Procedures: DIME TEAM: _____
Drop # 1 2 3 4 (circle one)   Date: _____

Procedure:

Red – Experiment specific
Black - General

In Lab (either on Level 4, Level 6, or in shop):

Installation:

_____   1.   Wear safety goggles when working with the experiment.
_____   2.   Perform experiment-specific activities to prepare the experiment
                apparatus before mounting in the Education Rig.
_____   3.   Unplug battery charger.
_____   4.   Ensure that the battery switch and 12 VDC power supply switch are
                both OFF.
_____   5.   Mount the plate into the rig with four Allen bolts inserted through the
                shelf into the bottom of mounting adaptor plate.
_____   6.   If experiment has electrical connections to the Education Rig, connect
                J1 – J5 as appropriate.
_____   7.   Adjust Education Rig and/or experiment as required before power is
                applied.
_____   8.   Turn Education Rig battery switch ON (lower shelf of Education Rig).
_____   9.   Turn 12 VDC power supply box ON (lower shelf of Education Rig).
_____   10. Perform other experiment-specific functions.
_____   11. On the rig control panel, turn switch SW-1 DOWN (back light) or UP
                (front lights) and switch SW-2 UP to enable the lights.
_____   12. Remove and store video camera lens cap.
_____   13. Check and adjust video camera
            _____   a.   Turn monitor on.
            _____   b.   Disconnect rig video output cable from back of camera
            _____   c.   Connect monitor video cable to back of camera
            _____   d.   Turn SW-3 UP.
            _____   e.   Use scissors jack to raise or lower camera to change field of view
            _____   f.   Using outer lens ring, zoom camera out to desired field of view
            _____   g.   Using middle lens ring, focus camera
            _____   h.   Using inner ring, adjust f-stop or brightness/darkness level
            _____   i.   Tape lens adjustments (with masking tape) to hold settings
            _____   j.   Turn SW-3 DOWN (light will turn off after a few seconds)

Functional Check

_____   14. Switch SW-7 to ON on the rig control panel to simulate connections
                which are made at the top of the drop tower.
_____   15. Switch SW-7 to OFF to simulate drop start.
_____   16. Verify the proper operation of experiment during simulated drop.
_____   17. Verify that the proper light (either back light or front light) is on.

_____ 18. Verify that the back light (or front light) turns off 5 seconds after SW-7 is turned off.

_____ 19. Troubleshoot if necessary

_____ 20. Disconnect monitor video output cable from back of camera

_____ 21. Connect rig video cable to back of camera

_____ 22. Turn monitor off.

_____ 23. Configure experiment and set final switch positions before leaving off-line lab:

		SWITCH	POSITION (enter desired position)
_____	a.	SW-1	_____ (UP for front or DOWN for back lights)
_____	b.	SW-2	_____ (UP to enable lights: DOWN to disable)
_____	c.	SW-3	_____ (UP or DOWN)
_____	d.	SW-4	_____ (UP or DOWN)
_____	e.	SW-5	_____ (UP or DOWN)
_____	f.	SW-6	_____ (UP or DOWN)
_____	g.	SW-7	_____ (UP or DOWN)

_____ 24. *CAUTION*: If the Education Rig control panel switches and relays ARE HOLDING experiment conditions, DO NOT TURN OFF the Education Rig power switches at this time.

_____ 25. CAUTION: Read previous step first! If the Education Rig switches and relays ARE NOT HOLDING the experiment conditions, you may turn 12 VDC Power Supply Box and rig battery switch OFF (if required).

_____ 26. Take video tape, checklist, and other supplies.

_____ 27. Transport rig to Level 5. Roll cart gently if experiment is sensitive.

On Level 5 (NASA Personnel Only):

_____ 28. All personnel wear HARD HATS during level 5 operations.

_____ 29. Turn rig battery switch ON (if required).

_____ 30. Turn 12 VDC Power Supply Box ON (if required).

_____ 31. Verify that floor spacer is up in lower part of drag shield

_____ 32. Hoist rig into lower part of drag shield

_____ 33. After crane clears drop area, pull handle on chain fall.

_____ 34. Use chain fall to move crane track out of drop area.

_____ 35. Guide top part of drag shield onto lower part using alignment pins.

_____ 36. Remove caps from transmitter and fiber optic cable numbered #1.

_____ 37. Connect fiber optic cable to transmitter

_____ 38. Using L-wrench, turn locking clamps (8) to LOCKED position.

_____ 39. Install door

_____ 40. After hoist operation clears drop area barrier, move floor fully back.

_____ 41. Spool out fiber optic cable. DO NOT KINK FIBER OPTIC CABLE

_____ 42. Take video tape and other supplies.

_____ 43. Proceed to Level 8.

Procedures: DIME TEAM: _____
Drop # 1 2 3 4 (circle one)   Date: _____

On Level 8:

Operator Positions (insert names):
Checklist: _____
Right Instrument Panel (IP): _____
Left Instrument Panel (IP): _____
Intercom: _____
Education Rig: _____(NASA Personnel)

Sequence of steps is critical!!!!
Connections at top of Education Rig and flipping switches on
Researcher Control Panel have to follow procedural order !!!!

_____ 44. Left IP: Researcher Panel Switches:
     _____ a. Red   DOWN
     _____ b. Yellow   DOWN
     _____ c. Green   DOWN
_____ 45. Education Rig: After technician latches experiment, open door
_____ 46. Education Rig: Make release connections on top of drag shield
_____ 47. Left IP: Researcher Panel Switches:
        SWITCH   POSITION (enter desired position)
     _____ a. Red   _____   (UP or DOWN)
     _____ b. Yellow   _____   (UP or DOWN)
     _____ c. Green   _____   (UP or DOWN)
_____ 48. Right IP: Insert USB thumbdrive in USB slot of Macintosh computer.
_____ 49. Right IP: Insert S-VHS video tape into VTR-2 and press RECORD & PLAY together.
_____ 50. Right IP: Check for VTR4 power ON – Green LED should be lit.
_____ 51. Right IP: Check VTR4 status lights: Upper light for inserted tape - on; DVCAM light – off; NTSC light – on; and PAL light – off.
_____ 52. Left IP: Put AM/FM switch to UP position
_____ 53. Left IP: Set left-hand Horita Time Generator switches to these positions:
     _____ a. ON/OFF --> ON
     _____ b. TC/UB --> TC
     _____ c. LRG/SML --> SML
     _____ d. TOP/BOT --> BOT
     _____ e. RUN/STOP --> left position
_____ 54. Left IP: Set right-hand Horita Time Generator switches to these positions:
     _____ a. ON/OFF --> ON
     _____ b. TC/UB --> TC

_____ c.   LRG/SML --> SML

_____ d.   TOP/BOT --> BOT

_____ e.   RUN/STOP --> left position

_____ 55.   Left IP: On Video Matrix Switcher, press RCL, enter 6 5, press TAKE to get Titler output to VTRs and video display.

_____ 56.   Left IP: Press the Character Generator power button to turn it ON (unless it is on already).

_____ 57.   Left IP: Press PAGE INDEX on Character Generator keyboard

_____ 58.   Left IP: Use the Character Generator arrow keys (up and down on big diamond-shaped key) to find the desired "page" or line (Team Name, Drop # __).

_____ 59.   Left IP: Press PLAY on Character Generator keyboard to display page.

_____ 60.   Right IP: On VTR-4, press and hold RECORD & then press PLAY to record the Character Generator page on the video tape for about 5 or 10 seconds.

_____ 61.   Right IP: Observe time changes on VTR4 clock.

_____ 62.   Right IP: Press PAUSE on VTR4

_____ 63.   Right IP: On the laptop computer, click on the DV camera symbol at the lower left of the data window when running iMovie software.

_____ 64.   Right IP: Press IMPORT button on Macintosh laptop iMovie software to record the Character Generator page on the laptop for about 5 or 10 seconds.

_____ 65.   Right IP: Press IMPORT button on Macintosh laptop to stop recording

_____ 66.   Left IP: On the Video Matrix Switcher, press RCL, enter 6 6, press TAKE to get experiment video to VTR4 (Important: Confirm camera view on VTR4 small video monitor. If necessary, try alternate setup with RCL, 6 7, TAKE.)

_____ 67.   Left IP: On left-hand Time Code Generator (Horita FP-50), turn OFF and then ON to reset time.

_____ 68.   Left IP: On left-hand Time Code Generator, Press RUN / STOP switch to SET position and release.

_____ 69.   Left IP: Observe time code generator time changes on video monitor.

_____ 70.   Right IP: Press PAUSE on VTR4 to restart recording (if still in PAUSE mode from earlier step - otherwise press & hold RECORD & then PLAY). Observe time changes on VTR4 clock.

_____ 71.   Right IP: Press IMPORT button on Macintosh laptop iMovie software

_____ 72.   Education Rig: Re-confirm the positions of the Researcher Panel Switches before this step. Place Rig Control Panel switches in proper position for drop (all Control Panel red LEDs normally should be OFF)

_____ a.   SW-1   DOWN for back lights or UP for front lights

_____ b.   SW-2   UP (this switch is DOWN only if experiment does not need lights!)

_____ c.   SW-3   _____ (UP or DOWN) Normal is DOWN

_____ d.   SW-4   _____ (UP or DOWN) Normal is DOWN

_____ e. SW-5 _____ (UP or DOWN) Normal is DOWN
_____ f. SW-6 _____ (UP or DOWN) Normal is DOWN
_____ g. SW-7 _____ (UP or DOWN) Normal is DOWN

_____ 73. Education Rig: Close drag shield door.
_____ 74. Intercom: Pick up Grey Phone, hold switch in handset, and announce "Prepare for drop"
_____ 75. Education Rig: Release crane hoist
_____ 76. Left IP: If necessary, activate Researcher Panel Switches when needed to activate experiment:

SWITCH   POSITION (enter desired position)
_____ a. Red   _____ (UP or DOWN)
_____ b. Yellow   _____ (UP or DOWN)
_____ c. Green   _____ (UP or DOWN)

_____ 77. Right IP: Observe video for proper operation of lights (if lights were switched on in previous step).
_____ 78. Intercom: Tell NASA Drop Technician when to drop the experiment.
_____ 79. NASA Drop Technician will release Education Rig when told with agreed-upon instruction. Usually this is "5-4-3-2-1-Drop!"
_____ 80. Right IP: 10 seconds after impact, press STOP on VTR4 and press STOP on VTR-2.
_____ 81. Right IP: Press IMPORT on Macintosh laptop and do menu selection FILE / SAVE PROJECT
_____ 82. Playback video to observe action during the 2.2 seconds of free fall.
_____ 83. In the Macintosh FINDER, copy the new project media files to the team's USB thumbdrive.
_____ 84. When file copy is complete, eject the USB thumbdrive with the icon next to the thumbdrive name in the left side of a window.
_____ 85. Remove USB thumbdrive.
_____ 86. Proceed to Level 5 take thumbdrive and other supplies.

Recovery: (NASA Personnel Only):

_____ 87. Spool in fiber optic cable
_____ 88. After hoist operation clears drop area barrier, move floor fully forward.
_____ 89. Remove door
_____ 90. Using L-wrench, turn locking clamps (8) to UNLOCKED position.
_____ 91. Disconnect fiber optic cable from transmitter
_____ 92. Install caps onto transmitter and fiber optic cable
_____ 93. Remove fiber optic cable to top of drag shield
_____ 94. Guide top part of drag shield up away from Education Rig
_____ 95. After crane clears level 5 area, pull handle on crane track
_____ 96. Use chain fall to position crane track into drop area.
_____ 97. After technician positions crane above rig, position hook into receptacle on top of rig.

_____ 98. Guide rig out of lower drag shield
_____ 99. Line up cart with crane track
_____ 100. After technician lowers rig onto cart, disconnect crane hook.
_____ 101. Download data from data logger.
_____ 102. Turn 12 VDC Power Supply Box OFF
_____ 103. Turn rig battery switch OFF
_____ 104. Wheel cart and experiment back to lab

Experiment Completion:

In Lab (on Level 4, Level 6 or shop):

_____ 105. Switch Charger to 28 VDC
_____ 106. Turn rig battery switch OFF
_____ 107. Connect Battery to Charger
_____ 108. Retrieve data from data logger (if used for experiment and if not done before).
_____ 109. Perform actions to recover the experiment.

After Last Drop:

_____ 110. Disconnect electrical plugs
_____ 111. Remove Mounting Plate and experiment apparatus from the Education Rig.
_____ 112. Load experiment into storage container to ship back to team's home school