Sensor Receiver And Processor (SRAP)

- Detects aircraft replies derived from radar and beacon sensors
- Generates a target report for aircraft
- Generates and reports weather map data
- Two modules - Radar Data Acquisition Subsystem (RDAS) and Beacon Data Acquisition Subsystem (BDAS)
- Extensive microprogrammed firmware in PROM
- Automatic diagnostics isolate fault to a single card
- Improved detection sensitivity and accuracy
- Serial data transmission for modem or parallel data transmission by direct computer interface
- May be configured as RDAS only, BDAS only, combined RDAS and BDAS or dual (redundant) RDAS/BDAS.
## Features

### Functional Characteristics

#### RDAS Target Reporting
- **Capacity** — 250/sec
- **Maximum Range** — 256 n. miles
- **Range Accuracy (RMS)**
  - Short range — 125 feet
  - Long range — 400 feet
- **Azimuth Accuracy** — 0.2 deg. RMS
- **Range Resolution** — 1.5 pulse widths for 90% resolution
- **Probability of Detection**
  - 50% for 6 dB peak signal RMS noise target
  - 95% for target 3dB above MDS
- **Weather False Alarm Control**
  - $10^{-5}$ to $10^{-6}$ max variation
- **Target Splits** — less than 1%

#### RDAS Weather Reporting
- **Number of Levels** — 2, light and heavy
- **Resolution**
  - Range — 24 radar pulse widths
  - Azimuth — 2.8 degrees
- **Update Rate** — one complete map per 4 antenna revolutions

#### BDAS Target Reporting
- **Decodes and Reports** Mode 3/A and C Replies
- **Capacity** — 250/sec
- **Maximum Range** — 256 n. miles
- **Range Accuracy** — 40 feet
- **Azimuth Accuracy** — 0.2 deg. RMS
- **Range Resolution** — 250 feet for 90% resolution
- **Azimuth Resolution** — 3dB beam width for 90% resolution
- **Probability of Detection** — 100% for target with 4 or more replies
- **Target Splits** — less than 1%

#### Radar-Beacon Correlation
- BDAS correlates beacon and radar replies and combines the replies into one report on the same aircraft.

#### System Options
- **Configuration**:
  - RDAS or BDAS only — Stand alone (1 module each)
  - SRAP — Combined RDAS and BDAS (2 modules)
  - Dual SRAP — Dual RDAS/BDAS (4 modules)
- **BDAS digital defruiter**
- **Serial output interface (BDAS or RDAS)**
  - Drives up to 4 modems at 2400, 4800 or 9600 BPS each
- **Duplexed parallel output**
  - 30-bit interface for direct output to 1 or 2 ARTS computer(s)
  - (BDAS or RDAS)
- **Digital radar interface**
  - Accepts 10-bit normal and MTI video and clock
- **Analog radar interface**
  - Accepts analog normal and MTI videos
- **RDAS interfaces with BDAS for BDAS output in normal ATC SRAP configuration**

### Physical Characteristics
- **Cabinet dimensions**
  - Height — 84 in.
  - Width — 24 in.
  - Depth — 30 in.
- **Module Dimensions**
  - RDAS or BDAS
  - **Height** — 16 in.
  - **Width** — 19 in.
  - **Depth** — 25 in.
- **System Weight**
  - 760 lbs. (Dual RDAS/BDAS plus Cabinet)

### Input Power
- Single Phase, 3 wire
  - 120V ± 10%
  - 60 Hz ± 2%
  - 2000 Watts (Dual RDAS/BDAS)

### Environmental
- Altitude 0 — 10,000 feet
- Temperature $10^\circ$ — $50^\circ$ C
- Humidity 5% — 90%

### Reliability
- BDAS — 7825 hours
- RDAS — 7406 hours
- Single System — 3897 hours

### Maintainability (MTTR)
- BDAS — 30 minutes
- RDAS — 30 minutes
- System — 30 minutes

### Applications
- **Air Traffic Control**
  - ARSR-2 and ARSR-3
  - ASR-4 thru ASR-8
  - ATCBI-4 and ATCBI-5
- **Beacon Search**
  - Enroute
  - Terminal
- **Military**
- **Tactical Air Surveillance**

For additional information write to Sperry Corporation, Air Traffic Control Systems, 1385 Mendota Heights Road, Mendota Heights, MN 55120, or call (612) 456-7714.