



Chapter 06: Safety and Compliance

02. Aircraft Fueling Safety Procedures

Implement safety protocols for aircraft fueling operations to prevent accidents and ensure regulatory compliance.

Roles and Responsibilities

Line Service Technician:

- Provide direct aircraft handling services
- Execute safety protocols during aircraft movements
- Document all services provided accurately
- Coordinate with ground support equipment
- Monitor safety compliance during operations

Safety Officer:

- Monitor safety compliance across all operations
- Conduct safety investigations and reporting
- Coordinate safety training and certification
- Ensure regulatory safety compliance
- Authorize safety equipment and improvements

Operations Leader:

- Oversee daily operations and coordinate between departments
- Authorize emergency response procedures and resource allocation
- Monitor safety compliance and operational excellence
- Coordinate scheduling across departments for operational coverage
- Review billing disputes and approve service adjustments
- Ensure regulatory compliance across all operations

Process Steps

Pre-Fueling Safety Phase

- **Verify aircraft electrical systems** - Ensure all electrical systems, radios, and transponders are turned

off before beginning fuel operations

- **Check weather conditions** - Confirm wind speed is below 35 knots and no thunderstorms are within 5 miles of airport
- **Inspect fueling equipment** - Verify fuel truck, hoses, nozzles, and grounding equipment are in proper working condition
- **Review fuel requirements** - Confirm fuel type (100LL or Jet A), quantity requested, and any special handling instructions
- **Establish communication** - Contact pilot or aircraft owner to confirm fueling authorization and requirements
- **Position fuel truck safely** - Park fuel truck in designated position with emergency equipment accessible

Grounding and Bonding Phase

- **Connect grounding cable** - Attach grounding cable from fuel truck to designated aircraft grounding point before fuel cap removal
- **Verify proper connection** - Ensure grounding cable makes solid electrical contact with aircraft structure
- **Test continuity** - Use continuity tester to verify proper grounding connection between truck and aircraft
- **Maintain grounding** - Keep grounding connection in place throughout entire fueling operation
- **Document grounding** - Record grounding verification on fuel service record
- **Check static dissipation** - Allow minimum 30 seconds for static electricity dissipation before fuel cap removal

Fuel Quality Verification Phase

- **Sample fuel quality** - Draw fuel sample from truck tank and test for contamination, water, and proper fuel type
- **Check fuel color** - Verify 100LL is blue and Jet A is clear or straw-colored
- **Test for water contamination** - Use water detection paste or electronic tester to check for water presence
- **Verify fuel specifications** - Confirm fuel meets ASTM specifications for octane rating and additives
- **Document fuel quality** - Record fuel quality test results on fuel service record
- **Reject contaminated fuel** - Do not dispense fuel if contamination is detected; notify fuel supplier immediately

Fueling Operation Phase

- **Remove fuel caps carefully** - Open fuel caps slowly to prevent static electricity buildup
- **Insert fuel nozzle properly** - Ensure fuel nozzle is fully inserted and seated in fuel port
- **Monitor fuel flow rate** - Maintain appropriate fuel flow rate to prevent overflow and static buildup

- **Watch for fuel level** - Monitor fuel quantity gauges and visual indicators to prevent overfilling
- **Maintain constant supervision** - Never leave fueling operation unattended; maintain visual contact at all times
- **Communicate with pilot** - Keep pilot informed of fueling progress and any issues that arise

Post-Fueling Safety Phase

- **Secure fuel caps** - Replace and tighten fuel caps properly to prevent fuel leakage
- **Remove grounding cable** - Disconnect grounding cable only after all fuel caps are secured
- **Inspect for leaks** - Check aircraft and ground area for any fuel leaks or spills
- **Clean up work area** - Remove any fuel residue and dispose of contaminated materials properly
- **Complete documentation** - Fill out fuel service record with quantities, fuel type, and safety verification
- **Return equipment** - Secure fuel truck and equipment in designated storage areas

Spill Response Phase

- **Stop fueling immediately** - Cease fuel flow and secure fuel source to prevent additional spillage
- **Eliminate ignition sources** - Ensure no smoking, electrical equipment, or vehicle engines in spill area
- **Contain fuel spill** - Use absorbent materials to contain and prevent spread of fuel spill
- **Ventilate area** - Ensure adequate ventilation to prevent vapor accumulation
- **Notify authorities** - Contact fire department and environmental authorities for spills exceeding reportable quantities
- **Document incident** - Complete spill report with cause, quantity, and response actions taken

Tools and Resources

Safety Equipment:

- Grounding cables and clamps
- Fire extinguishers (dry chemical and AFFF)
- Fuel spill containment materials
- Static electricity dissipation equipment

Testing Equipment:

- Fuel quality test kits
- Water detection paste or electronic testers
- Continuity testers for grounding verification
- Fuel sampling equipment and containers

Documentation:

- Fuel service records and logbooks
- Fuel quality test result forms
- Spill response procedures and contact lists
- Regulatory compliance checklists

Common Issues and Solutions

- **Issue:** Static electricity buildup during fuel transfer
- **Solution:** Ensure proper grounding, maintain slower fuel flow rates, and allow adequate static dissipation time

Issue: Fuel contamination detected in aircraft tanks

Solution: Stop fueling immediately, drain contaminated fuel, investigate source, and notify fuel supplier

Issue: Fuel spill during transfer operations

Solution: Implement immediate spill response procedures, contain spill, eliminate ignition sources, and notify appropriate authorities

Regulatory References

- **14 CFR Part 139.321** - Handling and storing of hazardous substances and materials
- **NFPA 407** - Standard for Aircraft Fuel Servicing
- **API RP 1004** - Bottom Loading and Vapor Recovery for MC-306 Tank Motor Vehicles
- **29 CFR 1910.106** - Flammable liquids storage and handling requirements
- **40 CFR Part 112** - Oil Pollution Prevention regulations
- **FAA Advisory Circular AC 150/5230-4** - Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports