

ORDER

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AL 3900.21C

ALASKAN REGION

June 9, 1993

SUBJ: FIRE DETECTION DEVICES IN FAA LIVING QUARTERS

1. **PURPOSE.** The purpose of this directive is to assist in early detection of fires resulting in saving of life and property in Alaskan Region living quarters units. This revision reflects changes in the Uniform Building Code.
2. **DISTRIBUTION.** This order is distributed to branch level in the Logistics, Airway Facilities, and Air Traffic Division, to all Airway Facilities field offices/facilities, and to all air traffic control towers and flight service stations.
3. **CANCELLATION.** Order AL 3900.21B, Fire Detection Devices in FAA Living Quarters, dated May 14, 1987, is cancelled.
4. **SCOPE.** This directive will govern the installation of smoke detection devices in all FAA owned or leased living quarters in the Alaskan Region.
5. **DEFINITIONS.**
 - a. Smoke Detector. A smoke detector is any approved smoke detection device utilizing photo-cell or ion-chamber detection systems to sense visible or invisible products of combustion. This detector shall bear a label or other identification issued by an approved testing agency having a service for inspection of materials and workmanship at the factory during fabrication and assembly.
 - b. Heat Detector or Rate-of-Rise Devices. This includes any approved heat sensing device designed to provide protection from unusually rapid temperature increase or high temperature approaching combustion levels. The detector shall bear a label or other identification issued by an approved testing agency having service for inspection of materials and workmanship at the factory during fabrication and assembly.
 - c. A.C. System or Device. This is any system or device designed to operate on household electricity, usually 120 volts A.C.
 - d. D.C. System or Device. This is any system or device designed to operate on replaceable batteries which provide direct-current power ranging from 4 to 24 volts.
6. **POLICY.**
 - a. General. All existing fire detection systems will be retained in an operable condition. Additional systems required by this directive will be installed to complement existing systems (see Appendix 1).
 - b. Detection Equipment.
 - (1) All living quarters areas shall be provided with smoke detection devices as required to comply with the latest edition of the Uniform Building Code (see Appendix 2).
 - (2) Install photo-cell detectors in sleeping areas;

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ion-chamber detectors near living-dining area. Do not install smoke detectors in kitchen areas. Ionization detectors can warn of a fire before property is seriously damaged or threatened. These detectors indicate an incipient fire condition by sensing combustion products; they are able to detect a fire before there is smoke, flame, or heat. Photo-cell detectors sense visible smoke. Installation of both types of smoke detectors will afford maximum protection. Install smoke detectors according to manufacturer's instructions.

(3) A.C. devices are preferred over D.C. and shall be connected to augment existing fire detection systems. (See Appendix 1, paragraph 3).

(4) In areas where commercial power is considered undependable or where living quarters are leased, approved D.C. devices may be installed.

(5) Furnace rooms, boiler rooms, garages, and storage spaces shall be equipped with approved heat detectors.

(6) A smoke detector shall be installed in the basement of dwelling units having a stairway which opens from the basement into the dwelling. This detector shall be connected to a sounding device or other detector to provide an alarm which will be audible in the sleeping area.

(7) All detectors shall be maintained as recommended by the manufacturer.

7. ACTION. Existing living quarters shall be kept in compliance with this order. All new living quarters shall be brought into compliance prior to commissioning or leasing. The Airway Facilities Division is responsible for ensuring compliance with the requirements set forth in this order.

Jacqueline L. Smith
Regional Administrator

APPENDIX 1. SMOKE DETECTION DEVICES

Smoke detection devices shall be installed in living units built, manufactured, or sold in the state.

Following is a list of guidelines applicable to smoke detectors.

1. A smoke detector is defined as a device which detects visible or invisible particles of combustion.
2. All smoke detectors shall be labeled as having been approved by Underwriters Laboratories, Inc.; Underwriters Laboratories of Canada, Inc.; or Factory Mutual Research Corporations, meeting the requirements of Uniform Building Standard.
3. An A.C. primary power source shall be utilized for detectors in all new construction. In existing households, A.C. primary power is preferred. However, when this is not practical, a monitored battery primary power source is permitted.
4. Each smoke detector shall be equipped with an alarm which is clearly audible in adjacent rooms, over normal household background noise levels, with connecting doors closed.
5. Smoke detectors installed to protect sleeping areas shall be located in each sleeping room and at a point centrally located in the corridor or area giving access to each separate sleeping area.
6. Smoke detectors shall be located on or near the ceiling.
7. If batteries are used as a source of energy, they shall be replaced in accordance with the recommendations of the device manufacturer.

(Planning and practicing for fire conditions with accent on rapid exit from a living unit is important. Drills should be held so all occupants know what to do. Each person should plan for the possible exit through a bedroom window and down a fire escape. An emergency exit from the bedroom without requiring opening of the bedroom door is essential.)

APPENDIX 2. EXCERPTS FROM THE 1991 UNIFORM BUILDING CODE

FIRE-WARNING AND SPRINKLER SYSTEMS

1. Section 1210.(a) Smoke Detectors. 1. General. Dwelling units, congregate residences and hotel or lodging house guest rooms that are used for sleeping purposes shall be provided with smoke detectors. Detectors shall be installed in accordance with the approved manufacturer's instructions.
2. Additions, alterations or repairs to Group R Occupancies. When the valuation of an addition, alteration or repair to a Group R Occupancy exceeds \$1,000 and a permit is required, or when one or more sleeping rooms are added or created in existing Group R Occupancies, smoke detectors shall be installed in accordance with Subsections 3, 4, and 5 of this section.
3. Power source. In new construction, required smoke detectors shall receive their primary power from the building wiring when such wiring is served from a commercial source and shall be equipped with a battery backup. The detector shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Smoke detectors may be solely battery operated when installed in existing buildings; or in buildings without commercial power; or in buildings which undergo alterations, repairs or additions regulated by Subsection 2 of this section.
4. Location within dwelling units. In dwelling units, a detector will be installed in each sleeping room and at a point centrally located in the corridor or area giving access to each separate sleeping area. When the dwelling unit has more than one story and in dwellings with basements, a detector shall be installed on each story and in the basement. In dwelling units where a story or basement is split into two or more levels, the smoke detector shall be installed on the upper level, except that when the lower level contains a sleeping area, a detector shall be installed on each level. When sleeping rooms are on an upper level, the detector shall be placed at the ceiling of the upper level in close proximity to the stairway. In dwelling units where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by 24 inches or more, smoke detectors shall be installed in the hallway and in the adjacent room. Detectors shall sound an alarm audible in all sleeping areas of the dwelling unit in which they are located.