

Debbie Brooks-Harris, Chika Nzelibe, Nick Merrill

Edgewood Chemical Biological Center, Aberdeen Proving Ground, MD

Background

The current packaging configuration of the Joint Service Aircrew Filter Pack (JAFF) consists of a commercially available foil bag housed inside a commercial grade cardboard container. This composition does not satisfy military preservation requirements as required by the Department of Defense Standard Practice for Military Packaging (MIL-STD-2073-1) for entry into the military distribution system; nor will it withstand long term storage shelf life requirements. An improved packaging design will increase the probability that the JAFF canisters will remain fully operational after military storage and field exposures. Prototype enclosures were evaluated as defined by the Department of Defense Test Method Standard for Environmental Engineering Considerations and Laboratory Tests (MIL-STD-810).



Scope

The current C2A1 canister packaging components were selected as an appropriate baseline for this effort and was tailored based on the unique physical shape of the JAFF, accounting for manufacturing variations to the filter dimensions. The Edgewood Chemical Biological Center (ECBC) developed a concept prototype to accommodate the JAFF canister using additive manufacturing technology. The design was tailored to minimize size and weight of the packaging components before production representative prototype parts and tooling were developed. ECBC developed and delivered 3D drawings and models for each part and assembly, defining to product to the extent necessary for a manufacturer to duplicate the physical interface and functional characteristics of the product. The manufacturer completed the packaging tasks for the filters, sealing the enclosures and packing the boxes. The packaged enclosures were shipped to ECBC for MIL-STD-810 Testing. Successful performance of the prototypes to testing will result in Drawings and Special Packaging Instructions for the packaged configuration released as part of the technical data package.

Results

The results of this redesign include a packaging assembly that will enable the JAFF canister to be shipped, stored and remain fully operational upon removal from its packaging. Two hundred forty production representative enclosure assemblies were packed, sealed, and overpacked in fiberboard boxes by a manufacturer and are expected to pass the MIL-STD-810 testing. Historically the C2A1 canister has proven to be a reliable packaging configuration, so the rationale to fashion the JAFF after that design was a sound choice for this style filter. Limited future component runs are anticipated for follow on packing by the manufacturer for shipment to the field.

