"NASA06" WCR Preparation for a flight

Ground preparation starting 45 minutes before take off time, outside the hangar

0) Make sure the KingAir data system is running and the GPS was acquired (this secures proper synch between wasp and tiger and communication between the KA master IRIG card and the WCR slave IRIG card)**.** If cabin EIA temperature is below 60F close the aircraft door and wait until the EIA temperature is at least 60F; if it is above 80F run air-conditioner to prevent overheating.

1) Power On the radar **PwrSply, wasp** and the **scope** (do not power the EIA yet).
2) Login as user **'radarop'** and password **'radarop0'.** The login will open a session without a desktop (window manager). The session performs the following operations: Create a flight directory (mmmdd) under /data; Opens 2 xterms (DSP1, DSP2) as SPOS monitors for 'ping' and 'pong' of the VXI DAQ; Open 1 xterm (IDL; idl session not running); Open 2 xterms (CPAS, XTERM) with the newly created flight directory as current.
3) Power On the **EIA(make sure radiate switch is on STNDBY)**. Afer ~2 mins (**HeaterDelay** light OFF).
4) Turn on the radar RF unit TRANSMIT switch.
5) From CPAS run ***cpas***. If cpas does not run properly (widget doesn't show up), abort ***cpas*** (Ctrl C) and from the prompt run a root protected (use sudo with radarop0 password) initialization of the VXI service: **sudo service *nivxi* restart**. After a successful restart run ***cpas*** again.
6) With the default algorithm (PPMAG4) push the 'PREVIEW' button to run the radar (it is not transmitting; this procedure is used to align the radar circulator network). After ~10 seconds stop ***cpas*** (push 'STOP' button).
7) In cpas widget choose SPPMAG tab. Make sure Tx Polarization shows H1. Change PRT fields from 50 50 to 100 100. Then push 'PREVIEW' to run the radar.
8) Make sure the radar mirror is set to up beam (green light is on)
9) In the RF unit turn the TURBO switch to ON and switch the EIA to RADIATE (the radar will radiate via the SideUp antenna pointing up). Check EIA body current. It should be around 0.5 mA. Leave the radar to transmit for 5-10 minutes. Check the peak/max voltage reading for the Tx monitor on the scope (should be larger than 20 mV; if not check that the TURBO is ON)
10) Stop cpas (push 'STOP', the radar stops transmitting). Load the algorithm/configuration to be used first during the flight.
11) Make sure Nadir port door is closed before take off.

After take off

1) Run ***cpas*** (the radar is transmitting). You may do this 5 min before the need to record radar data.
2) Push 'RECORD' on *cpas* widget to start recording radar data; Toggling RECORD stops recording and starts recording a new file; **CPAS keyboard short cuts**: 'SPACE'=mouse click; 'TAB'=move between buttons. **For high-data rate modes check occasionally if the data file is approaching 2GB**. If so start a new file as soon as possible.
3) Transmitted power monitoring: Occasionally check out the level of the transmitted power from the oscilloscope reading (Vmax, pulse is shown on scope channel 2); normal readings are 21 to 31 mV

Before landing or to power off the radar

- Stop recording. Stop ***cpas*** (radar stops transmitting). Quit ***cpas***.(use 'close' from the terminal menu).
- Shut down wasp: log out by pressing **Ctrl-Alt-backspace**, halt from the login prompt menu. Power down wasp.
- Turn the RADIATE switch to STNDBY and power switch of EIA CTRL to OFF. Turn off PWR SPLY and switch to OFF the TURBO and TRNSMT on the RF box.
- Close nadir port door

Configuration files for running different radar modes

All ***cpas*** configuration files are located in /**home/radarop/cpas/modes/nasa06**
A configuration file can be loaded by pushing '***load***' button on ***cpas*** widget.
Stop the radar; go to the directory (you have to do this once; '***load***' remembers the last directory used) and load the desired configuration file.

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How to try to work around for some problems

1) **Fault 1 during data recording**:
   Symptoms: Extended "black" zones or "color stripes" for all range gates in the real-time display for any reflectivity channel; EIA body current close or greater than 1 mA (if not in Fault 1 when checked)
   Fix: Stop cpas; Lower the beam voltage, and reset the fault. After a while you should be able to max the beam voltage with the body current around 0.5 mA. If that does not work recycle the power of the EIA controller.

2) **Severe attenuation or missing received power from one or both receivers:**
   Symptoms: Missing or much weaker than expected received power as seen on the real-time displays.
   Fix: Stop recording and stop cpas. Run 'Preview' and check if the problem is fixed. If not quit cpas and restart it again.

3) **For other problems that cause cpas or VXI to crash do the following:**
   Shut down DC power supply, wait 5 sec and turn ON again;
   Quit cpas (Cntrl C) and run: **sudo service *nivxi* restart**.

4) **WASP problems**
   Computer date/time wrong. Reason: unknown; Fix: set the date/time using date command (**date –u <mmddhhmm>,** e.g., *date –u 08092345*; time is UTC)