequate resources or training.

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