

12 December 1966

25X1A

TO: [REDACTED]

FROM: [REDACTED]

SUBJECT: REJECTED TAKEOFF, AIRCRAFT 132

2-12

On Friday, 2 December 1966, Aircraft 132 experienced a rejected takeoff. A power loss on the right engine at rotation was the reason for the pilot electing to abort. The drag chute failed upon deployment and the brakes felt ineffective so the pilot turned off of the overrun and rolled to a stop on the lakebed. Minor damage to a gear door and blown tires on the right side were the only damage found.

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[REDACTED] was the pilot on a Type I revalidation flight. Gross weight for takeoff was 105,500 pounds and FAT was 430F. He reported all checks prior to and during roll were normal. At rotation he noticed a pronounced right yaw and assumed the right A/B had gone out. He cycled the throttle and still had the problem. Speed was 210 KIAS and not increasing so he decided to abort. No caution lights were observed.

Throttles were chopped to Idle and he pulled the chute handle as soon as the aircraft touched the ground. Chute deployment was felt but no accompanying deceleration. Brakes were applied but felt ineffective. By this time he had passed the concrete turn-around pad and didn't know exactly where he was on the overrun nor how much more overrun was left. He turned off the strip onto the lake and felt a noticeable deceleration when on the lake surface. After stopping, the wheels and brakes were inspected by the Operations Officer. He noticed one blown tire on the right gear but the brakes did not appear hot, so advised Ray to taxi on in. While taxiing in the other two tires on the right side blew out so the aircraft was stopped and shut down on the north taxi strip.

The aircraft was defueled, new wheels installed on the right side and towed to the hangar. After removing the Type I package, new brakes and wheels were installed. The aircraft was inspected for structural damage and a gear swing was performed. A rock had apparently hit the leading edge of the right inboard gear door and caused a dent and several cracks. The door was replaced with one from stock and the old one will be repaired. No other damage was found. The left brakes were in good condition but the right ones were badly overheated. The right engine was looked over in the aircraft and appeared to be okay.

Installed engine and A/B runs were made on the right engine. (#247). It did not hold trim EGT very well over a series of runs and gradually decayed from an 818° trim to 788° without down trimming. A/B flame pattern looked good but it also had a tendency to decrease fuel flow by about 1000 pounds over a series of runs. Operation was normal otherwise. Control rigging was checked and found normal.

Cockpit camera pictures were reviewed and two frames showed the right nozzle full open, right EGT low and FF down 9,000 pounds prior to chopping the throttles. The chase pilot reported A/B operation looked normal until he saw the right side go out then right back on followed by both going out. The film and the chase pilot report make it sound like a main engine problem caused the nozzle to go wide open. The resultant loss of thrust made [REDACTED] think he had lost the A/B and what the chase pilot saw was caused by [REDACTED] manipulating the throttles.

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Engine #247 was removed for P & W to investigate further. Thus far the test stand results closely duplicate previous test stand runs on this engine. The engine is being held for further investigation. PRDC are conducting tests to possibly aid in the problem solution.

Aircraft systems and components that could possibly cause the problem were checked. Boost pump pressures were checked static and under flow conditions. Static pressure was above 28 psi at 400 cycles. At idle it was 14 psi and 5000 rpm was 25 psi. Low pressure switch setting was 8 to 9 psi. Generator voltage was within limits. Main fuel shut-off worked normally.

Prior to this flight both main fuel screens were removed from the aircraft feed lines for a required inspection. After reinstallation, the engines were run for several minutes with about three minutes at Mil power. This procedure was adopted two months ago in lieu of the previously used policy of A/B runs to displace air in the fuel system.

The history of the A/B run requirement goes back to the early J58 days on 121. We experienced two cases of aborted takeoff and lost flights because the A/B quit soon after lighting. It was found that the engine fuel system or main feed system had been open prior to each flight. It was decided that to prevent loss of flights like we had experienced, or more serious consequences due to a failure later in the roll, a checkout procedure requirement had to be adopted. A procedure that called for three A/B cycles with one of them at least three minutes long was placed in effect.

We were told that the AF and SR71 dropped this procedure over six months ago due to pressure from the Air Force. The P & W "J" engine O.I. called it out as a requirement until 12 October 1966.

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At this time a revision eliminated the requirement. At the [redacted] we purposely dragged our feet on eliminating the requirement until September. By this time we felt that the SR operating experience was sufficient to prove out the system. The procedure was originally adopted with A/B operation of prime concern because of the 121 experience and a test that was run on the local test stand. On this test, air was purposely introduced into the A/B control main body. A/B operation was normal for 30 seconds then it blew out. Test stand operators report that sometimes it takes quite a while to get all of the air out of an engine fuel system and have normal operation on a "fresh" engine.

With all ground tests giving essentially normal engine and A/B operation, the most likely cause appears to be air in the main control. We have asked P & W to conduct more air ingestion tests so that more can be learned about whether or not air is a problem. Meanwhile, we have gone back to the old A/B run requirement.

The drag chute failed one complete gore. It was deployed around 195-200 KIAS. This is slightly above placard limit. EAWB tests have had successful chute operation on used chutes at 190 KIAS. This chute had 13 previous operations and 3:50 [redacted] I hear that [redacted] group is developing a tester for drop testing chutes. This sounds like a needed item. If it doesn't work out, we should consider lowering the limit of 25 maximum operations before rejection. The only way I can see a pilot waiting for a limit speed on operation of an emergency device like this is to make it necessary for him to do something unusual to deliberately exceed the limit. Perhaps a Q switch could operate a pin that would prevent operation of the handle above 190 knots except by shearing the pin or something. This would remind him that he was going too fast. Either something like this or make the chute take a higher speed. 25X1A

The brakes were operated above their placard speed and, according to the pilot, he was bottoming the pedals. The appearance of the right brakes substantiates this but the left brakes do not. There is a possibility that the left brakes were in need of bleeding.

The old deceleration line on the lake can no longer be used due to the drainage ditch. Operations has asked us to work with them on a new layout that starts beyond the concrete turnaround pad.

Aircraft 132 has a new engine installed and is scheduled for a flight 13 December 1966. [redacted] 25X1A

GCF:ldb
cc: C. L. Johnson

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