

**Supplement to InFO 08032**  
**Discussion of Non-Routine Flight Operations (NRFO)**

**a. *Reasons for NRFOs.***

1. The affected flight was conducted for the purpose of achieving compliance with 14 CFR part 43, § 43.5, Approval for return to service after maintenance, preventive maintenance, rebuilding, or alteration.

2. For the purposes of this InFO, NRFOs are those flight operations conducted for purposes other than the ordinary transport of people or material. For air carriers, this means all flights not involving common carriage.

**(a) Examples of NRFOs.**

(1) In-flight functional evaluation of the aircraft and/or its systems,

(2) Engine inoperative ferry flights. **(NOTE: the guidance in this InFO is not applicable to Engine inoperative ferry flights.)**

(3) In-flight operational checks of maintenance performed or alteration(s) made,

(4) Flights conducted for the purpose of crewmember training or qualification,

(5) All operations conducted under a Special Flight Permit,

(6) Maintenance troubleshooting flights, and/or

(7) Sales or customer demonstration flights.

**(b)** For air carriers, the list includes all flight operations not conducted as part of the air carrier's scheduled or nonscheduled passenger and/or cargo carrying operations.

**b. *Clarification of Existing Regulations.*** There are numerous sections applicable to NRFOs. These include:

1. Section 91.3(a) states that "the pilot in command of an aircraft is directly responsible for, and is the **final** authority as to, the operation of that aircraft." This makes it critical that the pilot is the final authority on whether a flight starts, continues, or ends, and is responsible to end any such flight at the time the pilot finds safety is compromised. Therefore, the termination of an NRFO would be appropriate, even before departure, if the pilot finds that the aircraft is not airworthy.

2. Section 91.7.

(a) This section sets forth requirements concerning the airworthiness condition of all civil aircraft. Section 91.7(a) states that “no person may operate a civil aircraft unless it is in an airworthy condition.” Section 91.7(b) states that “the pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.”

(b) A clarification of the term airworthy is necessary because there is no definition of airworthy in 14 CFR. The accepted definition for “airworthy” comes from FAA Order 8900.1, Flight Standards Information Management System (FSIMS), Volume 7, Chapter 7, Section 1, Paragraph 7-223 and from legal interpretation No. 1988-16, dated June 17, 1988, issued by the Assistant Chief Counsel, Regulations and Enforcement Division, Office of the Chief Counsel.

3. Section 91.103 states, in part, that “each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight.” Therefore, the PIC must be aware of all that was done to the aircraft that might affect its operation.

4. Section 91.213 sets forth the requirements for operating an aircraft with certain instruments and equipment in an inoperable condition.

**Guidance:** This guidance material for conducting an NRFO is advisory rather than regulatory. The PIC must make the final decision as to the safety of the flight after considering all relevant regulations, procedures, and guidance.

a. *Air Carrier NRFOs.* The air carrier manual should contain:

1. Detailed policy and procedures for the authorization, control, and conduct of all non-routine flight operations,

2. Addresses of those locations and areas which can be used to conduct the NRFO, and

3. Detailed information describing the level, amount, and type of required training for those flight crewmembers authorized to conduct these types of flights.

b. *Airworthiness.* The PIC must be certain that the airplane is airworthy before operating it. Regulations prohibit a pilot from operating an airplane that is not airworthy. The PIC must be certain that:

1. An authorized person approved the aircraft for return to service, in accordance with the FAA-approved company maintenance manual.

2. All inspection, maintenance, and alteration tasks were completed before being approved for return to service.

c. *Determine the Required Crew Qualifications.*

**1. This document divides NRFOs into two groups.**

**(a)** Group 1 includes those NRFOs in which the flightcrew should consist of a fully qualified and current PIC, first officer, and, if appropriate, flight engineer.

**(b)** Group 2 includes those NRFOs in which the PIC, and, if applicable, flight engineer, are qualified instructors, check airmen, or flight crewmembers that have been trained and authorized by the air carrier specifically for conducting NRFOs.

**2. Operations.**

**(a)** Operations appropriate to Group 1 NRFOs involve the operation of the aircraft in accordance with the normal procedures of the flight manual. These include, but are not limited to:

- Normal operation of airplane systems such as the normal retraction and extension of the aircraft's landing gear
- A flight to confirm the proper functioning of the aircraft's communication and or navigation radios
- A flight to confirm the proper functioning of the aircraft's autopilot

**(b)** Operations appropriate to Group 2 NRFOs involve procedures described or listed, in emergency, abnormal, or alternate procedures. These flights include any flight in which any system on the aircraft is de-powered in order to confirm a back-up system is functional, such as:

- Any flight that involves de-powering of any of the aircraft's electric, hydraulic, or pneumatic systems
- Alternate extension of the aircraft's landing gear
- Alternate extension of the aircraft's flaps
- A flight that involves approach or actual entry into a stall
- Actual shut down of an engine
- De-powering of any flight control power input
- Operation of the plane's wing flaps following certain procedures

**3. Training.**

(a) The FAA requires that every PIC conducting operations under part 121 is trained and qualified to operate the airplane in all normal procedures, and to recover and land the aircraft from problems that might occur.

(b) Even though instructors check airmen, and specifically trained flight crewmembers are qualified to simulate emergencies and expect the unexpected, there is a need for some additional training for these pilots. Each certificate holder should develop, and have accepted by the Administrator, training such that each NRFO will be conducted in accordance with procedures consistent with safe flight operations.

**d. *Preparation/Pre-Flight.*** Proper and complete preparation before starting an NRFO might well be more extensive than the actual flight.

**1.** The PIC should coordinate with maintenance as to why the flight is needed.

(a) What was inoperative?

(b) What was repaired?

(c) What was replaced?

**2.** The PIC should determine what precautions to take and plan ahead what course of action to take if the airplane does not function in the intended manner.

**3.** The crew should thoroughly review all appropriate schematics, systems, and limitations consistent with the intended NRFO.

**4.** The PIC should pre-plan to immediately land the plane if its condition deteriorates to a condition that is no longer airworthy. The NRFO is not a test flight and the crew are not qualified test pilots.

**5.** The PIC should determine where to conduct the flight.

**6.** The PIC should make prior coordination with Air Traffic Control.

**7.** The PIC should determine that weather conditions are adequate to safely conduct the NRFO.

**e. *During the Flight.*** Following this methodology allows the crew to plan ahead for unexpected occurrences during the NRFO. Should the flight encounter such difficulties, the previously agreed-upon procedures should be sufficient to permit a safe landing.