



Chapter 05: Flight School Operations

14. Fuel Management and Refueling Operations

Manage fuel operations for training aircraft to ensure safe, efficient, and cost-effective fuel management while maintaining training aircraft availability.

Purpose

Establish procedures for managing aviation fuel inventory, conducting safe refueling operations, and coordinating fuel planning to support training aircraft operations while ensuring safety compliance and cost effectiveness.

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

Flight Instructor:

- Conduct student assessments and training
- Review training objectives with students
- Coordinate aircraft scheduling for training
- Maintain communication with students on progress
- Ensure safety and regulatory compliance

Process Steps

Fuel Planning Phase

- **Assess fuel requirements** - Calculate fuel needs for scheduled training flights and reserve requirements
- **Monitor fuel inventory** - Track fuel tank levels and coordinate replenishment scheduling

- **Plan refueling schedule** - Coordinate aircraft refueling with training schedules and aircraft availability
- **Verify fuel specifications** - Confirm correct fuel type and grade for each aircraft type

Pre-Refueling Safety Phase

- **Conduct safety inspection** - Verify refueling equipment condition and safety system operation
- **Test fuel quality** - Sample fuel for contamination, water, and specification compliance
- **Establish safety perimeter** - Ensure area security and fire safety equipment availability
- **Review aircraft status** - Verify aircraft electrical systems are off and refueling procedures are safe

Refueling Operations Phase

- **Connect grounding equipment** - Establish proper electrical grounding for fuel transfer operations
- **Verify fuel type match** - Confirm fuel grade matches aircraft requirements before fuel transfer
- **Monitor fuel transfer** - Supervise fuel transfer operation and watch for leaks or safety issues
- **Complete fuel quantity verification** - Confirm fuel quantity matches requirements and update records

Post-Refueling Documentation Phase

- **Disconnect equipment safely** - Remove fuel hoses and grounding equipment following safety procedures
- **Complete fuel service documentation** - Record fuel quantity, type, and service details accurately
- **Update aircraft records** - Record fuel service in aircraft logbooks and maintenance tracking
- **Process billing information** - Coordinate fuel service charges with billing and student accounts

Process Mapping

Flowchart showing fuel management workflow from planning through service documentation

Tools and Resources

Fuel Handling Equipment:

- Aircraft refueling trucks and fuel handling systems
- Fuel quality testing equipment and contamination detection tools
- Grounding equipment and static electricity prevention systems
- Fire safety equipment and emergency response materials

Documentation Systems:

- Fuel inventory tracking and management systems
- Aircraft fuel service records and logbook documentation
- Fuel quality testing logs and contamination records
- Billing and cost tracking systems for fuel services

Safety Equipment:

- Personal protective equipment for fuel handling operations
- Fire extinguishers and emergency response equipment
- Fuel spill containment and cleanup materials
- Safety signage and hazard identification systems

Success Metrics

- **Completion Time:** Aircraft refueling completed within 30 minutes of service request.
- **Quality Standard:** Zero fuel contamination incidents or fuel specification errors.
- **Safety Standard:** All fuel operations comply with safety regulations without incidents.
- **Client Satisfaction:** Training flights proceed as scheduled without fuel-related delays.

Common Issues and Solutions

- **Issue:** Fuel contamination discovered during quality testing requiring fuel system servicing
- **Solution:** Implement rigorous fuel testing procedures and maintain fuel system maintenance to prevent contamination

Issue: Refueling delays affecting training schedule due to equipment problems or fuel availability

Solution: Maintain backup refueling equipment and coordinate fuel inventory management to prevent shortages

Issue: Fuel planning errors resulting in inadequate fuel for training flights

Solution: Provide fuel planning training for instructors and students and implement verification procedures

Safety Considerations

- **⚠ WARNING:** Maintain strict fire safety procedures during all fuel handling operations and ensure emergency equipment availability

⚡ **CAUTION:** Verify proper grounding and electrical safety procedures before beginning fuel transfer operations

i **NOTE:** Test fuel quality before each refueling operation to prevent aircraft fuel system contamination

✓ **BEST PRACTICE:** Coordinate fuel operations with training schedules to ensure aircraft availability and minimize delays

Regulatory References

- 14 CFR Part 23 - Airworthiness standards for normal category airplanes fuel systems
- NFPA 407 - Standard for aircraft fuel servicing safety procedures
- EPA regulations - Environmental requirements for fuel handling and spill prevention
- OSHA 29 CFR 1910.106 - Flammable liquids safety and handling requirements
- API RP 1540 - Safety requirements for aircraft fuel servicing operations