NORTHROP GRUMMAN

# AN/UPX-39(V)2 Redundant MSSR Interrogator

*The AN/UPX-39(V)2 MSSR Interrogator provides ATCRBS, Mode 4 and Mode S Level 2 aircraft data to the USAF and FAA control centers*

The AN/UPX-39(V)2 Monopulse Secondary Surveillance Radar (MSSR) system is being delivered to replace the aging Identification Friend or Foe (IFF) interrogators in the U.S. Air Force SEEK IGLOO/North Warning AN/FPS-117 radars that support the Air Force Atmospheric Early Warning System. These long-range surveillance radar systems are located at 33 sites across the northern perimeters of Canada, Alaska, and Iceland, and they are in Hawaii, and Puerto Rico. These systems are dual-use sites that provide ATCRBS, Mode 4 and Mode S Level 2 aircraft data to the Air Force and Federal Aviation Administration (FAA) control centers.

The Air Force's Atmospheric Early Warning System provides military aircraft identification and commercial air traffic surveillance for up to 256 nautical miles. The AN/UPX-39(V)2 replaces thirty-year-old analog equipment with modern, digital Commercial Off-The-Shelf (COTS) equipment. The AN/UPX-39(V)2 Interrogator meets current STANAG 4193 and ICAO Annex 10 standards of air traffic control system requirements. It also adds remote control, Beacon Performance Monitor, and fault isolation capability. The reliability, maintainability and supportability of the AN/UPX-39(V)2 significantly lower maintenance costs for the Air Force.

## Fully Redundant MSSR System

- Consists of two MSSR interrogators, each with a UPS, a network switch and a Mode 4 computer interface and mount
- All standard military/civil operating modes supported
- Mode S Level 2
- Mode 4 Target Evaluation
- Amplitude Monopulse reply processing
- Adjustable transmit power
- Beacon Performance Monitoring and Measurement Reporting
- Reflection Target Suppression
- Seamless automatic switchover
- Automatic System Calibration with PARROT
- Software-Programmable COTS architecture
- Asterix Data Category 34/48 interface
- Growth to Mode S Level 4 and Mode 5
- All in a four foot high 19 inch rack

NORTHROP GRUMMAN

# AN/UPX-39(V)2 Redundant MSSR Interrogator

Northrop Grumman's AN/UPX-39(V)2 MSSR Air Traffic Control (ATC) System provides civil and military air traffic controllers with the latest in ATC system performance including:

- Modes 1, 2, 3/A, B, C, D, 4
- User selectable four-mode Interlace and Supermode sequence
- Mode S Level 2 including Ground Initiated Comm B
- Monopulse Reply Processing for 0.087 degree RMS azimuth accuracy (with PARROT)
- Transmit power electronically adjustable from 23 to 33 dBW
- Built-in MSSR Target Extractor and Tracker
- Digital Target Reports containing selectable Plot or Track data
- LDMOS Linear Transmitter Amplifiers
- Four 466 MHz PowerPC processors
- Three-Channel Digital Software Radio Receiver
- All-digital, software-programmable system
- Remote monitoring and control
- Measured and reported system performance parameters including Transmitted Power, Pulse Width and Pulse Spacing, Antenna VSWR, Receiver Sensitivity, Target Extractor/Tracker, GTC and RSLS performance
- ASTERIX, CD2 and Ethernet interfaces
- Four PPI Video Output Ports
- Automatic detection and location of reflecting objects
- Automatic System Phase Calibration and Monopulse Target Table Re-building utilizing PARROT

The AN/UPX-39(V)2 employs modern VME-64 Open Architecture technology to provide state-of-the-art performance and versatility today, while addressing evolving requirements and allowing insertion of new technology tomorrow. The AN/UPX-39(V)2 meets stringent military and civil IFF/MSSR system performance requirements using COTS hardware and software while offering an array of system options.

## System Growth Options

- Mode S Level 4
- Phase Monopulse
- $I^2SLS$
- Mode 5 up to Level 4
- GPS Time-of-Year clock
- Bus interfaces: HDLC, NTDS, 1553B, 1397, and TCP/IP/UDP
- Record/playback drives
- Primary Radar Tracker
- PSR/SSR Correlator

| Critical Function | Performance |
|---|---|
| Target Capacity | 1200 per scan |
| Probability of Detection | >98% |
| False Targets | <0.1% |
| Validated Code Accuracy | >99.9% |
| MTBCF | 50,000 hours (dual system) |
| MTBCCF | 9,400 hours |
| Availability | 0.99998 |
| Azimuth Accuracy | 0.087 degrees |
| Transmit Power | 2,000 watts peak |

*For more information, please contact:*
Northrop Grumman Corporation
Navigation Systems
21240 Burbank Boulevard
Woodland Hills, California 91367 USA
1-866-NGNAVSYS (646-2879)
www.nsd.es.northropgrumman.com

23341-R4/01-06/2000/Crawford