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DEPARTMENT OF TRANSPORTATION
NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20591

A-67-21

July 19, 1967

IN REPLY
REFER TO: SB-1-96

Honorable William F. McKee
Administrator
Federal Aviation Administration
Department of Transportation
Washington, D. C. 20590

Dear General McKee:

Mooney aircraft, Models M-20C and M-20E, employ an electrically actuated landing gear extension system using Duke actuators, P/N 4196-00-1C. This system incorporates an emergency handcrank but a mechanical failure of the actuation device could render it ineffective since the two are coupled in series. Lack of design redundancy thus thwarts the very function intended to be performed by the crank in just such situations.

In an accident involving a Mooney M-20E on August 13, 1966, at Fairfax Airport, Kansas City, Kansas, a failure of the actuator precluded gear extension despite the pilot's efforts utilizing the emergency handcrank. A similar accident involving an M-20E occurred on April 21, 1965 at Sugarland, Texas.

We also understand that at least three form FAA-1226 malfunction or defect reports submitted in January 1967 are pertinent to the problem mentioned above. These were submitted by the same mechanic for three different Mooney airplanes. Each report cited "stripping" of the actuator system ring gear teeth. In connection with one of the reports, it was stated that the airplane was landed gear up because the stripped ring gear teeth precluded manual extension.

All three airplanes utilized Duke actuators, P/N 4196-00-1C. The latter was an improved actuator version with installation compliance in accordance with Mooney Service Bulletin No. 20-131B issued on August 23, 1966.

In view of the potential hazards associated with this "series" type emergency crank and the reports cited above that appear to

reflect a gear design deficiency of the actuation device, we recommend that the Administration reevaluate the M-20C and M-20E landing gear extension systems with a view toward relocating the emergency hand-crank or replacing it with an independent non-series type device.

Sincerely yours,

/s/Joseph J. O'Connell, Jr.

Joseph J. O'Connell, Jr.
Chairman