



Summary Report

A summary investigation, in accordance with article 45 of the Ordinance on the Safety Investigation of Transport Incidents from 17th December 2014 (OSITI), as of 1st February 2015 (SR 742.161) was carried out with regards to the following serious incident. This report was prepared to ensure that lessons can be learned from the incident in question.

Aircraft	Raytheon 400 A Nextant 400XT		G-FXAR	
Operator	FairJet Limited, Birmingham International Airport B28 3QN			
Owner	FlexJet LTD, Birmingham International Airport B28 3QN			
Pilot	British citizen, 1966			
Licence	Air Transport Pilot Licence Aeroplane – ATPL(A) in accordance with and subjected to the provisions issued by the United Kingdom Civil Aviation Authority – UK CAA			
Flight hours	total	8400 h	during the last 90 days	3 h
	on the type of incident	3 h	during the last 90 days	3 h
First Officer	British citizen, 1959			
Licence	ATPL(A) in accordance with and subjected to the provisions issued by the UK CAA			
Flight hours	total	11'625 h	during the last 90 days	72 h
	on the type of incident	195 h	during the last 90 days	65 h
Location	approx. 10 NM south-east SOSAL			
Coordinates	---	Altitude	FL380	
Date and time	2 nd May 2018, 12:35 UTC (LT ¹ = UTC ² + 2 h)			
Type of operation	Commercial			
Flight rules	Instrument Flight Rules - IFR			
Flight phase	Cruise			
Type of serious incident	Cabin depressurization			
Point of departure	Milan-Linate (LIMC)			
Point of destination	London Luton (EGGW)			
Injuries to persons	Crew	Passengers	Third persons	
minor	0	0	0	
None	2	0	not applicable	
Damage to aircraft	None			
Other damage	None			

¹ LT: local time

² UTC: universal time coordinated

Course of events

The Raytheon 400 A aircraft, registered as G-FXAR, just established in the cruise at FL380 with the cabin pressurisation rotary switch in normal position, a red CABIN PRESS LO alert illuminated as Master Caution at 10:36 UTC. Pressurisation was checked by the crew and noted climbing rapidly through 11 000 ft at approximatively 600 ft/min up.

Previously the cabin pressurisation was checked and found normal during the climb. Minor pressurisation surges occurred when engine anti-ice has been selected ON.

Depressurisation drill was completed by the crew immediately. Initial descent was requested down to FL 340 to give a possibility of regaining control of the cabin altitude, however the crew quickly ascertained that the cabin altitude was climbing uncontrollably. Cabin oxygen masks were auto deployed in the cabin and manually deployed in the cockpit. Mayday was declared at 10:37 UTC and further descent requested to Air Traffic Control (ATC). The communication between the crew was impeded due to fact, that the pilot on the left hand seat was unable to activate the oxygen mask microphone with the selector to OXY MASK. The crew used Crew Resource Management to resolve.

The crew decided to perform a rapid rather than a full emergency descent as a precaution. Checklist action had no effect on cabin level and rate. Descent to FL 160 then to FL 80 was initiated further. The crew decided to divert to Geneva (LSGG) where the weather was suitable. The G-FXAR landed on the runway 23 in Geneva at 10:58 UTC with the fire brigade ready to act.

Analysis

The G-FXAR has been examined after the event in Geneva by an Engineer. He found out that the high-pressure valves on both engines were not working properly. The left one was suspected degraded and the right one was clearly damaged. Furthermore, during the investigation it was noticed that a non-binding Service Bulletin (SB) 21-2015-01 (see Appendix 1) has been published by Nextant Aerospace on 27 May 2016 concerning those valves. The engineer confirmed that the engine type mounted on this aircraft had several issues with those valves.

Conclusions

The loss of cabin pressurisation is explained with the faulty valves causing a loss of pneumatic pressure and flow. Nextant Aerospace recommended the application of the SB 21-2015-01 in order to correct unfavourable reliability issues of the low and high pressure valves.

For this reason, STSB forgoes additional investigations and completes the investigation with this summary report in accordance with Article 45 of the Ordinance on the Safety Investigation of Transport Incidents (OSITI).

Bern, 12 March 2021

Swiss Transportation Safety Investigation Board

Measures already taken

The measure taken on G-FXAR is the appliance of the SB 21-2015-01, and several tests including an engine run-up.



Figure 1: Situation before SB 21-2015-01 modification

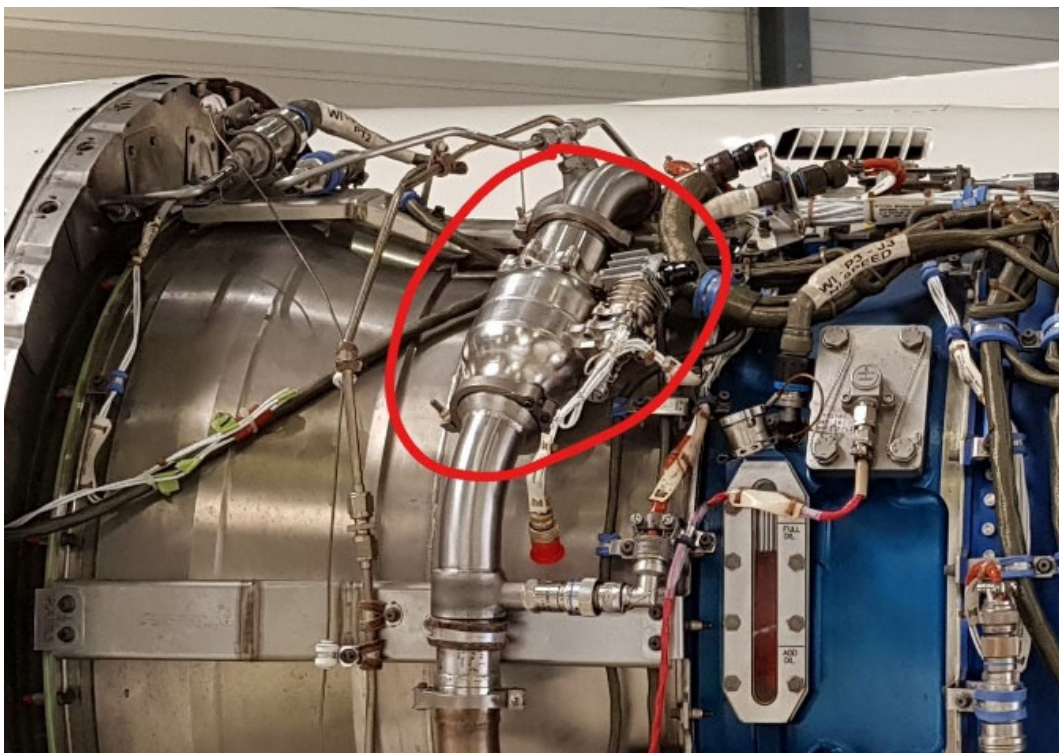


Figure 2: Situation after 21-2015-01 modification

Appendix

**RECOMMENDED****400XT/ 400XTi****SB-21-2015-01 Rev.IR****SERVICE BULLETIN****1 June 2016**

Subject: Reliability Improvement – Conversion from dual High Flow and Low Flow PRSOVs to a Single In-Line Full Flow Bleed Air PRSOV.

To: Nextant 400XT Owners/Operators
Nextant Aerospace Service Centers

1) Planning Information**a) Effectivity**

Nextant Modified Aircraft Model 400XT/XTi, Production Unit's 1 through 60, except for Production Unit 59, with Williams FJ44-3AP engines installed in accordance with STC ST02371LA.

All future production units and deliveries of the Nextant 400XT/XTi model aircraft will already have this modification incorporated.

b) Reason

This Service Bulletin is being issued to introduce Kit NX0057-KDL0-0100, which provides parts and information to install an improved Bleed Air Delivery System on the Williams FJ44-3AP engines to improve reliability and lower long-term maintenance costs.

c) Description

Incorporation of Kit NX0057-KDL0-0100 removes the existing dual Low and High Flow PRSOVs in the engine compartment which control bleed air delivery to the aircraft and anti-ice systems and installs a single in-line Full Flow PRSOV which can handle the bleed air flow comprehensively, thereby reducing parts and maintenance and improving reliability of the bleed air delivery system.

d) Compliance

Nextant Aerospace considers compliance with this Service Bulletin to be recommended. This modification is recommended to be accomplished in conjunction with the next "A" or "B" airframe inspection, or at any other opportunity where aircraft downtime permits.

**RECOMMENDED****400XT/ 400XTI****SB-21-2015-01 Rev.IR****SERVICE BULLETIN****1 June 2016****e) Approval**

The engineering data contained in this Service Bulletin is FAA approved through STC ST02371LA.

This modification is classified Level 2 Major per FAA Order 8110.52.

Prior to accomplishment, owners/operators of airplanes registered in countries other than the United States shall consult with their local Aviation Regulatory Authority.

f) Manpower

The following information is for planning purposes only:

Estimated man-hours: 25

Suggested number of technicians: 2

The above is an estimate based on experienced, properly equipped technicians complying with this Service Bulletin.

g) Weight and Balance

No Change/Negligible.

h) Electrical Load Data

No change.

i) Software Accomplishment Summary

Not applicable.

j) References

Kit NX0057-KDL0-0100.

k) Publications Affected

The appropriate STC ICA's and Maintenance Documents have been revised to reflect changes resulting incorporation of this kit.



RECOMMENDED

400XT/ 400XTI

SB-21-2015-01 Rev.IR

SERVICE BULLETIN

1 June 2016

l) Interchangeability of Parts

Not applicable

m) Warranty Credit

Warranty coverage offered in this Service Bulletin is limited to the new parts supplied only, which will carry a 12 month warranty.

2) Material Information

a) Materials - Price and Availability

Contact a Nextant Aerospace Authorized Service Center for information.

b) Industry Support

Not applicable