

HQCAA/1901/256/SIB



**CIVIL AVIATION AUTHORITY
PAKISTAN**

INCIDENT TO PACTEC AVIATION

CESSNA T-210

ON 23RD MAY, 2000

AT

PESHAWAR AIRPORT

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FINAL REPORT

INCIDENT RELATING TO PACTEC AVIATION CESSNA-T 210 REPUBLIC OF CONGO REGISTRATON

NO. 9Q-CNU AT PESHAWAR ON

23RD MAY 2000

SYNOPSIS

The incident information was transmitted by Airport Manager Peshawar followed by an incident report of the operator M/s PACTEC Aviation. (see Appendix 'A'). The investigation was carried out by a CAA Pakistan team comprising Air Commodore Hashim Yamin, Chief Pilot Investigator, SIB as Investigator Incharge and Sqn. Ldr. (Retd.). Ahmed Bilal, Operations Engineer of Flight Standards Directorate as the Technical Investigator. Representatives of the operator M/s PACTEC Aviation were also involved in the investigation. This report is being released under the authority of Director General Civil Aviation Authority Pakistan.

Brief Resume The aircraft was on a routine charter flight from Peshawar to Kabul. When gears were lowered before landing at Kabul, the nose landing gear failed to extend. Emergency checklist for landing gear extension failure was followed but the gear did not extend. The aircraft was returned to Peshawar. Two touch and go landings were made on main wheels but with no success. Finally a nose-wheel-up landing was executed.

1. FACTUAL INFORMATION

1.1 History of the Flight

- 1.1.1 Cessna T 210 departed Peshawar on 23rd May 2000, at about 0630 UTC for Kabul and returned to Peshawar at 0750 UTC. The incident took place at about 0848 UTC. Flight preparation and planning are non-factors in this incident.

1.1.2 The aircraft owned by a charter company M/s PACTEC Aviation was on a routine flight from Peshawar to Kabul. There was one pilot and one passenger on board the aircraft. The passenger was the company's pilot/engineer. When the landing gears were lowered at Kabul, the nose gear did not extend. The occupants tried to troubleshoot the problem by following the emergency checklist procedures but the landing gear failed to extend. Another company aircraft Reg. No. 9Q-CMQ was on ground at Kabul. Its pilot tried to look for a clue to the problem during low passes made by the aircraft, but could not find any. It was decided that both the aircraft should proceed to Peshawar. On reaching Peshawar, 9Q-CMQ landed first while the mishap aircraft made two touch and go landings on only main wheels, in an attempt to dislodge the stuck nose landing gear. Both attempts were unsuccessful. Finally the aircraft landed with the nose gear not fully extended.

1.1.3 Peshawar airfield is at a geographical location of N33 59.5 E071 31.0 and at an elevation of 1180 feet. The time of incident was 0848 UTC which was daytime.

1.2 Injuries to Persons Nil

1.3 Damage to Aircraft

1.3.1 All the three blades of the propeller were damaged due to contact with ground. Two nose wheel doors and augmentor tube on the lower right hand cowling were also damaged (see Appendix 'K3').

1.4 Other Damage Nil

1.5 Personnel Information

1.5.1 The pilot of the aircraft was Mr. Daniel Stephen Juzi aged 32 years, a Swiss National. He has a valid commercial pilot licence

issued by FAA of USA with single and multi engine instrument rating (see Appendix 'C'). He has flown a total of over 2000 hours with 900 hours on type. His last field check ride was carried out in November 1999. He had flown 11.7 hours in last three days prior to the incident and had been awake for 8 hours at the time of final touch down.

1.6 Aircraft Information

1.6.1 The aircraft is issued with a certificate of airworthiness by the Republic of Congo and it is maintained according to PACTEC Aviation Operations Manual.

1.6.2 The aircraft had flown a total of 2449 hrs since new and 1299 hrs since major overhaul. It had just returned to service after a phase inspection. Seven retraction tests had been performed after the inspection. No discrepancy had been observed. The aircraft had also been subjected to a test flight after the inspection and no discrepancy related to landing gear retraction/extension had been noticed. The records also indicate that nose wheel doors had been disconnected and re-connected during this inspection.

1.6.3 Mass and center of gravity had no bearing on the incident

1.6.4 Fuel used was 100 LL Octane.

1.7 Meteorological Information

1.7.1 The weather at Peshawar was reported as haze with visibility 5NM, and an easterly wind of 04 Knots. Clouds were 3 oktas ScCu at 4000 feet, 4 oktas Ac at 10,000 feet and traces of Cb at 3500 feet. Runway temperature was 37.50°C with relative humidity of 35%.

1.7.2 The meteorological information was available to the crew.

1.7.3 The incident took place in sunlight condition.

1.8 **Aids to Navigation**

1.8.1 Not relevant to the incident.

1.9 **Communication**

1.9.1 The aircraft had satisfactory air to ground communication with control tower.

1.10 **Aerodrome Information**

1.10.1 Peshawar airfield has a 9000 feet paved runway with direction 171°/351°. Stopway at 17 end is 740 feet and at 35 end it is 900 feet. There are no obstructions to the approach except for a 63 feet AGL structure near 35 end.

1.11 **Flight Recorders**

1.11.1 No flight recorders are installed on the aircraft.

1.12 **Wreckage and Impact Information**

1.12.1 The aircraft came to rest slightly off the centerline of runway 35 (see Appendix 'K1' & 'K2'). The propeller blades, nose wheel doors and lower engine cowling came in contact with the pavement. Time elapsed from main wheels touchdown to nose touchdown was 11 seconds, from nose touchdown to aircraft stop 09 seconds, and from aircraft stop to occupants' evacuation 03 seconds. The aircraft was cleared off the runway within 07 minutes of main wheels touchdown.

1.13 **Medical and Pathological Information**

1.13.1 This is not a factor in this incident.

1.14 **Fire**

1.14.1 There was no fire during or after the impact.

1.15 **Survival Aspect**

1.15.1 All fire and rescue services were positioned in time. The occupants of the aircraft carried out proper pre impact briefing and were able to evacuate the aircraft in 03 sec. through left and right cabin doors.

1.16 **Tests and Research** Nil

1.17 **Organization and Management Information**

1.17.1 M/s PACTEC Aviation is engaged in charter operations in Pakistan with special permission of CAA Pakistan to carry N.G.O. staff, working in Afghanistan to and from Afghanistan and for emergency evacuation flights (see Appendix 'B'). The aircraft it is operating are registered in Republic of Congo.

1.17.2 Peshawar airfield is under the operational control of Pakistan Air Force. ATC and rescue facilities were provided by Pakistan Air Force during the incident. A team of PACTEC experts also provided technical support during the emergency.

1.18 **Additional Information** Nil.

1.19 **Useful or Effective Investigation Techniques**

1.19.1 A video recording made during the emergency by P.A.F. was used to calculate the elapsed times of events after touchdown.

2. ANALYSIS

2.1. The following aspects have been discussed: -

2.1.1. Technical Aspect: Cause of nose gear extension failure

2.1.2. Operational Aspect: Pilot's Performance

2.2. Cause of Nose Gear Extension Failure

2.2.1. There are two sets of doors for the nose landing gear of Cessna T-210 aircraft. Both are linked mechanically with the nose wheel strut. The front set that covers the major portion of the strut including the wheel assembly is attached with three hinges per door and is spring loaded to open as the nose wheel strut travels down during the extension. There is a row of screws adjacent and parallel to the right front door's hinge line holding the lower engine cowling in place.

2.2.2. On post flight inspection, a portion of the lower engine cowling sheet metal was found to be cracked and deformed at one of the screw holes. This deformation had jammed the door in partially closed position and prevented the nose gear strut from moving down.

2.2.3. The crack in the cowling sheet metal was formed at a point that is adjacent to the center hinge of the right front nose wheel door in its open position. The clearance between the hinge and the cowling skin at this point is very small. There is a possibility that if the rigging of the door is disturbed, the hinge can strike the cowling while opening under the force of the spring and can cause the cowling skin to crack. This crack would not be normally visible on ground as the door remains open and overlaps this area.

2.2.4. In this case the most probable sequence of events leading to the failure of the nose gear to come down is as follows. A crack developed during the retraction tests performed at the time of the inspection and went unnoticed till the mishap flight, when the surface was subjected to air loads. During the flight, the crack caused the cowl skin to deform in such a way that it came in contact with the door at the hinge line. As the door started to open during the extension cycle at Kabul, this deformation obstructed its movement. The force applied on the door resulted in further deformation and subsequently tore off the skin to firmly jam it in partially open position.

2.2.5. The door was also observed in partially open position by the ground support team during touch-and-go landings at Peshawar (see Appendix 'F').

2.2.6. PACTEC Aviation is a USA registered air charter operator operating aircraft of Republic of Congo registration and its pilots are Swiss nationals. These pilots also hold Mechanics licences and perform maintenance functions as well. The maintenance records indicate that in the phase inspection that was carried out prior to the mishap flight, only one person (Mr. Daniel Fahrni) performed the inspection both as a mechanic and as an inspector. He also carried out the test flight as maintenance check pilot (see Appendix 'D').

2.3. Pilot's Performance

2.3.1. As per the available evidence, the pilot was physically, mentally and professionally fit to fly the mission.

2.3.2. The pilot's actions during the emergency were good and his handling of the aircraft contributed in minimizing the damage to the aircraft.

3. CONCLUSION

Findings

- 3.1 M/s PACTEC Aviation has been permitted by Government of Pakistan to operate charter flights between Peshawar and Kabul on regular basis using Cessna T-210 aircraft, registered in Republic of Congo.
- 3.2 Surveillance of operations and maintenance of M/s PACTEC Aviation aircraft in the responsibility of the state of registry.
- 3.3 A phase inspection was carried on the mishap aircraft on 22nd May 2000 during which the nose gear doors were disconnected and reconnected and rigging carried out.
- 3.4 After rigging, seven retraction tests were carried out.
- 3.5 Only one person carried out the inspection acting both as mechanic and as an inspector.
- 3.6 A sortie was flown on 22nd May 2000, wherein no problem was experienced.
- 3.7 On 23rd May 2000, at about 0630 UTC, the mishap aircraft took off from Peshawar for Kabul with the Captain of the aircraft and one passenger. The passenger was also the company pilot/engineer.
- 3.8 The Captain of the aircraft, Mr. Daniel Juzi was physically, mentally and professionally fit to fly the aircraft.
- 3.9. When gears were lowered before landing at Kabul, the nose wheel did not come down. The occupants tried to troubleshoot the problem by following emergency checklist procedures but were unsuccessful.

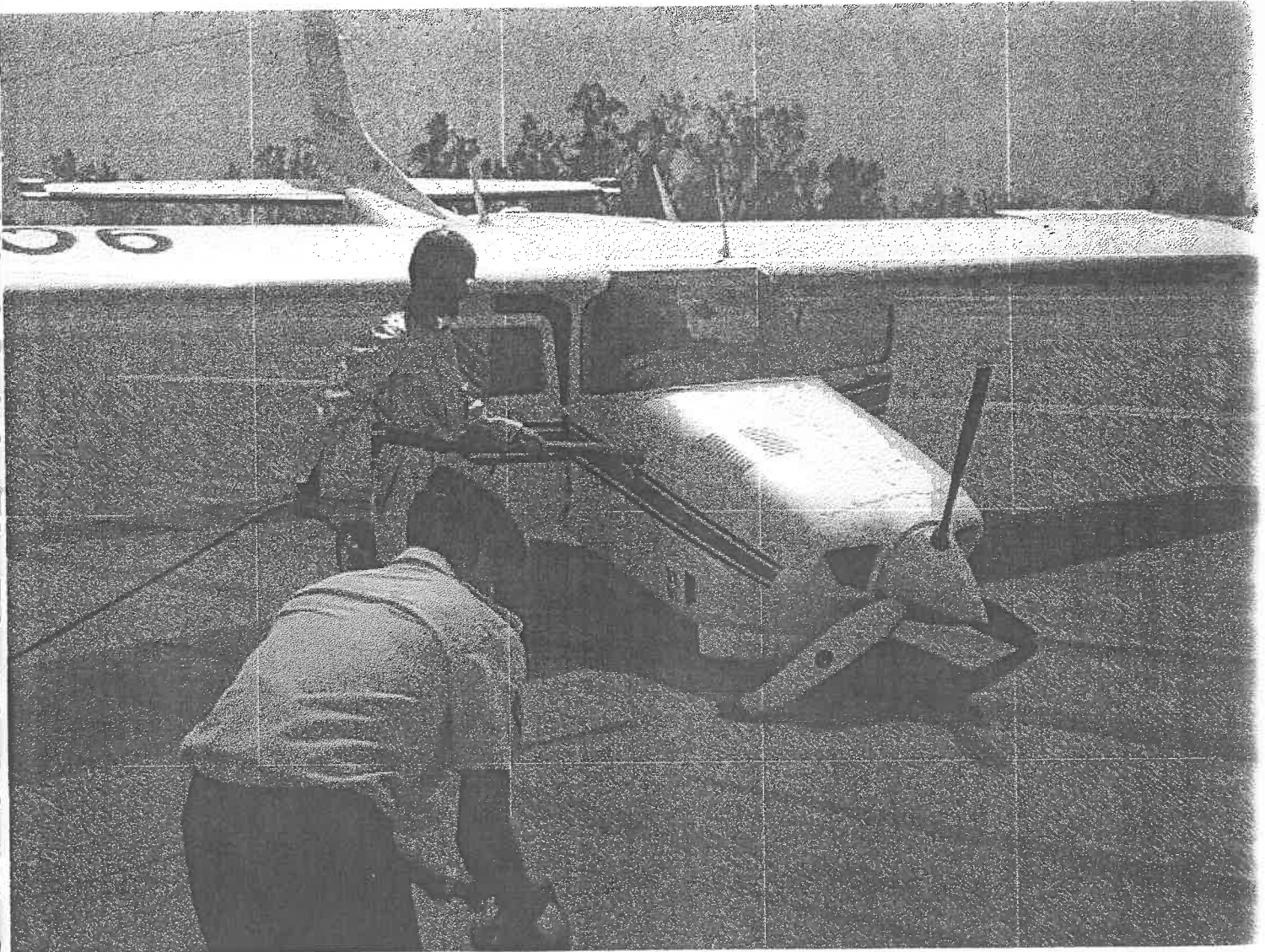
- 3.10 The aircraft returned to Peshawar. Two attempts were made to dislodge the nose gear by touch-and-go landings on main wheels only. These attempts were unsuccessful.
- 3.11 The aircraft made a nose-wheel-up touch down on Runway 35 at 0848 UTC.
- 3.12 The aircraft came to rest after 20 seconds from initial touchdown and the occupants evacuated the aircraft through left and right cabin doors 03 seconds after the aircraft came to rest.
- 3.13 Pakistan Air force Fire and Rescue Team along with PACTEC experts cleared the aircraft off the runway in 07 minutes.
- 3.14 There was no fire during or after the landing.
- 3.15 All the three propeller blades, the nose wheel doors and augmentor tube on lower right-hand corner were damaged during the landing.
- 3.16 On post flight inspection the front right nose landing gear door was found jammed by a piece of cowling sheet metal which was cracked and torn off of its fastening screw.
- 3.17 Deformation of the cowling could not have been detected on pre flight inspection as the nose gear door overlaps that area in open position.
- 3.18 The pilot followed correct checklist procedure and was able to execute the nose wheel up landing with minimum damage to the aircraft.

3.2 Cause

3.2.1. The nose landing gear failed to extend as it's front right door was jammed by a piece of cracked and deformed cowling sheet metal which was obstructing it's movement. The deformation of the cowling sheet metal was most probably caused by the door hinge striking it under the spring force, during the extension cycle, as a result of disturbed rigging of the nose gear doors.

4. SAFETY RECOMMENDATION

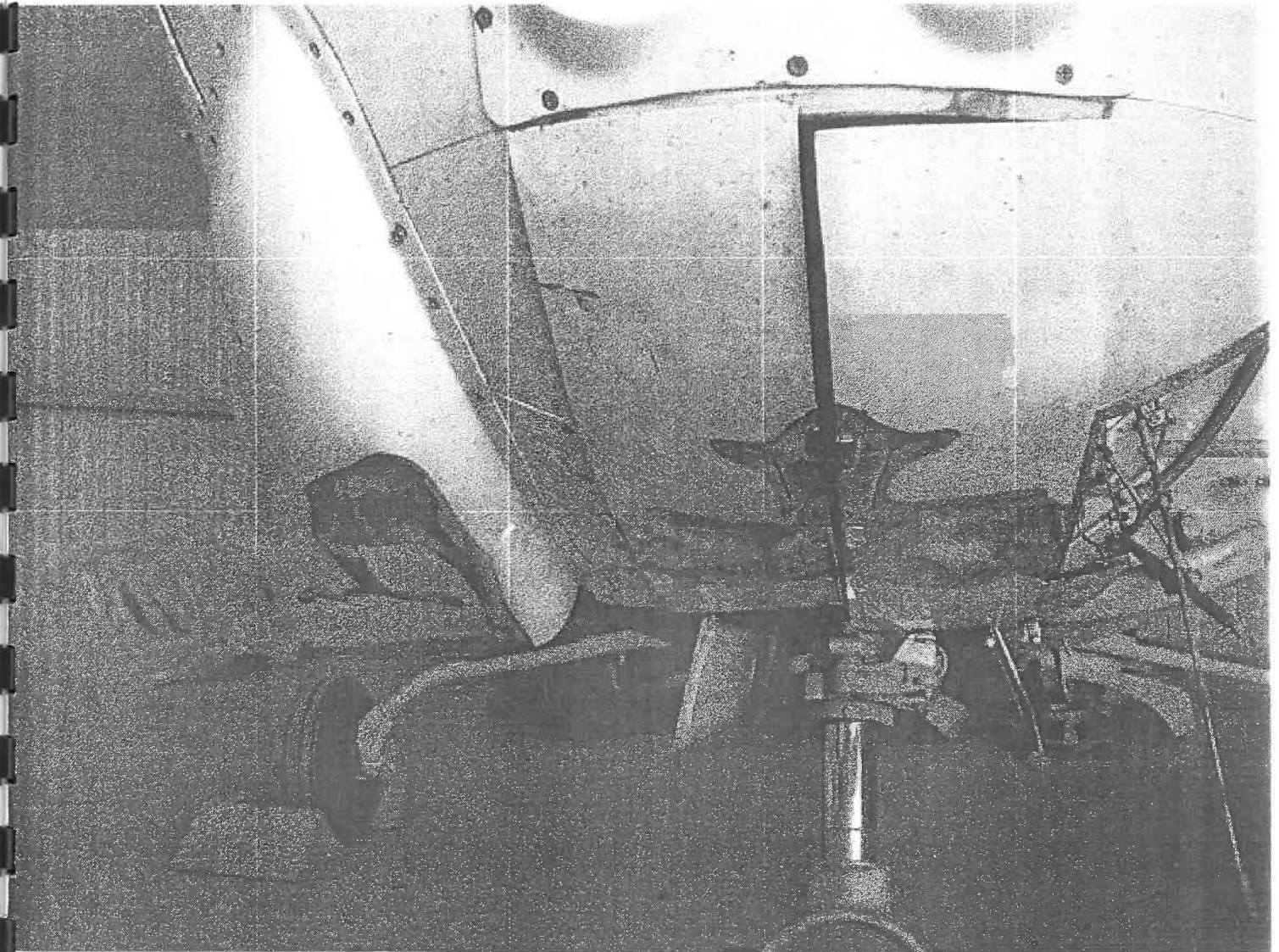
4.1 M/s PACTEC Aviation may consider formulating a system whereby, during phase inspections, the initial inspection and subsequent cross check are done by two different persons.



AIRCRAFT AFTER TOUCHDOWN



AIRCRAFT AFTER TOUCHDOWN

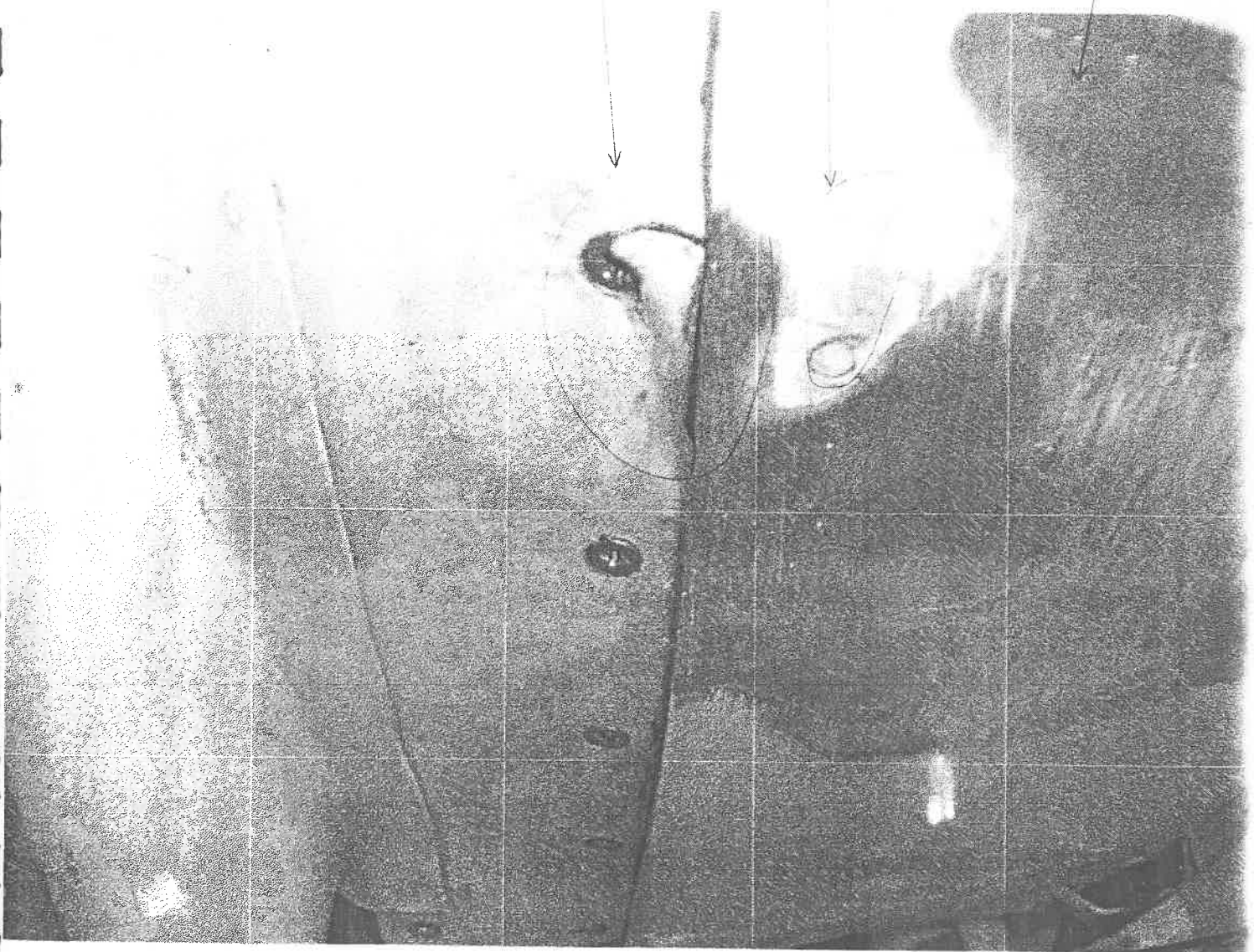


DAMAGE TO THE AIRCRAFT

CRACKED & DEFORMED
COWLING SKIN.

CENTRE HINGE
ATTACHMENT
POINT.

DOOR IN CLOSED
POSITION.



ENGINE COWLING SHEET METAL DEFORMATION