



## MEMORANDUM OF RECORD

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### NTSB Accident Number: ERA12FA127, Fort Lauderdale, Florida

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The following was excerpted from the Cessna Report 11-CSST Model: 650 Serial Number: 650-7063 Registration: N877G, and repeats the results of the Research and Testing Report (also part of the Public Docket) but in a more readable format.

“On 01-24-12, the right roll spoiler hydraulic actuator was removed from the aircraft by a Cessna Mechanic from the Orlando Citation Service Center under the supervision of FAA inspector Don White. Mr. White sent the actuator to Christy Eckerman at the Wichita FAA Aircraft Certification Office for further testing and analysis by Cessna Engineering.

On 02-07-12, the right roll spoiler hydraulic actuator (9914155-19, serial number: 2641) was examined at the Wichita Citation Service Center. Federal oversight was provided by Christy Eckerman. The inspection was attended by Nabtesco Engineering, Cessna Engineering, and this investigator. The actuator was removed from the shipping box and placed on a hydraulic test bench. The actuator linkage arm return spring tension was measured using a linear gauge. The measured force was approximately 1-2 lbs. Approximately 1,000 psi of hydraulic pressure was applied to the actuator and the linkage arm was actuated several times to eliminate any air trapped in the system.

During this “set-up” of the system, the actuator was extended and retracted several times. Approximately 3,000 psi was then applied to the actuator and the linkage arm was moved to extend the actuator. The actuator extended normally. When the actuator linkage arm was released, the return spring failed to provide enough force to smoothly return the linkage arm to the retracted position. The movement of the linkage arm appeared “sticky.” The linkage arm was moved several more times and the actuator extended and retracted normally until eventually the actuator jammed. At this point, the actuator arm could not be moved and the investigative group decided to disassemble the actuator.

Disassembly of the actuator revealed three gear teeth were fractured. Nabtesco engineering requested the part be sent to Redmond, WA for detailed analysis of the internal components. The NTSB-IIC agreed to grant Nabtesco “party” status. Further analysis of the actuator had not been completed at the time this report was written.

On 02-21-12, the mixer box assembly was removed from the aircraft by a Cessna Mechanic from the Orlando Citation Service Center under the supervision of FAA inspector Don White. Mr. White sent the mixer box to Christy Eckerman at the Wichita FAA Aircraft Certification Office for further testing and analysis by Cessna Engineering.

On 03-06-12, the right roll spoiler bell crank was examined, and on 03-12-12, the mixer box assembly was examined in the M&P laboratory at Cessna Aircraft Company. Federal oversight was provided by Christy Eckerman for both inspections. The inspections were attended by Cessna Product Design Engineering, Utility Systems/Mechanical Systems, and this investigator.

The bell crank was removed from the shipping box and examined under a microscope. The mixer box was removed from the shipping box and examined visually. The following conclusions were reached by M&P Engineering:

1. The bell crank did not display any unusual wear or significant corrosion.
2. Rotation of the bell crank bearings by hand in excess of 90 degrees was not possible.
3. The mixer box did not display any unusual wear. The internal mechanism of the mixer box moved easily by hand with no noticeable sticking or binding.
4. The examinations did not reveal anything that could have led to the unexpected partial extension of the right roll spoiler.”

Paul R. Cox  
Senior Air Safety Investigator