

The High Frequency Active Auroral Research Program

HAARP

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The HAARP Aircraft Alert Radar

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Questions of a technical nature may be submitted via e-mail to:
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The HAARP Gakona Facility employs a Furuno S-Band radar to detect all aircraft that may be in the vicinity of the facility. The radar is used to alert the control operator during research operations so that any high power transmitters on-site can be shut down. This Aircraft Alert Radar can detect planes at altitudes as low as 500 feet at 8 miles. As a supplement and to improve detection performance, the radar installation uses a modified TCAS system to interrogate planes within range that carry transponders. The resulting automatic replies allow the plane's altitude to be shown on the display console adjacent to the normal radar return.

In the photo to the left, the taller mast supports the main rotating antenna for the S-Band radar. The smaller mast supports a four monopole array used by the modified TCAS equipment to interrogate transponders in the vicinity and to determine the bearing for any responses. A [larger image](#) of the radar is available (34 K jpg).

The shelter shown in the image is used to house the S-Band transmitter, SureTrac radar processor and TCAS system. Processed information is sent from the trailer to the Operations Center and the control operator position by a fiber optic link. A large UPS is also located in the trailer to protect the equipment from power interruptions.

Some of the specifications for this radar include:

- Radar Transceiver: Furuno Model RTR018/60S
60 kW Peak Power S-Band Radar Transceiver
State-Of-The-Art Maritime Radar
MTD Target Detection Capability
- SSR Engineering Processor: Model PCRP-202
Radar Control and Post-Detection Signal Processing
Pentium IV PC Platform with Solid-State Disk Storage
- Range: Maximum: 96 nMiles, Minimum: .1 nMile
- Detection threshold 1 m2 at range 7 miles, altitude 500 feet.

The display console for the radar system is driven by a standard workstation with software that allows a map overlay and custom setting of range rings. The display console is installed at the main control operator's position. The radar system was installed by BAE Systems Advanced Technologies and the Naval Air Warfare Center (PAX River) with assistance from Oceantronics Corp. during July and August 2003.

Pioneering Ionospheric Radio Science Research for the Twenty-First Century



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