

MATCALs --Controlling the Skies (Written in 1993, author unknown)

In the wake of Operation Desert Storm two years ago, commercial air traffic over Kuwait was at a standstill until U.S. Marines --and a unique mobile air traffic control (ATC) system --came to the rescue. The Marine Air Traffic Control and Landing Systems (MATCALs) returned normal air service to Kuwaiti skies after electrical power problems and war damaged control equipment shut down commercial air traffic. More recently, MATCALs was deployed to Africa as part of the Joint Task Force's humanitarian relief effort Operation Restore Hope in Somalia. More specifically, MATCALs was utilized at the International Airport at Mogadishu as its sole air traffic control system from mid- December 1992 through April 1993 when ATC responsibility transitioned to the United Nations.

MATCALs --a rugged, transportable, completely self-sufficient, shelter-housed system -- provides the Air Traffic Control capability required to support aircraft from a Marine Corps Air Wing in performing its mission. The system enables a Marine ATC Squadron to control the air space within a 60 mile radius of an airfield, as well as coordinate air operations with adjacent air traffic centers.

MATCALs can be dispatched by any combination of air, sea or ground transportation anywhere in the world and can be operational within two hours. The all-weather MATCALs consists of three primary subsystems: an Air Traffic Control Subsystem, which performs the surveillance radar function, including identification of friend or foe; an All-Weather Landing Subsystem, which provides precision guidance for final approach and coupled fully-automatic landings; and a Control and Communications Subsystem (CCS) which integrates all sensor and communications input data. Sensor data, together with area map information, is correlated and displayed on multi-mode touch- screen displays for use by up to 8 air traffic controllers.

The CCS is the operational center for MATCALs. The control of the aircraft is effected by digital and voice communications to the aircraft. Sperry's Electronic Systems developed the CCS hardware suite, as well as the AN/UYK-44 based multi-mode displays. The same multi-mode display, tracking processor, and communications component of the new AN/TPS-73 Air Traffic Control Subsystem were developed by Electronic Systems in support of Systems Development. The CCS software was developed by Electronic Systems and Systems Services. Enhancements to the software continue at the Sperry site on Mare Island in Vallejo, California.

MATCALs, delivered to the fleet in 1986, had yet to be tested in actual battle conditions before the Gulf War. Its outstanding performance has ensured it will play a prominent role in future actions where restoring and maintaining air traffic flow is critical. The high-capacity systems were deployed by U. S. Marine forces in support of Operation Desert Storm, handling the huge number of incoming supply and troop shipments on flights arriving during the early activities. Several systems were located at bases to establish air traffic control of fixed- and rotary-wing aircraft. In the final stage of Operation Desert Storm, one system was installed at the Kuwait Airport, where it remained until normal air traffic control operations were restored.

In addition to its deployment in Operation Desert Storm, the versatility of MATCALs has been demonstrated in a number of areas: detecting air space violations near the presidential retreat in Kennebunkport, Maine, helping to restore air operations after Hurricane Hugo and providing humanitarian relief in Somalia.

The deployment at Mogadishu International Airport in Somalia was the first mission-essential deployment of the new ANrrpS-73 radar and accompanying CCS software for providing a data link interface with other systems. The site survey, system installation, initialization and FM flight check certification were all completed within three days of the arrival of the Marine Corps squadron. An average of 250 arriving/departing aircraft per day was controlled using MATCALs, which provided a 99.2 percent availability rate. Because of its performance, the MATCALs deployment was extended through April 1993. The United Nations then assumed Mogadishu airport operations from the Marine Corps.

The development of MATCALs, from initial studies in 1973 to the field-proven system of today, has been driven by the growing demands of ATC and military technology. Its application for military and commercial air traffic control --in both Kuwait and Somalia --is proof that the system goes beyond military use with a flexibility that can be applied in nearly any civil or military emergency situation. MATCALs is proven as a mobile air traffic control center in both civilian and military environments.

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