

ALERT BULLETIN

AB 2021:15/3-6

8/27/2021

1820104

TO: Fairchild Aircraft Services

INFO: FAA (AVP-1, AVP-200, AFS-200, AFS-280, AFS-100, MKC-AEG, AIR-360, AFS-300, AFS-900), A4A, ALPA, ASAP, ATSG, CAPA, IAM, IBT, ICASS, IFALPA, IPA, NBAA, NTSB, PAMA, RAA, TWU

FROM: Becky L. Hooey, Director
NASA Aviation Safety Reporting System

SUBJ: SA-227 Stabilizer Trim Failure

We recently received ASRS reports describing a safety concern that may involve your area of operational responsibility. We do not have sufficient details to assess either the factual accuracy or possible gravity of the report. It is our policy to relay the reported information to the appropriate authority for evaluation and any necessary follow-up. We feel you should be aware of the following:

ASRS received a report from a Fairchild SA-227 Captain describing control difficulties related to the failure of the stabilizer trim. Reporter stated he was operating the aircraft as a single pilot and was dispatched under a ferry permit with inoperative stabilizer trim position indicator and inoperative out-of-trim warning systems. Stabilizer trim failure was noted immediately after takeoff, and extreme yoke forces were required to control the aircraft. Reporter was able to divert to a nearby airport for a safe landing.

To properly assess the usefulness of our alert message service, we would appreciate it if you would take the time to give us your feedback on the value of the information that we have provided. Please contact Dr. Becky Hooey at (408) 541-2854 or email at becky.l.hooey@nasa.gov.



Aviation Safety Reporting System
P.O. Box 189 | Moffett Field, CA | 94035-0189



ACN 1820104

DATE / TIME

Date of Occurrence	202106
Local Time Of Day	1201 to 1800

PLACE

Locale	ZZZ.TRACON
State	US

ENVIRONMENT

Flight Conditions	VMC
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AIRCRAFT / EQUIPMENT X

ATC / Advisory - TRACON	ZZZ
Make Model Name	SA-227 AC Metro III

COMPONENT 1

Aircraft Component	Horizontal Stabilizer Trim
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PERSON 1

Function - Flight Crew	Captain
ASRS Report Number	1820104

EVENTS

Anomaly	Aircraft Equipment Problem - Critical
Anomaly	Airspace Violation - All Types
Anomaly	Deviation - Speed - All Types
Anomaly	Deviation / Discrepancy - Procedural - FAR
Anomaly	Deviation / Discrepancy - Procedural - Published Material / Policy
Detector - Person	Flight Crew
Result - General	Maintenance Action
Result - Flight Crew	Landed As Precaution
Result - Air Traffic Control	Provided Assistance

NARRATIVE 1

I accepted a ferry flight for Aircraft X from ZZZ to ZZZ1. This flight was accomplished as a single pilot operation. It was a perfectly clear day, with light winds from the south. Aircraft X required a special ferry permit due to an inoperative stabilizer trim position indicator, coupled with an inoperative out-of-trim warning system. Essentially, the pilot was unable to determine the position of the elevator trim from inside the flight deck, and there was nothing to alert the pilot that the trim was set outside of the takeoff range during takeoff. I was thoroughly familiar with this discrepancy because I had recognized it and alerted Maintenance of the need for repair the night before this event. The stabilizer trim itself had functioned normally.

I felt comfortable accepting this flight, as I had been flying Aircraft X for many days prior to the aforementioned maintenance issues, and was familiar with this specific aircraft. Before starting the engines, I re-trimmed the horizontal stabilizer by making adjustments on the flight deck and confirming the position of the trim visually from outside the aircraft. Confident that the airplane was ready for flight, and assured that the trim was working, I started the engines and taxied to Runway XXL for takeoff.

After experiencing no abnormalities prior to V1, and reaching the predetermined rotation speed, I took the plane airborne. After attaining a climb and retracting the landing gear, I attempted to make my first adjustment of the stabilizer trim since starting the engines. There was no response to my input. My first reaction was to ensure that I had not switched the stabilizer trim off inadvertently, as the switch rests immediately adjacent to my right knee. The switch was still positioned to the Captain's side. At this point I quickly recognized the gravity of the situation, which was that I was now flying a nearly 11,000 pound airplane, and I had no mechanical assistance to maintain a level flight attitude. During the climb out, my yoke weighed approximately 70-80 pounds.

In my initial radio communication with Departure, I informed the controller of my altitude and that I had no elevator trim. I did not explicitly declare an emergency. When asked if I needed assistance, I requested the most direct radar vector possible to join a visual approach at ZZZ1. I knew from my preflight planning that they were landing to the south at that airport and Runways XXL and XXR were in use. This meant that from the point at which I began my first turn to the point at which I joined final approach was a straight line just under 15nm long. This reduced the physical burden on me significantly versus returning to ZZZ, as flying the airplane became noticeably easier in straight and level flight.

I also requested a lower altitude than the 9,000 feet MSL that I was cleared to. Departure requested that I maintain 8,000 feet MSL as there were military aircraft operating in ZZZ2 airspace at 7,200 feet MSL. The vector I was given took me directly over the top of the military airfield. I visually observed several military fighter aircraft engage in sharp right turns to remain clear of me laterally. During level flight, I allowed the airplane to accelerate to approximately 215 KIAS. Every bit of airspeed I gained translated into a lightening of my controls, and made it possible to continue flying without exhausting the strength of my arms. It is possible that while at this speed, I descended under the Class B airspace into the Class E airspace that lies north of ZZZ1 and west of ZZZ2. Meaning, under my authority as PIC of an aircraft under 14 CFR 91.3, I may have inadvertently violated 14 CFR 91.117 as it pertains to the maximum speed of an aircraft in Class E and Class D airspace.

The conclusion of this flight was a safe landing at ZZZ1, followed by an uneventful taxi to the company maintenance hangar. I believe that I conducted this 8 minute flight as well as could be expected of any pilot with a similar level of knowledge and experience. My familiarity with the aircraft and the surrounding area, my current level of physical fitness, as well as the timely response and assistance from air traffic control led to the safe outcome of the flight.

SYNOPSIS

SA-227 AC Metro III pilot reported the stabilizer trim malfunctioned after takeoff, requiring great physical strength to control aircraft pitch. Pilot performed a successful diversion to a landing.