2/6/2006

PALAO Experiment Plan

Experiment name: Aircraft detection statistics
Experiment PI: A. Bouchez
Experiment date: 02/09/06 – 02/11/06
Estimated sky time: 4.0 hr/night
Required conditions: Any.
Special requirements: Requires a dedicated camera operator during first 3 hrs of each night.

Brief description of problem or theory this experiment is addressing:
This experiment will serve as a final test of the ASCAM, IRCAM software, prior to the software review scheduled 2/24/06 and the preparation of an FAA validation plan. Our goal is to verify operation of the aircraft detection hardware and software, and the user interface. In addition, we will also evaluate a possible IRCAM and RADAR validation technique; slewing the telescope to a location extrapolated from a plane's last two position.

Step by step instructions for conducting the experiment:
1. Setup
   - 1.1. During the afternoon, set up an oscilloscope to display RADAR return, within easy reach of safety camera operator (will need John Henning's help on this).
   - 1.2. Verify that ASCAM, IRCAM, and RADAR are all talking to TCS (?).
   - 1.3. Start up ASCAM software on Vulcan (see procedure,below). Check that images are updating. "Venetian Blinds" indicate saturation due to twilight.
   - 1.4. Start up IRCAM software on Vulcan. Check that images are updating.
   - 1.5. Once dome is open, power on RADAR (see procedure below).
2. Measurements. Please use log sheet included below.
   - 2.1. Note time at which twilight no longer saturates ASCAM.
   - 2.2. Note any difficulties with software or cameras.
   - 2.3. Note any ASCAM "dropouts" when aircraft were above 20^{o} elevation. If possible, follow these up by looking at difference image and evaluate the cause.
   - 2.4. For any aircraft which appear to be heading for the exclusion zone:
     - 2.4.1. Note the time at which they entered the exclusion zone.
     - 2.4.2. Note whether they were visible on the RADAR oscilloscope screen. If visible, record the range (in milliseconds from the trigger pulse), and peak magnitude (in volts) .
     - 2.4.3. Note whether they were visible in the IRCAM.
     - 2.4.4. Note whether TCS triggered, and the stated cause.
   - 2.5. If software to predict trajectories has been developed in time for this run, pick a few test case aircraft, and check whether they in fact follow the predicted trajectory. Note approximate offset at a point 30s down-range from initial contact.
   - 2.6. Check occasionally that ASCAM log is being updated (*need filename here*).
3. Shut down
   - 3.1. Power off RADAR.
   - 3.2. Shut down cameras and software.

Camera startup procedure (11/16 email from A. Morrissett):

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1) Log into Vulcan as user 'allsky', password 'Cda!sky'.
2) Open two text windows.
3) In one, type 'asdisp.pl'  You will get a ds9 window a Tk GUI control window.
Push 'Run' to start the camera and 'Stop' to stop it.  Push 'Arm' to arm the
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laser. It the laser triggers off for any reason, you will have to arm it again manually. If the laser can't be armed for some reason, e.g. the dome isn't opened, then it will refuse to arm.
4) In another window, type 'irdisp.pl'. You will get a ds9 window and a Tk GUI window. In order to run, you will have to power the camera and open its shutter using the bottom two buttons. Then you use Run/Stop and Arm/Block buttons as for the allsky software.
5) To restart either display you can ^C them and re-type the appropriate command ('asdisp.pl' or 'irdisp.pl'). The monitoring programs on 'allsky' and 'lgs' will still be running.
6) If you really have to, for some reason, you can log into allsky or lgs as user 'allsky' or 'ircam', respectively, with password 'palao%opr'. Kill any processes names 'allskyMonitor' or 'ircamMonitor'. Then type either 'allsky.pl' or 'ircam.pl', depending on which machine you're on, and the monitoring programs will be running.

You can reach me on my cell 818 314-3986, or during the night at my home office phone 818 951-0261 (which I will be able to hear).

RADAR power up procedure:
1) Telnet into 209.242.146.148 (the network power switch).
2) Turn on RADAR: /on …
3) To exit: /x

Analysis and conclusions from this experiment:

Palomar LGS Aircraft Detection Log Sheet

UT Date:_____. ASCAM twilight limit (UT): _____.
Conditions:_____

ASCAM		RADAR		IRCAM	Comments
ID	UT time	Range (ms)	Peak (V)	Detected?	TCS triggered? ASCAM dropout?
1					
2					
3					
4					
5					
6					
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