

NEW DEVELOPMENTS

The Airborne Multi-Sensor Pod System

By
David Reade

The world is a very different place than it was five years ago. The Cold War is over and new priorities now loom to the forefront, with new emphasis placed on arms control and non-proliferation, as well as environmental monitoring and disaster control. To meet these ever-growing tasks, The Department of Energy (DOE) sponsors Research, Development, Test and Evaluation (RDT&E) of new technology sensors that will potentially aid in monitoring these vital interests. One such DOE RDT&E program currently involves the use of a Lockheed RP-3A Orion as a test-bed research aircraft in proof-of-concept sensor development. The Airborne Multi-Sensor Pod System (AMPS) program, under DOE sponsorship with National Laboratories, is developing a series of pods with state-of-the-art electronics for supporting multi-sensor, data-collection research to facilitate possible utilization of this technology in treaty-verification and environmental monitoring applications.

Under the program, DOE National Labs are tasked to design and develop sensor pods to test multi-sensor data research concepts. There are currently three different pods being designed for AMPS that are based on US-3A Viking Carrier Onboard Delivery cargo pods modified as electronic sensor instrument bays. Each pod, 200 inches long x 42 inches in diameter, has a 90-inch wide door well suited



Naval Air Warfare Center Weapons Division (NAWCWPNS), Test and Evaluation Support Aircraft Division (P355) RP3A aircraft Buno 150524, Bloodhound 35 (BH35) with POD 1, the Synthetic Aperture Radar (SAR) POD loaded on Station 15, and POD 2, the Multispectral Imaging (MSI) POD, loaded on Station 12.
(INFOTEC)

for providing access to installed sensors.

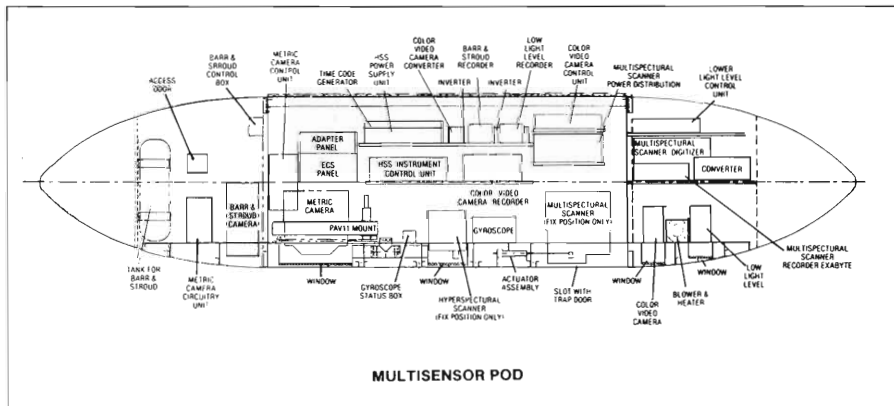
POD 1, developed by the Sandia National Lab, contains a digital-imaging Synthetic Aperture Radar (SAR) positioned in a side-looking configuration for all weather, day and night radar imagery. Pod 1 data integrated by Data Fusion will complement and enhance the optical sensors data in POD 2.

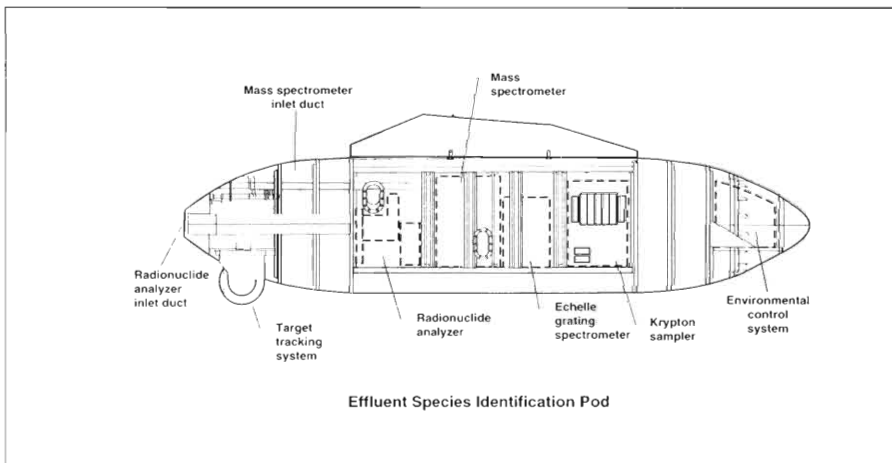
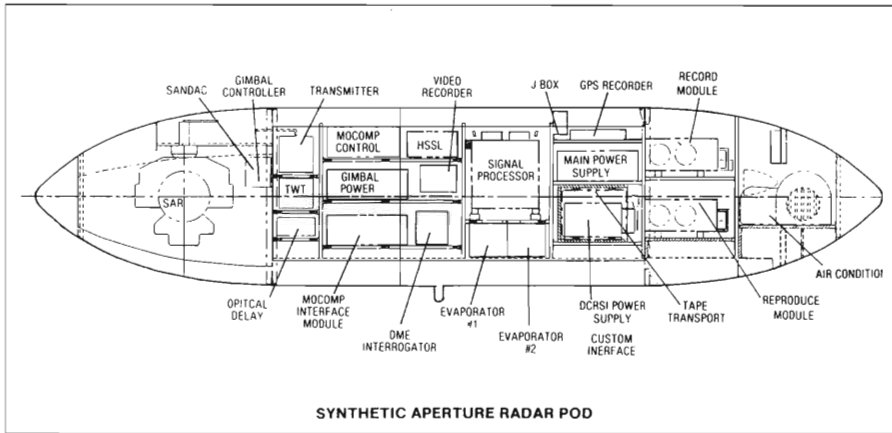
POD 2, designed by EG&G Remote-Sensing Lab, is a multi-sensor pod housing six different off-the-shelf optical and thermal-imaging sensors. These range

from high-resolution mapping cameras and video units to three multi-spectral infrared sensors. The units are placed in a downward-looking vertical position within the pod. On their own, each sensor cannot generate the degree of information that can be derived from combining data from all the sensors. This combined sensor technology is at the heart of AMPS research to verify the accuracy of the synergism concept.

POD 3 is a proposed Effluent Species Identification pod, to be equipped with several airborne-air-particle scanners. These systems can detect airborne radioactive particles escaping from nuclear facilities associated with nuclear weapons production and proliferation, as well as chemical pollutants and warfare agents leaking from manufacturing plants or storage facilities. Lawrence Livermore National Lab, in collaboration with Savannah River Technology Center and Pacific Northwest Lab, have been selected for development of this portion of the program.

DOE has selected Infotec Development Inc. (INFOTEC) of Camarillo,





California as the program coordinator. INFOTEC provides project-development support to the National Labs, and liaison with the US Navy. The company directs

all flight operations for the program, and coordinated arrangements with the Naval Air Warfare Center-Weapons Division, Point Mugu California for utilizing

one of their range control RP-3A Orions as the AMPS test bed aircraft. (DOE had investigated purchasing a used Navy Orion to conduct RDT&E projects several years ago, but settled on the less costly agreement to utilize one of the NAWC-WD Point Mugu Orions on an "as needed" basis).

The NAWC-WD Orion was modified by the Naval Aviation Depot, Alameda to provide power, control and data-signal support for the AMPS pods. The mod includes a twin-sensor, operator workstation in the back of the aircraft from which to operate the SAR pod, and controls to activate the other pods. Sensor data is collected and stored by digital tape and film/video units installed on the aircraft for later analysis.

Although the Orion is only the testbed aircraft for the AMPS program and is not scheduled to be an operational platform for the pods, which were originally conceived for use with various aircraft, it is possible that P-3 Orion operators could utilize the AMPS sensor pods, custom-tailored for their own specific sensor needs.

The AMPS concept lends itself to future applications, exploiting advance technologies to develop low cost derivative sensor pods with capabilities for law enforcement, search and rescue, border and counter-drug surveillance, environmental and ocean-fisheries patrols. Military applications may include electronic warfare, non-acoustic ASW and weapons test monitoring.



A GENTLEMAN'S WAR

At 1500 hours on 10 March 1944, Sunderland E591 of 422 Sqn RCAF operating out of Loch Erne, Northern Ireland sighted U-625 on the surface several hundred miles west of the southern tip of Ireland. On his attack run, Flight Lieutenant S.W. Butler encountered flak but successfully straddled the sub with six depth charges. The sub submerged then resurfaced three minutes later, moving at slow speed and turning to the right.

The Sunderland crew circled for nearly one and a half hours, when the U-boat crew signalled visually to the aircraft - "Fine Bombish!" before abandoning the boat.

Source: Search Find and Kill, Norman L.R. Franks