The Antenna Unit
The APN-242 Antenna Unit consists of a flat plate array and receiving portion and uses the existing APN-59 installation and mounting brackets. The array element supports target detection range and is electronically controlled to permit continuous (linear) / (sector) switching. The antenna rotates body through 360º and is connected to existing aircraft attitude reference systems to provide antenna stabilization throughout the normal range of aircraft maneuvers. High reliability is achieved through the elimination of all gears, improving antenna MTBF by a factor of fifty.

The Receiver/Transmitter
The APN-242 Receiver/Transmitter uses a lower power solid state design, a lower recovery and a throttle to reduce component reliability. It improves receiver performance and greatly increases reliability. Transmit power is generated by a 1000W motor system. The output field art accepts with digitally controlled pulse width, pulse repetition rate, intermediate frequency (IF) and video amplification, mode switching and built-in-test (BIT).

The Display Group
The APN-242 Display Group provides a vivid color or monochrome radar image in ambient lighting. These high resolution displays are coupled with advanced navigation data such as true heading, ground speed and track angle on one display. A flexible flight display design covers a panel to display information to any display. A dual image identification function is provided to display and range identification information on the aircraft transmitter design number, range from the target, bearing equipment (MEB), self-contained navigation system (SCNS) and traffic collision avoidance system (TCAS) can be integrated and displayed. In the green mode, the displays are eight primary modes: google-compatible.

Weather Detection and Avoidance
Dramatically improved system mean-time between failures (MTBF) and greater than an order of magnitude improvement in system mean-time-between-declarations (MTBD). Today's APN-242 has half the number of line replaceable units (LRUs) and mounts without aircraft modification. Using existing radar cabling, connections and mounting pedestals and using existing APN-59 installation and mounting brackets. The array is controlled to permit continuous (linear) / (sector) switching.

Terrain Mapping and Navigation
The APN-242 Antenna Unit consists of a flat plate array and receiving portion and uses the existing APN-59 installation and mounting brackets. The array element supports target detection range and is electronically controlled to permit continuous (linear) / (sector) switching. The antenna rotates body through 360º and is connected to existing aircraft attitude reference systems to provide antenna stabilization throughout the normal range of aircraft maneuvers. High reliability is achieved through the elimination of all gears, improving antenna MTBF by a factor of fifty.

Aircraft Detection
No standard radar unit for immediate All screens are actual video capture from cockpit videotape availability. In production for USAF. Off the shelf and in inventory for immediate availability. The APN-242 Receiver/Transmitter uses a lower power solid state design, a lower recovery and a throttle to reduce component reliability. It improves receiver performance and greatly increases reliability. Transmit power is generated by a 1000W motor system. The output field art accepts with digitally controlled pulse width, pulse repetition rate, intermediate frequency (IF) and video amplification, mode switching and built-in-test (BIT).

Recon and IFF Interrogation
The APN-242 Antenna Unit consists of a flat plate array and receiving portion and uses the existing APN-59 installation and mounting brackets. The array element supports target detection range and is electronically controlled to permit continuous (linear) / (sector) switching. The antenna rotates body through 360º and is connected to existing aircraft attitude reference systems to provide antenna stabilization throughout the normal range of aircraft maneuvers. High reliability is achieved through the elimination of all gears, improving antenna MTBF by a factor of fifty.

Field Installation By Unit Level
The APN-242 Antenna Unit consists of a flat plate array and receiving portion and uses the existing APN-59 installation and mounting brackets. The array element supports target detection range and is electronically controlled to permit continuous (linear) / (sector) switching. The antenna rotates body through 360º and is connected to existing aircraft attitude reference systems to provide antenna stabilization throughout the normal range of aircraft maneuvers. High reliability is achieved through the elimination of all gears, improving antenna MTBF by a factor of fifty.
Form, Fit and Function Replacement for the APN-59 Radar

**Previous Configuration: APN-59**

- **AN/APN-242**
  - **Color Weather & Navigation Radar**
  - **with other operating modes.**
  - **through intervening rain showers concurrent**
  - **Skin paints fighter aircraft at extended ranges**
  - **Aircraft Detection**
  - **waypoint.**
  - **to provide range and azimuth information to**
  - **latitude/longitude stabilized electronic cursor**
  - **High resolution ground mapping mode with**
  - **Terrain Mapping and Navigation**
  - **240NM.**
  - **white, or green displays of storms out to**
  - **Weather Detection and Avoidance**
  - **Detects airborne and ground beacons and**
  - **Beacon and IFF Interrogation**
  - **Displays of airborne and ground beacons and**
  - **Dramatically Improved System Mean-Time Between Failures Rate**
  - **Under 100 Hours Greater than 1000 hours**
  - **If no output required, APN-242 can be installed**
  - **Field Installations By Unit Level**
  - **Maintenance In A Day**
  - **Field Installation By Unit Level**
  - **Maintenance In A Day**

**Today's Consolidated Configuration: APN-242**

- **APN-242**
  - **Modes of Operation**
  - **In Production For USAF**
Form, Fit and Function Replacement for the APN-59 Radar

The Antenna Unit
The APN-242 Antenna Unit has a cylindrical fair probe and receiving antenna and a rotating metallic disk. The square elements improve target detection range and are automatically controlled to permit antenna phase (array) switching. The antenna rotates freely through 360º and is connected to existing aircraft attitude reference systems to provide antenna stabilization throughout the normal range of aircraft maneuvers. High reliability is achieved through the elimination of all gears, improving antenna MTBF by a factor of fifty.

Weather Detection and Avoidance
High resolution radar provides a clear and unobstructed image of the surrounding environment.

Aircraft Detection
Aircraft detection capability allows operation in a combat environment.

Beacon and IFF Interrogation
Aircraft detection is achieved through the use of a radar system.

The Receiver/Transmitter
The APN-242 Receiver/Transmitter uses a higher power solid state design, a hermetic receiver and a filter to minimize noise in the system.

The Display Group
The APN-242 Display Group provides a vivid color or monochrome radar image on a backlit display. These high resolution displays are capable of handling the data in real-time, and are integrated into the cockpit.

The Time Between Failure Rate
As APN-59 systems age, radar failures are becoming a leading cause of C-130 and C-150 aircraft downtime. Today’s APN-242 has 135 aircraft downtime. Today’s APN-242 has a color and black-and-white display of storms out to 100 nm.

Weather Detection and Avoidance
The APN-242 Electronic Display provides a vivid color and monochrome radar image on an unobstructed surface. These high resolution displays are capable of handling the data in real-time, and are integrated into the cockpit.

Aircraft Detection
Aircraft detection capability allows operation in a combat environment.

Beacon and IFF Interrogation
Aircraft detection is achieved through the use of a radar system.

The Receiver/Transmitter
The APN-242 Receiver/Transmitter uses a higher power solid state design, a hermetic receiver and a filter to minimize noise in the system.

The Display Group
The APN-242 Display Group provides a vivid color or monochrome radar image on a backlit display. These high resolution displays are capable of handling the data in real-time, and are integrated into the cockpit.

The Time Between Failure Rate
As APN-59 systems age, radar failures are becoming a leading cause of C-130 and C-150 aircraft downtime. Today’s APN-242 has 135 aircraft downtime. Today’s APN-242 has a color and black-and-white display of storms out to 100 nm.
Operating Parameters

Frequencies
- Radar operation: X-band 9375 ±10 MHz; beacon reception 9310 MHz
- Transmitted Power: 25 kW nominal peak (new high reliability magnetron)
- Transmitter Noise Figure: 6.5 dB nominal
- Range Scale: 2.5 to 20 (2.5 NM increments), 25, 30, 50, 100 and 240 NM
- Pulse Length: Multiple lengths (0.2, 0.8, 2.35 and 4.5 microseconds), automatically selected for different ranges and functions
- Pulse Repetition Frequency: 0.2 µsec @ 1024 Hz, 0.8 µsec @ 350 Hz, 2.35 µsec @ 350 Hz, 4.5 µsec @ 180 Hz
- Scanning Features: 360-degree scan rates: 12 rpm on long range functions; 45 rpm on short range functions
- Sector Scan: approximately 90 degrees centered about forward position
- Antenna Beam Selection: Pencil or fan beam, both with 3-degree azimuth beamwidth and instantaneous electronic switching
- Antenna Stabilization: Stabilized to existing aircraft reference throughout a range of ±15 degrees pitch and ±30 degrees roll

Navigation Parameters
- Operating Temperature (Internal Equipment):
  - Navigator & Pilot Indicators: -15 to +55°C
  - Antenna Interface Unit: -55 to +55°C
  - Video Processor: -40 to +55°C
  - Receiver/Transmitter & Antenna Operating Temperature: -55 to +55°C
- Storage Temperature: -57 to +85°C
- Aircraft Altitude (Uninhabited): -1,500 to 50,000 feet
- Cabin Pressure (Inhabited): 0 to 8,000 feet
- Maximum Level Flight Speed: 400 knots EAS
- Vertical Speed: ±1,500 ft/min
- Pitch Angle: ±15°
- Bank Angle: ±30° (stabilized) ±60° (unstabilized)

LRU Weight/Size
- Unit Dimensions Weight
  - Antenna: 35.8 x 35.8 x 34.0 in 69.0 lbs
  - Antenna Interface Unit: 6.5 x 5.5 x 10.7 in 7.0 lbs
  - Receiver/Transmitter & Antenna: 15.3 in dia. 15.1 in ht. 65.0 lbs
  - Video Processor: 7.75 x 7.75 x 12.3 in 25.0 lbs
  - Pilot’s Indicator: 6.5 x 6.5 x 12.0 in 12.0 lbs
  - Navigator’s Indicator: 8.5 x 10.0 x 12.8 in 21.0 lbs
  - Navigator’s Control: 6.0 x 10.0 x 3.8 in 5.5 lbs

Sperry Marine
AN/APN-242
Color Weather & Navigation Radar
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ISO 9001

Aperture Array Dimensions

- 35.76 in/908 mm
- 8.29 in/211 mm
- 15.25 in/387 mm
- 18.00 in/457 mm
- 25.75 in/654 mm Max

ALL DIMENSIONS AND WEIGHTS ARE APPROXIMATE
Sperry Marine

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