	W-BAND ARM CLOUD RADAR		
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W-Band ARM Cloud Radar Periodic Preventive Maintenance

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Prepared for

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Introduction

The W-band ARM Cloud Radar (WACR) system has been designed for continuous unattended operation. Remote access to the host computer allows the radar to be controlled and monitored from our facility in Massachusetts, or by any authorized user within ARM.

Under normal operating conditions, we expect that that the staff at the SGP site will periodically check the radar for normal operation, by equipment inspection and by noting the value of various parameters displayed on the client computer running next to WACR in the MMCR shelter.

Routine Checks and Maintenance

Chiller fluid level: The chiller fluid level should be checked weekly by removing the covering over the chiller fill port on the left side of the chiller unit at the base of the equipment rack. If the fluid is not visible, it should be topped off with distilled water.

Chiller air filter: The chiller air filter should be checked weekly to assure adequate airflow. The filter may be removed and cleaned if it becomes clogged with pollen or dust. A spare filter is located in a small corrugated cardboard box on the shelf on the north wall of the MMCR shelter.


Changing chiller fluid: The fluid should be changed every six months. A fluid drain is provided at the base of the chiller. When changing the fluid, it is not necessary to blow out the hoses going to the radar. During warm weather, the fluid should be 100% distilled water. For cold weather, the proper mix is 70% distilled water 30% propylene glycol.

Rust Prevention on Spash Plate Drive

The bearings holding the drive shaft of the rooftop splash plate are not stainless. These bearings should be covered with a light coating of bearing grease to minimize rust accumulation.

Daily Monitoring of Radar Operation:

Visual Inspection of Radome and Splash Plate: The radome and splash plate should be free of foreign matter, such as heavy dirt or ice/snow. A mild coating of dust or pollen is not a problem. Some ice buildup around the edges of the radome and splashplate is also acceptable.

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Modulator controller. During normal operation, the yellow LED should glow steadily on the modulator control unit in the lower equipment rack.

Modulator Body Current: Body current should be less than 0.5 mA as displayed on the right hand analog panel meter on modulator control unit in equipment rack. This level will go to zero briefly every few seconds.

Modulator Beam Voltage: Beam voltage should be approximately 17.5 kV as shown on the left hand analog panel meter on the modulator control unit. This should only go to zero when the modulator is in standby or ready mode (green LEDs on modulator control unit).

Data Displayed on Client Computer

The client computer produces scrolling displays of a variety of parameters monitoring proper operation of the radar. All of this data is stored in the recorded data files.

The executable IDL program WACR_monitor_sgp.sav displays several key parameters monitoring the state of the radar. If it is not already running, the program may be started by double clicking the “WACR Monitor” icon on the client computer. The following values should be recorded in the daily PM records:

Transmitter Power: A running average value is printed in the plot.


Transmit Drive Power Sample: The current value is printed in the plot.

Receiver Gain: The current value is printed in the plot.

Receiver Noise Temperature: The current value is printed in the plot.

Please alert Kevin Widener or Jim Mead (mead@prosensing.com) if any of these values fall outside the dashed lines on the plots.

The executable program WACR_temp_monitor_sgp.sav displays all of the sampled temperatures in the radar as well as a calculation of heat extraction. If it is not already running, the program may be started by double clicking the “WACR Temperatures” icon on the client computer. None of these values should be recorded. Please alert Kevin Widener or Jim Mead if any of these values falls outside the dashed lines on the plots.

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Lacie Disk Drive

The light on the Lacie disk drive should glow blue and should flash periodically. To check the disk capacity, open an X terminal on the client computer and remotely login to the host computer by typing:

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ssh radarop@198.124.98.41
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password: ask local system administrator.

Once you are logged in type: df

The percentage use of data0 and data1 should be displayed. The Lacie disk is data1. Record the percentage use for data1.

If the capacity exceeds 90% the disk should be swapped. See the WACR Software Users Manual for details on swapping the Lacie disk.

Restarting the Host Computer

In the case of a power outage or if the host computer needs to be rebooted, the staff at SGP will be required to restart the host by pressing the power button on the front panel of the host computer. This computer is housed in the equipment rack (below the ceiling mounted RF unit) above the UPS. After the power button has been pressed, the radar may be started remotely by Kevin Widener or someone at ProSensing (Richard Cochran 413-549-4402 x12 or Jim Mead, 413 549-4402 x13). The radar may also be started from the client computer in the MMCR shelter if desired as described in the software users manual.