

<b>ARCS PROCEDURE:</b>	<b>MICRO-PULSE LIDAR (MPL) DAILY OPERATING PROCEDURE</b>	<b>PRO(MPL)-002.004</b>
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## **Micro-Pulse Lidar (MPL) Daily Operating Procedure**

### **I. Purpose:**

This document assumes that the MPL has operated continuously for a period of at least several days without problems. It describes the daily care and maintenance for the polarizer equipped Type 4B Micro-Pulse Lidars (MPLs) currently operated at the Tropical Western Pacific Facilities and the ARM Mobile Facility.

### **II. Cautions and Hazards:**

- During normal operation, the MPL is an eye-safe laser radar system. Nonetheless, one should avoid directly viewing the transmitter beam for an extended period of time (more than several seconds). If the side panels are removed from the MPL Transmitter/Receiver module, or if the fiber optic cable is disconnected from the laser head, the system is no longer eye-safe and laser safety glasses are to be worn.

### **III. Requirements:**

- Air Duster

### **IV. Procedure:**

#### **A. Steps:**

1. Verify that all indicator lights on the MPL computer, computer monitor, Photonics Laser Controller, Lidar Data System, and (if installed) shutter control box are illuminated.
2. On Meadowlark Optics box: "Power" light should be on. If "Status" light does not blink briefly every three seconds, power cycle the Meadowlark Optics box and check that the status light does then blink every 3 seconds.
3. ON CRT monitors, increase monitor intensity if needed and verify that the MPL is updating the display every 3 seconds.
4. Looking at "MPL Data Graph" verify displayed parameters are within their acceptable ranges:
  - Check that the date code and time are correct
  - Detector temperature (acceptable range 20C-30C, typical 25C);
  - Telescope temperature (acceptable range 20C-30C, typical 23C)

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- Laser temperature (acceptable range 20C-30C, typical 25C)
  - Energy Cal EM (acceptable range 5-8 microjoules, typical 6)
  - PolarVolt0 alternates between two values every 3 seconds
  - Laser supply check: Ia set for each MPL (range 0.80 - 1.2)
  - Laser supply check: R-Rate=2500
5. Looking at "Sigma MPL Display" verify displayed parameters are within their acceptable ranges. (Minimize "MPL Data Graph" if necessary)
    - Check that each of the following boxes is selected: Collect Data, Detector Power Channel 1, and Save Data.
    - Check that the following settings are correct: Bin Resolution 30 meters, and Averaging Time 3 seconds.
    - Note any new errors reported in the Sigma MPL Display scroll buffer.
    - Restore "MPL Data Graph" to view if minimized.
  6. Hold a sheet of white paper above the lidar telescope; a green, circular donut of light, approximately 20 cm in diameter, should appear. Report any deformity of beam appearance.
  7. Check for debris/dust on the telescope exit glass. To avoid eye exposure to laser radiation, do not stare into telescope. Remove any debris. If dust remains, use air duster to remove, if any further contamination of telescope contact technical staff for advice.
  8. After climbing onto seatainer/trailer roof, check for debris/dust on MPL ceiling port window and on sun position sensor tube window (if unit is equipped with shutter). To avoid eye exposure to laser radiation, do not stare into MPL ceiling port window. If necessary, clean windows with distilled water or mild detergent solution (e.g., Windex) and wipe dry with paper towels.

**V. References:**

None.

**VI. Attachments:**

None.