Geonics EM34-3 Deep Ground Induction System

Standard Operating Procedure & Calibration Protocol

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Target Equipment: Geonics EM34-3 Deep Ground Induction System	**Status:** Approved for Field Use

1.0 PURPOSE & SCOPE

This SOP details field assembly, inter-coil spacing alignment (10m, 20m, 40m), and two-man operation calibration for the Geonics EM34-3 deep electromagnetic induction conductivity meter measuring terrain conductivity down to 60 meters depth.

2.0 FIELD CALIBRATION & OPERATIONAL STEPS

1. **Battery Verification:** Test transmitter (Tx) and receiver (Rx) battery consoles in BAT mode (reading 720 to 1500 required).
2. **Inter-Coil Separation Alignment:** Connect reference cable (10m, 20m, or 40m). Adjust Rx separation control until meter needle centers at zero in Separation mode.
3. **Horizontal Dipole (HD) Baseline Check:** Hold transmitter and receiver coils coplanar, vertical on ground surface. Record HD conductivity reading.
4. **Vertical Dipole (VD) Baseline Check:** Turn both coils flat on ground (coplanar horizontal). Verify VD reading matches depth response curve.
5. **Coil Noise Audit:** Verify zero needle jitter from nearby fences or 60 Hz power lines.

3.0 SPECIFICATIONS & LIMITS

Coil Spacing	Exploration Depth (HD / VD)	Acceptable Battery Level
10 meters	7.5m (HD) / 15m (VD)	720 – 1500 (Analog)
20 meters	15m (HD) / 30m (VD)	720 – 1500 (Analog)
40 meters	30m (HD) / 60m (VD)	720 – 1500 (Analog)

APPROVAL & AUTHORIZATION	FIELD EXECUTION SIGN-OFF
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