

TSE 2003

CAMERA PLATFORM OPERATIONS CHECK SHEET DRAFT: 13 NOV 2003

A. CAMERA/GYRO PLATFORM ASSEMBLY

ASSEMBLY/INTEGRATION STEPS TO BE SPECIFIED
OPTICAL ALIGNMENT VERIFICATION TO BE SPECIFIED

B. PRE-FLIGHT BATTERY CHECK/CONDITIONING

B.1. BATTERY CHARGING

- B.1.1 [] GYRO BATTERY #1 TO FULL CHARGE (7 HR)
- B.1.2 [] GYRO BATTERY #2 TO FULL CHARGE (7 HR)
- B.1.3 [] G4/15 LAPTOP BATTERY TO FULL CHARGE (>97%, 4 LIGHTS)
- B.1.4 [] G4/15 SPARE BATTERY TO FULL CHARGE (>97%, 4 LIGHTS)
- B.1.5 [] WINBOOK BATTERY TO FULL CHARGE
- B.1.6 [] CCD POWER SUPPLY BATTERY TO FULL CHARGE
- B.1.7 [] G4/17 BATTERY #1 TO FULL CHARGE
- B.1.8 [] G4/17 BATTERY #2 TO FULL CHARGE
- B.1.9 [] CCD CAMERA TO FULL CHARGE

B.1. BATTERY REPLACEMENT

- B.2.1 [] VERIFY F5 BATTERIES @ 1.5V, REPLACE IF NEEDED
[1] [2] [3] [4] [5] [6] [7] [8]
- B.2.1 [] VERIFY PENTAX BATTERY *TBD* AT ___ VOLTS

C. CAMERA PREPARATION

C.1. PENTAX CAMERA IN-FLIGHT PREPARATION

- C.1.1 [] LOAD ISO 64, 36 EXP FILM
- C.1.2 [] VERIFY f STOP WIDE OPEN @ f/8
- C.1.3 [] TAPE f STOP @ f/8 POSITION
- C.1.4 [] VERIFY FOCUS @ INFINITY
- C.1.5 [] TAPE FOCUS @ INFINITY
- C.1.6 [] VERIFY EXPOSURE MODE IS BULB
- C.1.7 [] REMOVE & STOW SKYLIGHT FILTER
- C.1.8 [] RECOVER LENS

* C.1.2 - C.1.6 may be done before boarding aircraft
but must be checked in re-checked flight

C.2. NIKON CAMERA IN-FLIGHT PREPARATION

- C.2.1 [] LOAD ISO 800, 36 EXP FILM
- C.2.2 [] VERIFY f STOP WIDE OPEN @ f/4.5-5.6

- C.2.3 [] TAPE f STOP @ f/4.5-5.6 POSITION
- C.2.4 [] VERIFY FOCUS @ INFINITY
- C.2.5 [] TAPE FOCUS @ INFINITY
- C.2.6 [] VERIFY EXPOSURE MODE IS BULB
- C.2.7 [] VERIFY LENS VIBRATION REDUCTION MODE 1 SELECTED
- C.2.8 [] TAPE OVER VR MODE SELECTOR SWITCH
- C.2.9 [] VERIFY AUTOFOCUS ON LENS IS DISABLED
- C.2.10 [] REMOVE & STOW SKYLIGHT FILTER
- C.2.11 [] RECOVER LENS

* C.2.2 - C.2.9 may be done before boarding aircraft
but must be checked in re-checked flight

C.3 VIDEO CAMERA IN-FLIGHT PREPARATION

- C.3.1 [] VERIFY VIDEO TAPE INSERTION
- C.3.2 [] REMOVE & STOW SKYLIGHT FILTER
- C.3.2 [] RECOVER LENS
- C.3.3 [] TURN POWER SWITCH ON
- C.3.4 [] CHECK/VERIFY VCR/CAM SWITCH IN "CAMERA" POSITION
- C.3.5 [] SET EXPOSURE MODE F/STOP
- C.3.6 [] SET EXPOSURE MODE SHUTTER

D. ELECTRICAL CONTROL CONNECTIONS

D.1 PENTAX TO UMBRAPHILE BOX

- D.1.1 [] CONNECT PENTAX 3-PIN SHUTTER CABLE TO BODY
- D.1.2 [] TAPE/SECURE CONNECTOR TO BODY
- D.1.3 [] CONNECT PENTAX MINI-PLUG TO UMBRAPHILE BOX

D.2 F5 TO UMBRAPHILE BOX

- D.2.1 [] CONNECT F5 10-PIN CONTROL CABLE TO BODY
- D.2.2 [] VERIFY CONNECTOR CABLE LOCKED IN PLACE
- D.2.3 [] F5 BLACK (COMMON) PLUG TO BLACK UPHILE BOX JACK
- D.2.4 [] F5 YELLOW (SHUTTER) PLUG TO RED UPHILE BOX JACK
- D.2.5 [] F5 BLUE WITH EXTENDER (VR/METER) TO TOP UPHILE JACK

D.3 UMBRAPHILE BOX TO G4/15

- D.3.1 [] VERIFY/TAPE UPHILE/DB25 TO APPLE TALK CONNECTOR
- D.3.2 [] CONNECT/TAPE APPLE TALK TO KEYSpan ADAPTER PORT 2
- D.3.1 [] CONNECT KEYSpan USB TO 15" POWERBOOK USB PORT 1

D.4 VIDEO AND CCD OUTPUT

- D.4.1 [] USB CABLE FROM THINKPAD (TOP PORT) TO SBIG CAMERA
- D.4.2 [] FIREWIRE CABLE FROM POWERBOOK TO SONY VIDEO CAMERA

E. ELECTRICAL POWER CONNECTIONS

E.1 SBIG CCD

- E.1.1** [] VERIFY SBIG DC-TO-DC SUPPLY POWER OFF
- E.1.2** [] CONNECT SBIG TO DC-TO-DC POWER SUPPLY
- E.1.3** [] CONNECT DC-TO-DC POWER SUPPLY TO BATTERY

- E.2.1** [] VERIFY DC-TO-400HZ INVERTER #1 POWER OFF
- E.2.2** [] VERIFY DC-TO-400HZ INVERTER #2 POWER OFF
- E.2.3** [] CONNECT GYRO #1 POWER CABLE TO INVERTER #1
- E.2.4** [] CONNECT GYRO #2 POWER CABLE TO INVERTER #2

F. CAMERA PLATFORM RIGGING AS FLIGHT CONDITIONS PERMIT

F.0 SET UP SUSPENSION HARDWARE *TBD*

Pending QF94 Inspection, Measures, and Test

F.1 PLATFORM INSTALLATION & SETUP

- F.1.1** [] SUSPEND FROM COG TO FLIGHT DECK ROOF VIA
BUNGIE AND TBD ATTACH HARDWARE
- F.1.2** [] REMOVE PISTOL GRIP HANDLE
- F.1.3** [] ROUTE & SECURE POWER AND CONTROL CABLES
DOWNWARD (AND TO RIGHT) FROM COG
- F.1.4** [] REMOVE ALL 4 LENS COVERS
[PENTAX] [F5] [SBIG] [VIDEO]
- F.1.5** [] VERIFY MECHANICAL OPTICAL ALIGNMENTS
(FIDUCIAL MARKINGS ON PLATFORM/CAMERAS)

F.2 PLATFORM ADJUSTMENT & ALIGNMENT

- F.2.1** [] VERIFY ALL CAMERA/GYRO SUPPORT BOLTS SECURE
- F.2.2** [] ADJUST AND SECURE U-BOLT SUSPENSION POINT
FOR 15 DEGREE ELEVATION ANGLE
- F.2.3** [] ADJUST R/L SLIDER FOR HORIZONTAL BALANCE
- F.2.4** [] ADJUST EQUILIBRIUM ROTATION FOR WINDOW POINTING

F.3 WINDOW & OPTICAL ALIGNMENT AND PREP

- F.3.1** [] CLEAN WINDOW INTERIOR (DETERGENT & AMMONIA)
- F.3.2** [] PLACE SOLAR FILTER ON WINDOW FOR QUICK REMOVAL
- F.3.4** [] HANG BLACK CLOTH BEHIND RIG (and Self)

F.4 VERIFY ALIGNMENT OF VIDEO & FILM CAMERAS

- F.4.1** [] CONNECT CAMERA-TO-POWERBOOK FIREWIRE CABLE
- F.4.2** [] WAKE/BOOT POWERBOOK
- F.4.3** [] LAUNCH IMOVIE
- F.4.4** [] ACQUIRE TARGET (FILTERED SUN/LANDCAPE)
- F.4.5** [] CHECK F5-TO-VIDEO CENTERING
- F.4.6** [] CHECK PENTAX-TO-VIDEO CENTERING
- F.4.7** [] SLEEP POWERBOOK

G. SBIG CCD CAMERA INITIALIZATION T MINUS TIME: 1H 30M (MAXIMUM)

G.1 INITIALIZATION

- G.1.1 [] BOOT THINKPAD - WAIT UNTIL BOOT COMPLETE
- G.1.2 [] TURN ON DC-TO-DC SUPPLY FOR SBIG CCD
- G.1.3 [] PLUG USB CABLE INTO TOP PORT OF THINKPAD
- G.1.4 [] CONFIRM 3 PAIRS OF TONES TO MOUNT USB DEVICE

G.2 CCD FOCUS CHECK WHEN POSSIBLE

- G.2.1 [] From WINDOWS START menu: Programs -> SBIG -> CCDOPS
- G.2.2 [] In Small Window: Click SETUP
- G.2.3 [] In new Window -OR- Under CAMERA at Top
Set Resolution Mode = Medium [OK]
- G.2.4 [] In new Window -OR- Under CAMERA at Top
Set Exposure Time = TBD
Full Frame (Don't Select Dark Frame)
Update Mode Automatic [OK]
- G.2.5 [] ACQUIRE SUN THROUGH SOLAR FILTER OR
DISTANT LANDSCAPE WITHOUT FILTER
- G.2.6 [] Verify/Adjust Focus as needed
- G.2.7 [] Verify/adjust optical alignment with VIDEO
- G.2.8 [] Close FOCUS Window and exit CCDOPS
- G.2.8a [] Reboot as contingency

G.3 CCD IMAGE ACQUISITION SEQUENCE INITIALIZATION

- G.3.1 [] Double-click MaximDL ICON on Desktop
- G.3.2 [] From VIEW menu, select CCD Control Window
- G.3.3 [] In Maxim CCD Camera Window, Verify/Select:
Camera Model SBIG Dual Chip
Connect to USB
Guider ABG Off
Binning Mode On-Chip
Swap Chips Off
Priority High
- G.3.4 [] In same window, right side, click CONNECT.
Verify Main CCD Camera subwindow says:
SBIG Dual Chip, Cooler is Off, Setpoint XXX
- G.3.5 [] In Maxim CCD window, click:
Cooler On (right side)
Cooler (left side) and set point -15C
- G.3.6 [] From FILE menu (may be grey, OK) select
Run Script. SELECT - *do NOT Open*
FinalScript.vbs in Desktop/Antarctica

H. POWER UP GYROS

T MINUS TIME: 40M (minimum) TO 1H

- H.1.1 [] POWER ON GYRO #1
- H.1.2 [] VERIFY GREEN LIGHT ON INVERTER #1
- H.1.3 [] LISTEN FOR SPIN-UP ON GYRO #1
- H.2.1 [] POWER ON GYRO #1
- H.2.2 [] VERIFY GREEN LIGHT ON INVERTER #1
- H.2.3 [] LISTEN FOR SPIN-UP ON GYRO #1

I. EYEPATCH ON

T MINUS TIME: APPX. 45M

J. G4/15 & UMBRAPHILE STARTUP

T MINUS TIME: 40M TO 1H

J.1 G4/15 INITIALIZATION

- J.1.1 [] OPEN LID TO WAKE FROM SLEEP
- J.1.1a [] REBOOT IF NEEDED
- J.1.2 [] VERIFY CLASSIC (OS 9) ENVIRONMENT RUNNING
- J.1.2b [] START UP CLASSIC ENVIRONMENT IF NOT RUNNING

J.2 SYSTEM CLOCK TO UTC

- J.2.1 [] SET SYSTEM CLOCK TO GPS/UT VIA DATE/TIME
SYSTEM PREFERENCES

J.3 UMBRAPHILE STARTUP/TEST

- J.3.1 [] LAUNCH APL 3.1.0e (from Analysis Tab)
- J.3.2 [] LOAD (OPEN) UMBRA230 (from UMBRAPHILE FOR TSE2003
FOLDER)
- J.3.3 [] CLICK [OK] AFTER LOADING
- J.3.4 [] SELECT TEST SERIAL PORT
- J.3.5 [] Set: Length of Test = 1 s
- J.3.6 [] NOTE PENTAX [] and F5 [] frame counters
Note orientation of film rewind levers
- J.3.7 [] Watch film rewind levers, listen to cameras and [OK]
- J.3.8 [] Verify that a single exposure was taken on each
camera and that film advanced.

J.4 UMBRAPHILE TOTALITY SEQUENCE

- J.3.4 [] SELECT RUN CONTROLLER FROM UMBRAPHILE MENU
- J.3.5 [] VERIFY PORT 2 SELECTED and CLICK [OK]
- J.3.6 [] CLICK OK TO DEFAULT PORT SETUP PARAMETERS
- J.3.7 [] CLICK OK TO REPROGRAM PORT
- J.3.8 [] VERIFY LAT/LONG/ALTITUDE, UPDATE IF NEEDED
Lat = _____, Long = _____, Alt = _____
- J.3.9 [] CLICK OK FOR COORDINATES

- J.3.10 [] IMPORT DATA FILE: ECLIPSE-23NOV2003_Q747.DATA
- J.3.11 [] UT = System Clock + [000000] HHMMSS.fff
- J.3.12 [] CLICK OK TO CREATE/RUN EXPOSURE SEQUENCE
... and, away we go!!!

K. START VIDEO CAMERA RECORD/STREAM T-MINUS TIME: 25M TO 40M

- K.1.1 [] LAUNCH IMOVIE ON G4 COMPUTER
- K.1.2 [] TURN ON VIDEO IF NOT ON
- K.1.3 [] SET VIDEO TO RECORD
- K.1.4 [] VERIFY VIDEO STREAMING TO IMOVIE

L. HANG CAMERA PLATFORM T-MINUS TIME: ASAP AFTER START OF RUN OR EARLIER IF PERMITTED

- L.1.1 [] HANG PLATFORM IF NOT HUNG
- L.1.2 [] ADJUST ROTATION SO LOS IS ORTHOGONAL TO WINDOW
- L.1.3 [] SECURE CABLED DOWNWARD FROM VERTICAL COG
- L.1.4 [] CHECK/ADJUST BALANCE AND TORQUES
- L.1.5 [] ACQUIRE SUN THROUGH SOLAR FILTER ASAP

M. EXECUTE CCD IMAGE ACQUISITION SEQUENCE CII-MINUS TIME: 10M

- M.1.1 [] ***** WAIT Until CII minus 10 MINUTES *****
- M.1.2 [] **Click OPEN at CII minus 10 minutes**
Notes: 25 Bias/Dark Frames (4 minutes)
150 images frames 10, 20, 40ms @ 4s cadance
Total Execution Time = 19.5m
175 files, 641 MB, in Desktop:EclipseFrames:

N. ENABLE VR KEEP-ALIVE CIRCUIT CII-MINUS TIME: 3M TO 5M

O. SOLAR FILTER OFF/CCD BLOCKER ON CII-MINUS TIME: -20S

- P.1.1 [] Flip Down CCD Blocker
- P.1.2 [] Remove Solar Filter From Window

****** TOTALITY ******

Q. EYEPATCH OFF

CII-PLUS TIME: +5S

R. REMOVE CCD BLOCKER

CII-PLUS TIME: +10S

S. REPLACE CCD BLOCKER

CIII-MINUS TIME: -10S

****** END TOTALITY ******

U. REPLACE CCD BLOCKER

CIII-MINUS TIME: -10S

V. SLEW (ROTATE) PLATFORM OFF SUN

CIII-PLUS TIME: +20S

W. POWER DOWN GYROS

CIII-PLUS TIME: ASAP AFTER STEP R

X. SHUT DOWN CCD CAMERA

CIII-PLUS TIME: APPX +10M

X.1.1 [] Wait for script completion then [OK] MaximDL program

X.1.2 [] Turn off Cooler, Exit MaximDL Program

X.1.3 [] Turn off 12V DC Power Supply

X.1.4 [] Disconnect/Insulate 12V Battery for CCD Power Supply

X.1.5 [] Disconnect SBIG Power and USB Cables

X.1.6 [] Sleep ThinkPad

**Y. DISMOUNT/DEINTEGRATE GYRO PLATFORM
CIII-PLUS TIME: ANYTIME AFTER STEP X**

**Z. CELEBRATE
CIII-PLUS TIME: ANYTIME AFTER STEP Y**

- Z.1.1 [] Deploy Eclipse Flag
- Z.1.2 [] Serve Egg
- Z.1.3 [] Creams Toast to 8 April 2005