

# NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

ISSUED: February 6, 1981

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Forwarded to:

Mr. Charles E. Weithoner  
Acting Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-81-9 through -11

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On October 8, 1979, a Cessna 207A, N6424H, crashed into a hangar at Merrill Field, Anchorage, Alaska, moments after lift-off from runway 33. All four occupants were killed, and the postcrash fire destroyed the hangar.

Investigation of the accident revealed that: the fuel system showed evidence of extensive water and rust contamination; the underground fuel tank at Merrill Field where the aircraft was last fueled contained a large quantity of water and rust; the underground fuel tank's filtration system was heavily contaminated; and an incorrect fuel system dispensing filter, intended for use with diesel fuel, had been installed.

In 1978, the National Transportation Safety Board investigated 17 general aviation accidents involving fuel contamination "exclusive" of water as a cause or factor, and 66 general aviation accidents involving water "in" the fuel as a cause or factor. In March 1980, the Safety Board's Anchorage field office mailed a questionnaire to all known commercial/air taxi operators in the State of Alaska. Of the operators who replied, 4 percent did not know what type of filtration assemblies and filters they used, 4 percent performed no inspections to determine when the dispensing filters should be changed, 30 percent inspected the dispensing filter daily, and 20 percent inspected the dispensing filter "at least yearly." The remaining operators inspected at intervals ranging from "once every 3 days" to "once every 3 years."

The Safety Board recognizes that the pilot is responsible for assuring that a general aviation aircraft has uncontaminated fuel. Pilots of general aviation aircraft procedurally drain a small amount of fuel from the tanks and the fuel strainer and check for the presence of water and particulate matter. If a partially filled tank cools, condensation results and settles to the bottom of the tank. This is detectable using normal preflight procedures.

However, when fuel contaminated by water is added to an uncontaminated tank, considerable time is needed for the water to completely settle to the bottom of the tank. This creates the opportunity for contaminated fuel to go undetected. Also, the uncontaminated fuel in the lines and fittings must first be drained to detect the water-contaminated fuel. On some aircraft, more than a quart of fuel must be drained before any water appears. Most tiedown areas where preflight checks are performed belong to flight schools or fixed-base operators, most of whom do not encourage pilots to drain a quart of fuel on the asphalt because aircraft fuel tends to dissolve this particular surface. The pilot then, although responsible, is presented with situations in which water detection is difficult.

While the Board believes that pilots must conduct an adequate preflight check, we are concerned that this is not a total solution to the problem of fuel contamination. In addition to the current pilot responsibility, the Board believes that other measures should be taken to insure against contamination. For example, fuel dispensing systems could be required to be equipped with filter/separator units which respond to the presence of free water by shutting down.

The Board is aware that 14 CFR 139 prescribes rules governing the certification of land airports serving air carriers that hold certificates of public convenience and necessity issued by the Civil Aeronautics Board. Part 139.51 states that "... the applicant for an airport certificate must show that it (or its tenant), as the fueling agent, has a sufficient number of trained personnel and procedures for safely storing, dispensing, and otherwise handling fuel, lubricants, and oxygen on the airport (other than articles and materials that are, or are intended to be, aircraft cargo). . . ." This is the only rule that addresses the subject of storing and dispensing aviation fuel, and in addition, applies solely to air carrier airports. In the Board's opinion, 14 CFR 139 is inadequate even for those airports it covers because it does not address fuel contamination. Our accident statistics do not indicate that fuel contamination has been a problem to air carrier aircraft. However, informal communication with the FAA indicates that control of contamination is considered during airport certification via a rather broad interpretation of 14 CFR 139.51. The Board believes that the problem of fuel contamination should be specifically addressed for both air carrier and general aviation airports. In our judgment, fuel contamination should be specifically addressed for all segments of aviation rather than only that segment in which there is an apparent current problem. It has been generally accepted that standards for air carrier operations must be as stringent as they are for general aviation. We believe that the regulations should reflect this consistency.

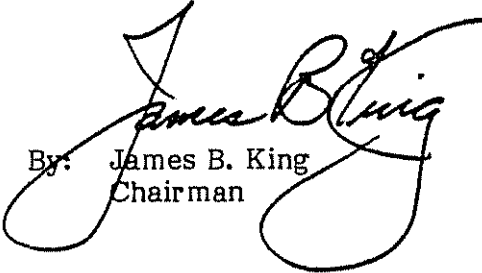
Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Expand 14 CFR 139 to include minimum specifications and design criteria for the installation, maintenance, and inspection of aviation fuel storage and dispensing systems at airports certificated under 14 CFR 139. (Class II, Priority Action) (A-81-9)

Take necessary action to establish minimum specifications and design criteria for aviation fuel storage and dispensing systems at public-use airports not certificated under 14 CFR 139. In addition to the equipment itself, such criteria should address their installation, operation, maintenance, and inspection. (Class II, Priority Action) (A-81-10)

When specifications and criteria are established for aviation fuel storage and dispensing systems at public-use airports are not certified under 14 CFR 139, establish and implement procedures to verify compliance. (Class II, Priority Action) (A-81-11)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN and BURSLEY, Members, concurred in these recommendations.

  
By: James B. King  
Chairman