NMSU POP Master Field Operations Checklist

Version: Consolidated 1.0 | Modules Covered: 1-5

Date: _____ Location: _____

Staff: _____

1. Safety & PPE Protocols (Universal)

- [ ] **Personal Safety:**
  - Hard hats (at height)
  - Safety glasses
  - Steel-toed boots
  - Work gloves are mandatory.
  - Never work alone; a partner is required for maintenance and transport.
- [ ] **Electrical Safety:**
  Ensure main disconnect is OFF before maintenance. Remove metallic jewelry. Do not bridge battery terminals. 48V DC systems can arc.
- [ ] **Site Safety:**
  Verify trailer is level, stable, and >500ft from the main building with clear line-of-sight. Avoid overhead power lines.

2. Mobility & Deployment (Moving the POP)

Pre-Transport & Hitching

- [ ] **Shutdown:**
  - Turn off Main Disconnect and Cerbo GX.
  - Disconnect all external sensors and retract stabilizing jacks.
- [ ] **Hitching:**
  Use a 2-inch ball. Ensure coupler is fully seated and locked. Cross safety chains under the tongue (do not twist).
- [ ] **Connections:**
  Connect breakaway cable and 7-way light plug. Test brake lights, turn signals, and markers.
- [ ] **Transport:**
  Max speed 55 mph. Check mirrors frequently for sway.

Site Setup

- [ ] **Positioning:**
  Orient trailer for optimal solar exposure and wireless line-of-sight.
- [ ] **Stabilization:**
  Deploy jacks until trailer is perfectly level. Chock wheels.
- [ ] **Reconnect:**
  Connect solar panels and battery banks before powering on the load.

3. Power Systems (Solar & Battery)

Daily Inspection Criteria

- [ ] **Voltage Check:**
  Nominal voltage should be 48V (Range: 47-49V acceptable).
- [ ] **Charge Level:**
  Morning >80%; Evening (target) 100%. Critical low is <60%.
- [ ] **Physical Check:**
  - Solar panels clean/debris-free.
  - Battery terminals corrosion-free.
  - Inverter cooling vents clear.
- [ ] **Temperature:**
  Normal operating range 20-40°C. Warning at >50°C.

Troubleshooting Power

- [ ] **Low Charge (<50%):**
  - Reduce non-essential loads immediately.
  - Check for panel shading/dirt.
  - Verify MPPT is tracking.
- [ ] **High Temp (>50°C):**
  - Ensure enclosure ventilation is clear.
  - Reduce load.
  - Contact ACES IT.

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4. Wireless Alignment & Connectivity

Alignment Procedure

- [ ] **Coarse Alignment:**
  Visually point LiteBeam toward the main building sector antenna using binoculars/compass.
- [ ] **Fine Tuning:**
  Adjust Azimuth (Left/Right) and Elevation (Up/Down) in small increments (2-5 degrees) while monitoring signal dBm.
- [ ] **Verification:**
  Lock antenna position when signal is maximized.

Signal Strength Reference

Strength (dBm)	Status	Action
-30 to -50	Excellent	Optimal target: Lock down equipment
-50 to -70	Good	Acceptable for most applications
-70 to -90	Fair	Monitor closely; may fail in bad weather
> -90	Poor	Re-align immediately
Latency	< 50 ms	High fluctuations / Packet loss

Connectivity Check: Verify data throughput (>10 Mbps download), acceptable latency (<50 ms), and no packet loss.

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5. Research Operations & Data Integrity

Daily System Health

- ☐ **Data Flow:**
  Verify IoT devices, sensors, network equipment, and cameras are reporting to the main office.

Monthly Performance Review

- ☐ **Uptime:**
  Target >98% (max 7 hours downtime/month).
- ☐ **Storage:**
  Verify local and remote data storage capacity is adequate.
- ☐ **Maintenance:**
  Log all downtime incidents and root causes.

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6. Quick Reference: Technical Specs & Contacts

System Specifications

Parameter	Normal Range	Critical/Failure
Battery Voltage	47V - 49V	< 45V or > 50V
Battery Temp	20°C - 40°C	> 50°C
System Load	< 40A	> 60A
Wireless Signal	-30 to -70 dBm	> -90 dBm
Latency	< 50 ms	High fluctuations / Packet loss

Key Contacts

Emergency/Fire:

- Call 911 Immediately

Wireless/IT, Power, or Trailer Issues:

- ACES IT | (575) 646-3305 | aces_help@nmsu.edu

ASC On-Site Issues:

- Contact the local ASC Director or Manager

Sign-Off Inspected By: _____ Date: _____

Status: □ Operational □ Issues Found