

ORIGINAL

1901/94



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AIRCRAFT INCIDENT INVESTIGATION
REPORT

M/S SCHON AIR CESSNA 402-C REG. MKS. AP-BCV
AT QUETTA AIRPORT

ON

21ST FEBRUARY, 1989

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INVESTIGATION REPORT ON THE INCIDENT TO M/S.SCHON AIR
(PVT) LTD AIRCRAFT CESSNA-402-C REGISTRATION
MARKS AP-BCV AT QUETTA AIRPORT ON THE
21ST FEBRUARY, 1989

REPORT ON INCIDENT TO M/S.SCHON AIR (PVT) AIRCRAFT
CESSNA-402-C REG.MK. AP-BCV AT QUETTA
AIRPORT ON 21ST FEB 1989

Authority: Director General Civil Aviation Authority
Memorandum No.HQ.CAA/1901/94/AIB dt.22.2.89
(Appendix 'A' attached to this report)

1. AIRCRAFT INFORMATION

- | | | |
|--|---|--|
| 1.1. Registration Marking | : | AP-BCV |
| 1.2. Aircraft type Manufacturers
Serial Number | : | Cessna-402-C
S.No.402-C-0254 |
| 1.3. Engine types airframe position
Maker's S.No.Hours done | : | Wing mounted engines
with propeller. Continental
TSIQ-520 VBI. |
| 1.4. Certificate of Reg.No.2&validity | : | S.No.596 valid till further
order 4.11.86 |
| 1.5. Certificate of Airworthiness
Sl.No. date of expiry | : | S.No.549 valid |
| 1.6. Certificate of Maintenance & date:
of issue and period of validity | : | Issued on 8.2.89, validity
10.3.89 or 50 hrs which-
ever comes first |
| 1.7. Date of construction of airframe | : | 1980 |
| 1.8. Name and address of owner | : | M/s.Schon Air (Pvt) Ltd
Karachi Airport |
| 1.9. Gross weight Maximum permitted
by Chief of Airworthiness | : | 6885 Lbs |
| 1.10. Gross weight of this aircraft
at the time of incident | : | Within limits. |
| 1.11. Loading, centre of gravity
position at the time of
incident | : | Weight empty 4692 Lbs
C of G within limits .
It is not a factor
in this incident. |

/1.12.Airframe

1.12. Airframe History

- 1.12.1. Flying time since manufactured. : 4316.43 Hrs
- 1.12.2. Date number last C of A : 11.12.89 at 4286.23 hrs.
inspection checks carried out.
- 1.12.3. Major parts/nose structure damages in this incident. : Nose landing gear bay and front nose lower area structure damaged. Repair carried out by PIA-Appendix 'B'.
- 1.12.4. Source at which Hydraulic failure occurred. : Right Hand Hydraulic pump.
- 1.12.5. Sketch Emergency extension system of landing gears. : Appendix 'C' attached to this report.
- 1.12.6. Instruction for Operation of emergency extension of landing gears. : Appendix 'D' attached to this report.
- 1.12.7. Previous history of gear system snag as per work/technical log. : Nil
- 1.12.8. Modification status during C of A. : Charter flights refer Appendix 'E' attached to this report.

2. CREW INFORMATION

- 2.1. Name : Imtiaz-ul-Haque
- 2.2. Position in the cockpit : Captain Left hand seat
- 2.3. Date of Birth : 11.01.1946
- 2.4. Type of Licence and No. : ALTP No.620
- 2.5. Medical date with status : 02.11.1988 (FAA 07.9.88)

/2.6.Rating

2.6 Rating:-

- 2.6.1. Type(s) held : CESSNA-150/152, 172, 180
185, 188, 310, 337, 402,
421, PIPER PAWNEE, AZTEC,
SENECA, SUPER CUB, DHC-2
(BEAVER) DHC-6 (TWIN OTTER)
AUSTER SERIES, TURBO/
AERO COMDRS.
- 2.6.2. Type Current : DC-6 (PILATUS PORTER)
AT-400 (AIR TRACTOR)
TURBO/THRUSH COMD. F-27
(FOKKER) DC-3, DA-20,
FU-24 (FLETCHER)
- 2.6.3. Flight Instructor Rating: CESSNA-150/152, 172, 180
185, PA-23, PIPER SENECA,
CESSNA, 182, 310, 337,
402, 421, TURBO/AERO 500/
600 SERIES.
- 2.6.4. Flight Engineer Instructor N/A
- 2.6.5. Check rating : Approved check Pilot
CAA (PAK)

2.7. Flying Experience:-

- 2.7.1. Grand total : 9688 Hrs
- 2.7.2. Total-in-Command : 8857 Hrs
- 2.7.3. Total-in-Command on the : 150 + hrs
type of incident
occurred.

- 2.8. Where trained : MULTAN FLYING CLUB,
MULTAN AIRPORT
(FROM MARCH, 1963
TO MARCH 1965)

- 2.9. Date of joining the Organization: 24.4.1984.

3. SUMMARY OF INCIDENT

3.1. Cessna-402-C aircraft AP-BCV of M/s.Schon Air (Pvt) Ltd., Karachi, departed from Quetta to Karachi on a Chartered Flight with three passengers and a Pilot Capt.Imtiaz-ul-Haque ALTP No.620 on board dated 21st February, 1989 at 1500 hrs LT. At about 25 miles out from Quetta, low hydraulic pressure light came 'ON' therefore Pilot immediately lowered the landing gears by normal operating system i.e. hydraulic system. Both Main landing gears were extended and locked in down position only uplock of the nose gear could break, but did not lock in extended configuration, which was indicated. Gear unsafe warning light in the cockpit which confirmed the nose gear was not in down and locked position. The Pilot therefore decided to land back at Quetta.

3.2. Prior to landing at Quetta the Pilot tried to extend the nose gear by pulling the emergency extension handle, to fire the pneumatic bottle for alternate emergency extension, but neither the nose gear green light came 'ON' nor the gear unsafe warning light went off. Later the Pilot attempted to apply 'G' loads by abrupt pitching movement in order to lock the nose gear in extended configuration, but the nose gear remained hanging in transit, i.e. neither locked up nor locked down.

/3.3. Finally

3.3. Finally the aircraft had to land on main landing gears, engines were shut down after landing and nose of the aircraft was brought down gradually to the ground with full application of brake simultaneously. Front lower fuselage skin was badly rubbed. There was no injury to personnel on board the aircraft, nor there was fire during or after the incident.

4. INJURY TO PERSON(S)

4.1. None

5. DAMAGE TO AIRCRAFT

5.1. Refer Appendix 'B' attached to this report.

6. OTHER DAMAGE

6.1. Nil

7. METEOROLOGICAL CONDITIONS

7.1. The weather was fair.

7.2. Weather is not a factor in this incident.

8. NAVIGATIONAL & LANDING AIDS

8.1. They were operating normal.

8.2. These were not a factor in this incident.

9. COMMUNICATION

9.1. All radio facilities were serviceable.

9.2. These were not a factor in this incident.

10. AERODROME GROUND FACILITIES

10.1. Adequate for operation of this type of aircraft also.

10.2. These were not a factor in this incident.

11. FLIGHT RECORDERS

11.1. Not fitted in this type of aircraft.

12. WRECKAGE IMPACT INFORMATION

12.1. Please refer damage report Appendix 'B'.

13. FIRE

13.1. No fire occurred during or after the occurrence.

14. SURVIVABLE ASPECTS

14.1. It was a survivable incident.

15. TEST & RESEARCH

15.1. At Quetta during investigation, initially, emergency Air bottle did not operate. After couple of attempts and manipulation of operating mechanism, the bottle did operate to extend nose gear to full down position.

15.2. At Karachi during initial investigation bottle did not operate at all in the presence of investigators.

16. OBSERVATIONS

16.1. Preliminary inspection of the aircraft revealed that hydraulic reservoir had emptied due to leakage in the engine driven pump.

- 16.2. Red light was 'ON' and no indication of the nose gear green light.
- 16.3. Nose gear lock mechanism not in safety position. (Not over centred).
- 16.4. Nose gear door hinges were badly bent.
- 16.5. Emergency pneumatic bottle was fully charged to green range (1800 PSI).
- 16.6. Emergency extension lever pulled.
- 16.7. Hydraulic C.B pulled out.
- 16.8. Left gear wheel well splashed with hydraulic.
- 16.9. Hydraulic found splashed around the hydraulic pump of R/H engine.

17. INVESTIGATION

- 17.1. Detailed investigation has confirmed that R/H engine hydraulic pump was leaking from the body, while operating charter flight from Quetta to Karachi dated 21st Feb 89 which made the low hydraulic pressure light to illuminate and finally resulted into the hydraulic failure, hence the remaining hydraulic fluid could not lock the nose gear in down and locked configuration.
- 17.2. During close visual inspection of emergency alternate system at Quetta, it was noted that two green lights for main gear were 'ON', gear unsafe warning light was 'ON' and no green light for nose gear. The gear lever was in down detent, emergency alternate lever was pulled out, hydraulic

circuit breaker to by-pass hydraulic for pneumatic operation pulled out which clearly indicated that operating procedure by the Pilot was correct.

- 17.3. But the emergency pneumatic bottle pressure was in green range i.e. about 1800 PSI clearly indicated that pneumatic bottle did not discharge to lock the nose gear down and locked. Later Captain Ather (Owner of the Aircraft and a licenced Pilot on the subject aircraft) alongwith a CAA. Investigator went together in the cockpit and operated the emergency.
- 17.4. The emergency extension system was closely inspected and operated many times and finally it is established that pneumatic mechanism was hard and intermittent due to excessive friction between casing and piano wire of teleflex cable, used for operation of pneumatic bottle. Secondly the teleflex cable casing was slipping in and out in a clamp close to bottle. Hence the Pilot could not extend the nose gear by emergency alternate pneumatic system prior to emergency landing at Quetta dated 21st Feb 89.
- 17.5. It has been noted that service letter ME 81-28 (SK 421-107) has not been incorporated requiring modified clamp to be installed. Appendix 'F' attached to this report.

18. WITNESSES

- 18.1. Statement of following personnels recorded and attached to this report:-

/18.1.1.Capt.

18.1.1. Captain Imtiaz-ul-Haq	App. 'K ₁ & K ₃ '
18.1.2. Mr.M.Ibrahim Engr.Incharge	App. 'L ₁ & L ₂ '
18.1.3. Capt.S.H.Athar	'M'
18.1.4. Mr.Nadir Iqbal Mirza	'N'

19. FINDINGS

- 19.1. The Charter/Aerial Work Licence of M/s. Schon Air had lapsed on 31.12.88. The Charter Operations being conducted by M/s. Schon Air at the time of incident were illegal.
- 19.2. The Pilot was properly licenced and rated for the flight.
- 19.3. The aircraft was airworthy and had no previous snag indicated in log book before the flight. However there is a possibility that the aircraft had hydraulic leak before this incident. Both the hydraulic pumps were tested for hydraulic leak the right hand EDP was found leaking from the body joint which indicated the possibility of hydraulic leak prior to the incident.
- 19.4. Certificate of Maintenance, Airworthiness and Registration were valid.
- 19.5. Previously similar incident had occurred on this type of aircraft where the emergency gear extension had failed to function. Cessna Company had issued a service letter ME-81-28 (SK-241-107) requiring modification on the clamp in the emergency nose gear extension system. This modification was to be carried out in 1981, it should

/_ have been

have been modified before the aircraft C of A was issued by F.A.A. but it had not been done so even when the aircraft was bought and imported by M/s. Schon in 1986.

19.6. There is a provision for medical standards in Rule 31 Sub-rule (6) (c) of CAR 1978 in respect of aircraft maintenance engineers licence. This rule has not been enforced to date.

19.7. Waiver was given for the ground check of technical snags operation an emergency landing gear extension due to unserviceability of the ground test equipment. However the system had been in-advertently found serviceable when landing gears were extended by emergency method in the air on 18.7.1988.

20. CAUSE(S)

20.1. The main cause of hydraulic leak was from the body casing of R/H engine hydraulic pump body.

20.2. Alternate system of landing gear extension i.e. pneumatic system operating mechanism had excessive friction between the casing and piano wire of the teleflex cable. Secondly due to slipping of casing in clamp during emergency lever operation, hence Pilot could not operate the lever to its full length and pneumatic bottle was not fired.

21. RECOMMENDATIONS

- 21.1. Operator to carry out work on emergency blow down bottle operating cable as per Cessna Company Service letter ME-81-28 dated Oct 30, 1981 using service Kit (Part No.SK-241-107).
- 21.2. Airworthiness Branch to carry out inspection of M/s.Schon Air maintenance establishment & to ensure that the aircraft is maintained as per Airworthiness requirements (Airworthiness directives, notices, service buttetins etc).
- 21.3. Airworthiness to ensure that equipment required for ground testing of aircraft during annual C of A renewal is available with the operators.
- 21.4. Chief of Aviation Medicine to look into the possibility of issuing ANO in accordance with Rule 31 Sub-rule (6) of CAR 1978 specifying medical standards for issue/renewal of AME licence.
- 21.5. Action may be taken against M/s.Schon Aviation for violating rule 227 (1) of CAR 1978 and conducting Charter/Aerial work operations without a valid licence.