

CHAPTER 1. AIR NAVIGATION AND COMMUNICATIONS

SECTION 6. GENERAL COMMUNICATION CONCEPTS, POLICIES, AND GUIDANCE

285. GENERAL. For all operations, Federal Aviation Regulations (FAR) § 91.183 requires that the pilot-in-command (PIC) of each aircraft maintain a continuous watch on the appropriate frequency when operating under instrument flight rules (IFR) in controlled airspace. This section contains information and guidance concerning the communication equipment requirements for FAR Parts 121 and 135 over-water operations.

287. VERY HIGH FREQUENCY (VHF)/HIGH FREQUENCY (HF) COMMUNICATIONS. (TBD)

289. COMMUNICATION EQUIPMENT REQUIREMENTS FOR OVER-WATER OPERATIONS.

A. Over-water Operations. FAR § 91.511 identifies the radio equipment that is required when operating “over water” more than 30 minutes flying time or 100 nautical miles (NM) from the nearest shore. Different from the “extended over-water” definition found in FAR Part 1, this term is applied to FAR Part 91 operations of large and turbine-powered multiengine airplanes.

B. Extended Over-water Operations. FAR Part 1 defines “extended over-water operation” for airplanes as “an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline. . . .and, for helicopters, as “an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure.” The definition applies to both FAR Part 121 and 135 operations.

C. Regulations. The appropriate regulations and accompanying guidance for conducting extended over-water operations under FAR Part 121 are as follows:

(1) FAR § 121.351(a) states that no person may conduct an extended over-water operation unless the airplane is equipped with the radio equipment necessary to comply with FAR § 121.349 and an independent system that complies with FAR § 121.347(a)(1).

(2) FAR § 121.349 requires all of the equipment required in FAR § 121.347(a) to be installed. In addition, the radio equipment must be able to satisfactorily receive all radio navigational facilities to be used by either of two independent systems.

(3) FAR § 121.347(a)(1) requires the radio equipment necessary for the crew to communicate with at least one appropriate ground station from any point en route.

(4) FAR § 121.347(a)(2) requires the radio equipment necessary for the crew to communicate with appropriate Air Traffic Control (ATC) from any point in the control zone within which flights are intended.

(5) FAR § 121.347(a)(3) requires the radio equipment necessary for the crew to receive meteorological information from any point en route by either of two independent systems, and further states that one of the means provided to comply with this subparagraph may also be used to comply with subparagraphs (a)(1) and (2) of FAR § 121.347

D. Applicable FAR Part 121 Guidance. To ensure adequate communication with ground stations, FAR § 121.351 requires FAR Part 121 operators engaged in extended over-water operations to have all aircraft equipped with two independent communication systems. Each of these independent communication systems must be capable of communicating with at least one appropriate ground station from any point on the route.

(1) If this requirement can be complied with on all over-water routes by using VHF equipment, the airplane need only be equipped with two VHF receivers and two VHF transmitters.

(2) On the other hand, if compliance with FAR § 121.347(a)(1) can only be accomplished with HF equipment, the airplane must be equipped with two HF systems and at least one VHF system to also comply with FAR § 121.347(a)(2).

NOTE: Principal operations inspectors (POI) should be aware that Exemption No. 2081, as amended, grants relief from FAR § 121.99 by authorizing FAR Part 121 operators to dispatch airplanes over certain ocean

areas with one of the two required HF radios inoperative at the time of departure, subject to certain conditions and limitations.

(3) The term “appropriate ground station” in FAR § 121.347(a)(1) includes, for example, aeronautical radio stations for ATC en route and air carrier dispatcher and flight-following services. Where there are gaps in air-ground communication capabilities that require the use of both VHF and HF systems en route to comply with FAR § 121.347(a)(1), there must be two VHF and two HF systems to comply with the requirement of FAR § 121.351.

E. FAR Part 135 Guidance. FAR § 135.165 prohibits operators from flying under IFR or on extended over-water operations unless the aircraft is equipped with certain communication and navigation equipment. Guidance for FAR Part 135 operators regarding this equipment is specified in FAR § 135.165 as follows:

(1) *Turbojet Airplanes with 10 or More Passenger Seats and Multiengine Commuter Airplanes.* FAR § 135.165(a) pertains to turbojet airplanes with a passenger seating configuration of 10 or more and to multiengine airplanes carrying passengers as a commuter air carrier. FAR § 135.165(a) requires, in part, for IFR or for extended over-water operations, that those airplanes have radio communications equipment appropriate to the facilities to be used and that the equipment be capable of transmitting to, and receiving from, at least one ground facility at any place on the route. It also requires, in part, that two “independent” transmitters and two “independent” receivers for communication be used. For the purpose of this section, a receiver or transmitter is “independent” if it

does not depend on the functioning of any part of another receiver or transmitter.

(2) *Other Aircraft.* FAR § 135.165(b) pertains to all other aircraft and requires, in part, only one transmitter and two independent receivers for communications under IFR or during extended over-water operations.

(3) *Use of an Additional Transmitter.* FAR § 135.165(b)(7) also requires that an additional communications transmitter be used for extended over-water operations. This would mean that if an HF radio is required to communicate with ATC over any part of an extended over-water route, the aircraft will be required to be equipped with two HF independent transmitters and two independent HF receivers.

F. FAR Parts 121 and 135 Operations Ferrying Aircraft Under FAR Part 91. FAR § 91.511 requires those FAR Part 121 and 135 operators who ferry aircraft under FAR Part 91 to carry certain operable communications equipment on large and turbine-powered, multiengine airplanes when they are flown over water. For example, when both VHF and HF communications equipment are required for the intended route under FAR § 91.511, FAR § 91.511(d) allows the FAR Part 91 operator to conduct over-water operations with only one HF transmitter and one HF receiver, provided the aircraft is equipped with two independent VHF transmitters and receivers.

291. DATA LINK. (TBD)

293. AUTOMATIC DEPENDENT SURVEILLANCE. (TBD)

295. SATELLITE VOICE. (TBD)

296.-400. RESERVED.

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