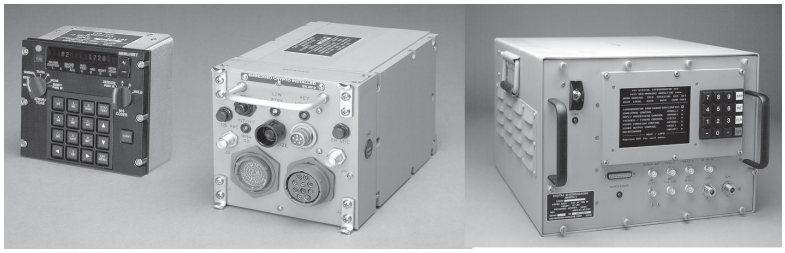
Mark XIIA Identification Friend or Foe (IFF)

SUMMARY

- The Army, Navy, and Air Force have each initiated independent acquisition programs to develop and field Mark XIIA Identification Friend or Foe (IFF) transponders and interrogators.
- DOT&E's initial focus is to develop test plans that are adequate and address issues of joint interoperability, stressing overload situations, and electromagnetic compatibility.
- Ensuring all systems developed by the Services interoperate properly is the most critical aspect of Mark XIIA Mode 5 testing, requiring extensive coordination between the Service operational test agencies. A capstone Test and Evaluation Master Plan for Mark XIIA IFF is the best way to ensure that the necessary Joint testing occurs.
- An FY05 Navy Operational Assessment is the first operational test.



The IFF system is a cooperative question (interrogation) and answer (provided by a transponder) identification system.

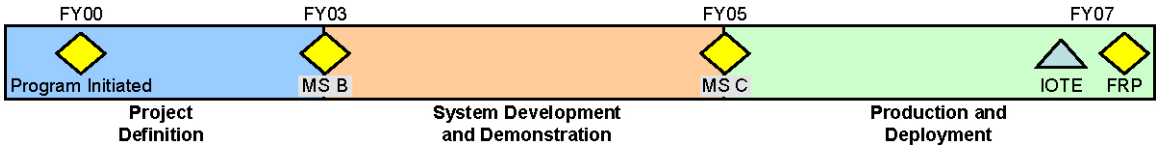
SYSTEM DESCRIPTION AND MISSION

The Mark XIIA IFF system will provide legacy IFF mode capability, as well as the new waveform referred to as Mode 5. The IFF system is a cooperative question (interrogation) and answer (provided by a transponder) identification system. It shares Mode 3 use and radio frequencies with civil air traffic. Mode 5 is a military-only combat identification mode, which will provide modern encryption to ensure the security of interrogations and replies. Mode 5 provides added security and more data transmissions than Mode 4. Additionally, Mode 5 will use a spread spectrum waveform, which should reduce interference with civilian IFF. A new Mode 5 message format with a lethal interrogation mode will help to eliminate fratricide.

The Air Traffic Control Radar Beacon IFF Mark XII System program office is responsible for ensuring all IFF equipment procured by the Services meet specifications. It is not a Joint Program Office, and does not coordinate or manage the Services' various Mode 5 acquisition programs. The Air Traffic Control Radar Beacon IFF Mark XII System program office also certifies Mode 5 systems, and manages and allocates the Mode 5 addresses assigned for military use.
The Army, Navy, and Air Force have each initiated acquisition programs to develop and field Mark XIIA IFF transponders and interrogators. Because the National Security Agency has decertified Mode 4, eventually all military systems using IFF Mode 4 equipment will be required to upgrade to Mode 5-capable equipment. The Navy plans to install Mark XIIA Mode 5-capable systems on all Mode 4-capable surface and air platforms — currently more than 3,000 platforms. The Navy is currently developing airborne and shipboard transponders and a shipboard interrogator. The Navy has deferred, due to funding availability, development and integration of an airborne interrogator for the E-2C and fighter aircraft.

The Army awarded a contract to Raytheon Corporation to develop a Mark XIIA Mode 5 interrogator for all ground-to-air capable host platforms — potentially more than 2,000 systems including all air traffic control, air, and missile defense systems. The Army is planning integration of a Mark XIIA transponder developed by the Navy for Army helicopters.

TEST AND EVALUATION ACTIVITY



DOT&E placed all IFF Mark XIIA acquisition programs on oversight in FY04. Before placed on oversight, the Navy approved the Test and Evaluation Master Plan. The Navy established a Test and Evaluation Working Group Integrated Test Team, and DOT&E is supporting planning of developmental testing/operational testing of prototype Mark XIIA systems. Tests will commence during late FY04 and FY05. The Air Force will participate in the tests with an E-3 Airborne Warning and Control System configured with a prototype Mark XIIA airborne interrogator as a risk reduction effort. The testing will evaluate jamming as well as interrogation and response formats. The Navy is also conducting Mark XIIA interoperability testing with the Italian Air Force during FY05. The Navy will conduct an operational assessment of the Navy Mark XIIA airborne transponders and ship-based interrogators during the second and third quarters of FY05. This operational assessment will support a decision for low-rate initial production of the transponders and ship-based interrogators.

TEST AND EVALUATION ASSESSMENT

The Mark XIIA program requires development and early involvement by the operational tester and DOT&E. The Navy Mark XIIA developmental test will use non-operational host systems (e.g., laboratory and Learjet). However, an adequate operational assessment must include integration of equipment in a combat system.