Ground Surveillance Radar — Operator Checklist

Quick reference checklist for pre-mission, operation, and shutdown steps.

Pre-Start (Before MAIN POWER ON)

- [ ] Personnel & area clear of antenna sweep and RF exposure zones
- [ ] External power / generator / UPS available and nominal
- [ ] Grounding strap / earthing verified
- [ ] Fire extinguisher / safety equipment accessible

1. MAIN POWER ON

- [ ] Turn MAIN POWER ON / close circuit breaker
- [ ] Confirm fans start and status lamps illuminate
- [ ] Verify console boot begins (POST running)

2. POST / BIT (Power-On Self Test)

- [ ] No critical BIT faults (check fault panel & console)
- [ ] Cooling fans airflow OK
- [ ] Door/interlock & emergency stop states OK
- [ ] Clear any non-critical warnings after corrective action

3. CONTROLLER & NETWORK INIT

- [ ] Controller/CPU loaded configuration and firmware
- [ ] Console/display communication OK
- [ ] GPS / time sync / network link OK
- [ ] Data link to C2 / recorders established

4. ANTENNA / SERVO INIT

- [ ] Power to antenna drive enabled
- [ ] Encoder / limit switches / homing completed
- [ ] Perform slow jog / brief rotation — check for noise/vibration
- [ ] Rotor brakes released and slip-ring status OK

5. RF SUBSYSTEM WARM-UP

- [ ] Enable transmitter warm-up (filaments/T/R modules)
- [ ] Wait warm-up timer complete (30 s – 5 min typical)
- [ ] Receiver LNA + LO stabilization confirmed

6. RECEIVER & PROCESSOR CALIBRATION

- [ ] Run internal loopback/calibration routine
- [ ] Verify I/Q balance, range alignment, matched-filter response
- [ ] Accept calibration results or re-run if out of spec

7. SAFETY & MISSION PRECHECKS

- [ ] RF exclusion zone and personnel brief confirmed
- [ ] IFF/SSR (if present) initialized and tested
- [ ] Mission parameters set: scan sectors, range, PRF, gain, tilt, dwell
- [ ] Site offsets (antenna height, coords) entered

8. STANDBY → OPERATE (Transmit Enable)

- [ ] Confirm all interlocks (doors closed, waveguide covers, safety switches)
- [ ] Move guarded switch to OPERATE / TRANSMIT enable
- [ ] Monitor forward/reflected power, arc detectors, HV stability
- [ ] If any fault — return to STANDBY and troubleshoot

9. INITIAL SCANS & CLUTTER BUILD

- [ ] Allow 2–10 sweeps to build ground/clutter map
- [ ] Verify MTI/GMTI filters and clutter suppression behavior
- [ ] Confirm track initiation on valid detections

10. NORMAL OPERATION

- [ ] Monitor system health: temperatures, voltages, currents, RF metrics
- [ ] Adjust thresholds/gain/PRF/scan sectors as needed
- [ ] Log noteworthy tracks, anomalies, and operator actions
- [ ] Ensure continuous data link to C2 (if applicable)

11. FAULT RESPONSE

- [ ] Non-critical fault: apply guided recovery steps
- [ ] Critical fault: immediately switch to STANDBY; park antenna if required
- [ ] Record fault codes and notify maintenance

12. STANDBY / PARK (Temporary Pause)

- [ ] Switch to STANDBY (transmitter OFF, receiver optionally ON)
- [ ] Park antenna or set safe rotation mode as per SOP
- [ ] Fans & cooling remain active

13. SHUTDOWN (End of Mission)

- [ ] Command OPERATE → STANDBY; confirm transmitter HV = 0 and RF OFF
- [ ] Park antenna and lock servos / apply brakes (if required)
- [ ] Allow cooldown period (1–5 min typical)
- [ ] Turn MAIN POWER OFF after safe shutdown complete

14. POST-SHUTDOWN / LOGS

- [ ] Archive mission logs, radar recordings, and fault logs
- [ ] Note maintenance actions and anomalies in logbook
- [ ] Schedule any required preventive maintenance

Emergency Actions: Use EMERGENCY STOP or RF KILL switch immediately if personnel hazard or fire occurs.