

ORIGINAL

1901/99



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AIRCRAFT INCIDENT INVESTIGATION
REPORT
ON THE GROUND FATAL INCIDENT TO M/S
P.I.A.C F-27 REG. MKS. AP-BBF
AT SUKKUR AIRPORT
ON
15TH JUNE 1989

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INVESTIGATION REPORT ON THE INCIDENT TO M/S.PIAC

F-27 REG,MK.AP-BBF ON 15TH JUNE,89

AT SUKKUR AIRPORT

INVESTIGATION REPORT ON GROUND FATAL INCIDENT TO
M/S.PIAC F-27 AIRCRAFT AP-BBF ON 15TH JUNE, 1989
AT SUKKUR AIRPORT

(WHILE GROUND ENGINEER WAS CARRYING OUT SNAG
RECTIFICATION OF PK-589 DURING TRANSIT TIME
SUKKUR - KARACHI SECTOR)

Authority: Director General Civil Aviation Authority
Memorandum No.HQ.CAA/1901/99/AIB dt:150689
(Attached to this report as Appendix 'A').

1. AIRCRAFT INFORMATION:

- | | | |
|---|---|---|
| 1.1. Registration Marking | : | AP-BBF |
| 1.2. Aircraft type & Maker's S.No. | : | F-27 Sl.No. 10207 |
| 1.3. Engine, type, airframe
position & maker's Sl.No.
hours since overhaul. | : | 2 Darts 532-7 attached 1 each
to left - right wings
No.1 S.N. 13378 hrs 2980-9
No.2 S.N. 451 hrs 2130-35

All 2 engines were airworthy
in all respects, no modifica-
tion was pending. |
| 1.4. Propellers Sl.No. hrs since
overhaul. | : | No.1 S.N. DRG 120/69 hrs 1277-18
No.2.S.N. DRG 200/68 hrs 778-58 |
| 1.5. Total Airframe Hrs/Landing | : | Hrs.44170-49
Landing 41380 |
| 1.6. Certificate of Registration
No. and validity. | : | No.555 valid till further orders. |
| 1.7. Certificate of Airworthiness
No. and validity. | : | No.508 |
| 1.8. Certificate of Maintenance
issued on | : | Issued on 14.6.89 for 75 hrs
or 10 days whichever is earlier.

(Appendix 'B' attached
to this report) |
| 1.9. Date of construction airframe | : | 31.7.1962 |
| 1.10. Owner | : | PIAC |

/1.11.Maximum

- 1.11. Maximum gross weight permitted : 42000 Lbs.
 T.O. gross weight 35676 Lbs.
- 1.12. Centre of gravity : Within Limits. Loading is not a factor in this incident

1.13. Airframe History

- 1.13.1. Flying time since manufacture last overhaul and last periodic check. : Time since new 44170-49 Landing 41380 Check done at 41931-55 hrs on 39078 landings.
- 1.13.2. Last Maint check carried out at hrs. : Check I done at 44159 hrs and 41369 landings on 130689
- 1.13.3. Modifications status : All mods were incorporated and C of M & C of A, was valid.
- 1.13.4. Previous snag on nose landing gear warning system since 1.5.89 : No snag reported or presisted

- 1.13.5. List of damage occurred to aircraft nose area and other areas, as below:-

- 1.13.5.1. VHF 1 Antenna sheared off alongwith base plate.
- 1.13.5.2. Dorsal fin upper forward panel attached to vertical fin forward side bent badly while rope was used to lower the tail by manpower to removed trapped Ground Engineer in Nose wheel bay.
- 1.13.5.3. Both nose gear doors broken and forward hings attachments sheared off with the ground impact.
- 1.13.5.4. Nose radome dented at bottom position.
- 1.13.5.5. Nose section damaged R.H.Side badly dented and torn, all along the length from 3 'O' clock to 5 'O' clock positions.

- 1.13.5.6. Oil carrying underneath station 1400 at the bottom.
(Refer photographs attached App. 'C₁-C₈').

2. CREW INFORMATION

2.1. Pilot-in-Command

- 2.1.1. Name : Raffat Jamil
- 2.1.2. Position in the Cockpit : Captain
- 2.1.3. Date of Birth : 25.1.1949
- 2.1.4. Type of Lic and No. : ALTP No.485
- 2.1.5. Medical date with status: 27.3.89 Fit for ALTP Lic renewal.
- 2.1.6. Rating:
- 2.1.6.1. Type(s) held : C-150, 185, 206, P.AZTIC, DHC-6 & F-27
- 2.1.6.2. Type current : DHC-6 & F-27
- 2.1.6.3. Assist/Flight Instructor rating : —
- 2.1.6.4. Flight Engr Instructor rating : —
- 2.1.6.5. Check rating : —
- 2.1.7. Flying Experience:
- 2.1.7.1. Grand total : 8563-00
- 2.1.7.2. Total-in-command 4943-00
- 2.1.7.3. Total-in-command 1193-00
Copilot/Flight Engr on the type accident/incident occurred.
- 2.1.8. Where trained : PAF
- 2.1.9. Date of joining the Organization. : 21.8.1978

2.2. CO-PILOT

2.2.1. Name : Ahmad Saeed Akhtar

2.2.2. Position in the Cockpit : ~~Co~~-pilot

2.2.3. Date of Birth : 14.9.1962

2.2.4. Type of Lic and No. : CPL No.1293

2.2.5. Medical date with status : 6.3.1989

2.2.6. **Rating:**

2.2.6.1. Type(s) held : (P-I) Cessna-150/151,
Twin Otter DHC-6, (P-2)
F-27 P-2 Rating.

2.2.6.2. Type Current : F-27 (P-2)

2.2.6.3. Assist/flight ~~10.20~~
Instructor rating : —

2.2.6.4. Flight Engineer
Instructor Rating : —

2.2.6.5. Check rating : —

2.2.7. **Flying Experience:**

2.2.7.1. Grand total : 474

2.2.7.2. Total-in-Command : 205.40

2.2.7.3. Total-in-Command Co- : 4.25 hrs + 10.20 hrs
pilot/Flight Engr on
the type accident/
incident occurred Sin. Trg.

2.2.8. Where trained : U.S.A.

2.2.9. Date of Joining the Org. : PIAC

2.3.GROUND

2.3. GROUND MAINTENANCE ENGINEER

- 2.3.1. Name : Akbar Qasim Ali
- 2.3.2. Staff No. : 39051
- 2.3.3. Date of Birth : 24.5.1959
- 2.3.4. Date of Employment in PIAC : 22.11.1978 as Apprentice
- 2.3.5. Date of Absorption as Senior Technician : 2.12.1981
- 2.3.6. Initial Licence AME No.1067 : 4.3.1985
Cat. 'A' F-27 aircraft.
- 2.3.7. Endorsement of Cat.'C' : 4.8.1987
D 532 Engines fitted
on F-27 Aircraft.
- 2.3.8. Offtng Aircraft engineer : 29.8.1988
- 2.3.9. Promotion as Aircraft Engineer : 27.2.1989
- 2.3.10. He was on 15 days temporary duty at Sukkur w.e.f. : 6.6.1989

3. SUMMARY OF FLIGHT AND INCIDENT:

3.1. Aircraft AP-BBF (Fokker) F-27 was flying on a scheduled flight from Bhawalpur to Sukkur. While landing at Sukkur, when the landing gears were selected down, unsafe gear indication of nose gear appeared in the Cockpit. The Pilot recycled the gears but the unsafe nose gear warning remained on. The Pilot tried lowering the gears by emergency method but the indication of unsafe nose gear persisted.

/3.2. In the

- 3.2. In the meantime tower was informed to prepare all crash rescue facilities for an emergency landing with nose gear indicating unsafe. The Pilot kept circling overhead Sukkur in order to burn fuel. During this period the Engineering Staff was consulted on the R/T for advise also.
- 3.3. When approximately 400 Lbs of fuel remained in each tank, the Pilot made an approach to land. The landing was normal and uneventful. The aircraft touched down at 12:28 LT after rolling on the runway the Pilot very gradually lowered the nose gear which remained down until the aircraft came to a halt and the passengers & crew disembarked.
- 3.4. After landing the Engineer Mr. Akbar Qasim Ali, having been briefed by the Pilot of the snag, inspected the nose gear bay. he saw papers stuck under the down lock latch. In an effort to remove the papers. He jacked up the nose of the aircraft with the help of nose wheel change jack (App. 'D') which is specially designed to change nose wheel only. He then tried to open the latch with a screw driver.
- 3.5. As he tried to disturb the down lock latch to remove the bundle of papers, nose shock strut, started retracting. The nose shock strut caused nose jack to tilt forward, resulting in the nose gear jack to slip and nose gear to fold forward. The Engineer who was positioned directly in front of the nose landing gear got entangled between the wheel and the nose wheel bay which resulted in fatal injury.

/3.6. Immediately

3.6. Immediately the PIA Cockpit Crew, who were present in the lounge, were informed of the incident. They rushed to the site and organized rescue operations with the help of ASF, CAA and PIA Staff. They managed to free Mr. Akbar and rushed his body to the Hospital. (Attached report Appendix 'E').

3.7. The CAA Investigation Team reached the scene of incident on the same day at 1800 hrs. Photographs were taken and statements of the Witnesses were recorded. After initial investigation of the incident the aircraft was cleared for recovery and clearance of the runway. The aircraft was finally towed away at 2030 hrs and the runway was opened for operations.

4. INJURY TO PERSON(S)

4.1. Passengers – Crew safe, only Ground Engineer sustained fatal injuries when nose landing gear collapsed while he was rectifying the snag. (Refer Medical/Police report Appendix 'E' & 'F').

5. DAMAGE TO AIRCRAFT

5.1. VHF 1 Antenna sheared off alongwith base plate.

5.2. Dorsal-fin upper forward panel attached to vertical fin forward side damaged while rope was used to lower the tail by manpower to remove trapped Ground Engineer in nose wheel bay.

/5.3. Both

5.3. Both nose gear doors broken and forward hinges attachments sheared off with the ground impact.

5.4. Nose radome dented at bottom position.

5.5. Nose section damaged, R.H. side badly dented and torn, all along the length from 3 'O' Clock to 5 'O' Clock positions.

5.6. Oil canning underneath station 1400 at the bottom.
(Refer photographs attached Appendix C₁ to C₈).

6. OTHER DAMAGE

6.1. Nil (Runway was blocked from 1230 to 2030 hrs for other aircraft operation).

7. METEOROLOGICAL CONDITIONS

7.1. These were normal.

7.2. These were not a factor in the incident. (App.'H').

8. NAVIGATIONAL & LANDING AIDS

8.1. These were operating normal.

8.2. These were not a factor in this incidents.

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 F-27 aircraft.

10.2. These were not a factor in this incident.

11. G.V.R. FLIGHT RECORDER

11.1. Flight Data Recorder was removed from the aircraft.

Its read out is attached as App.'G' to this report,
indicates normal operation & landing.

11.2. Cockpit Voice Recorder read out taken. (Lot of disturbances).

Conversation of the nose gear down lock warning snag and
safe landing, could be heard.

12. WRECKAGE — IMPACT INFORMATION

12.1. Not applicable.

13. FIRE

13.1. No fire occurred during or after the occurrence.

14. SURVIVAL ASPECTS

14.1. Passengers and crew were safe, only Ground Engineer
was killed while rectifying the snag during transit
time.

15. TEST & RESEARCH

15.1. Not applicable.

16. OBSERVATIONS

- 16.1. The aircraft was parked in the centre of the main runway with nose gear collapsed.
- 16.2. Nose gear ground down lock and 2 clamp rings to lock steering motor were lying on left side of nose gear alongwith the fallen jack.
- 16.3. Jack pad and bracket was in position and attached under the wheel lever.
- 16.4. A fixation tool to prevent compression of the shock absorber was not used and was found in the stores.
- 16.5. While the nose of aircraft was being lifted from the ground, a bundle of paper was seen stuck in the right hand side near down lock latch.
- 16.6. After removing the jack pad bracket from the wheel lever, which was hindering in extending the nose gear, PIA mechanic handed over bundle of paper which was later confirmed as newspaper Hurriyet with weekly magazine of same day's flight i.e. of 15.6.89.

17. INVESTIGATIONS

- 17.1. The Investigation Team reached the place of incident at 1800 hrs LT. PIA Maintenance and Quality Control and PIA Corporate Safety Officers were also present.

- 17.2. On 15th June, 1989, F-27 AP-BBF operated Karachi - Sukkur - Bhawalpur as PK-588 without any snag. On return sector as PK-589, take off from Bhawalpur was normal. But when preparing for landing at Sukkur Airport, while landing gears were extended, Pilot observed nose gear red light staying On. Green light down lock indication was off and warning horn was on. He recycled landing gear couple of times but defect persisted. Maintenance was contacted and Sukkur Airport Tower also confirmed nose gear extended when gears were lowered. But the nose gear down lock indication in the cockpit remained Red. Eventually when enough fuel was consumed, the Pilot made normal landing and parked aircraft in the centre of the runway with engines & battery power shut off.
- 17.3. All passengers and crew were disembarked through normal doors, baggage taken to terminal after maintenance installed ground locks in all 3 landing gears.
- 17.4. Ground Engineer after discussion with the Pilot, inspected the nose gear area, and soon confirmed to the Pilot, that he had noticed a bundle of papers stuck under the nose landing gear down latch, which was not allowing nose gear down lock latch to fully sit home and causing the red warning light to illuminate in the cockpit.
- 17.5. Captain took Ground Engineer with him to the terminal and insisted that he should not try removing the paper bundle stuck partially under the latch. The Engineer,

however in enthusiasm went back to the aircraft to rectify the fault. Being young and not very experienced, he jacked up the aircraft with the help of cradle jack which is meant for nose wheel change only and is used with fixation tools.

17.6. He tried to remove the papers with the help of a knife, but could not manage to do so; He then sent a mechanic to the store to bring a tool kit. In the meantime he continued his efforts to remove the bundle of papers but the nose gear collapsed and retracted forward with aircraft nose section touching the ground and Ground Engineer badly trapped between the nose wheel and forward nose wheel bay. Immediately ASF, PIA & CAA Staff reached the place of incident and PIA Crew and airport Manager with great difficulty were able to free the trapped Ground Engineer. A rope was slung over the tail section and both ends were pulled down causing the nose to lift. Few members of the Staff went inside the cabin to put extra weight in rear cabin, to help nose section to lift up. The Engineer's body was immediately sent to the Hospital. (Autopsy Report attached as App. 'E' and Police Report App. 'F').

17.7. It was noted by the Investigation Team that special nose wheel change jack which is used with fixation tools, was used by the Ground Engineer to ease in removing the bundle of papers stuck under the latch. He was not able to remove partially seated down lock latch, but he just ignored that the type of jack he was using was

/actually

actually causing to unlock the down lock as the force of jack was applied tangentially. Hence the nose gear immediately retracted trapping the Ground Engineer's body between the fuselage and the nose gear. The body was later freed by the PIA staff who rushed from the terminal.

17.8. Investigation Team also observed that nose gear ground lock was lying to the left side of aircraft nose section along with tilted nose jack and 2 locking clamp fixation tools, which were not used by the Engineer during jacking. He also had not used nose shock strut fixation tool, which was later collected by the investigation team from the tools - store.

17.9. After jacking up the nose section of aircraft with fuselage jack, bundle of papers was removed from R.H side of lock latch and steering motor attachment bracket, which later on was confirmed as Newspaper Hurriyet with weekly magazine of 15/6/1989.

17.10. As a result of this unfortunate incident extensive damage to aircraft nose section and doors, H.F. Antenna etc., also occurred. Aircraft had to be ferry flown to Karachi for permanent repairs.

18. WITNESSES

Statements of the following witnesses are attached to this report:-

18.1. Capt. Raffat

APPENDICES

18.1. Capt.Raffat Jamil Operating PK-589/150689	M ₁ (i) – M ₁ (ii)
18.2. First Officer Ahmed Saeed, "	M ₂ (i) – M ₂ (ii)
18.3. Mr.Shahid Ahmed Vahidy,Flight Steward	M ₃ (i) – M ₃ (ii)
18.4. Ms.Samia Khan, Air Hostess	M ₄ (i) – M ₄ (ii)
18.5. Mr.Mubashir Ahmed, Avionics Engineer	M ₅ (i) – M ₅ (ii)
18.6. Mr.Riazul Hasan Ansari, A/c Engineer	M ₆ (i) – M ₆ (ii)
18.7. Mr.Imtiaz Ali Haider, A/c Engineer	M ₇ (i) – M ₇ (ii)
18.8. Mr.Asif Raza Khan, Sr.Technician	M ₈
18.9. Mr.Zaki-Ullah Khan, Sr.Tech.	M ₉
18.10.Mr.Akhtar Ali Shah, Engine Tech.	M ₁₀
18.11.Mr.Auj Ahmed, Sr.Tech.	M ₁₁
18.12.Mr.Atiqullah Siddiqui, Avionics Tech.	M ₁₂
18.13.Mr.Ghulam Mustafa, Security Asstt.PIA	M ₁₃ (i) – M ₁₃ (ii)
18.14.Syed Amdad Hussain Shah, Sec.Asstt.PIA	M ₁₄
18.15.Mr.Noor Mohammad, Traffic Asstt.PIA	M ₁₅
18.16.S.Nayyar Abbas (Shop No.50)	M ₁₆
18.17.Mr.Nawaz Ahmed, Sr.Tech.L/M.II	M ₁₇
18.18.Mr.Safeer Ahmed, Cat Asstt.	M ₁₈
18.19.Air Cdre (Retd) S.Qaiser Yusoof,Principal PTC.	M ₁₉
18.20.Mr.Jamal A.Ghani, DCE PIA	M ₂₀

/18.21.Mr.Ghous

18.21. Mr.Ghous Buksh (P.45690)	$M_{21}(i)-M_{21}(ii)$
18.22. Mr.Perverish Ali, Guard - I, ASF	M_{22}
18.23. Mr.Arif, Loader, PIA	M_{23}
18.24. Mr.Muhammad Akram, Loader PIA	M_{24}

19. DISCUSSION OF EVIDENCE

- 19.1. The aircraft had operated PK-588 Karachi - Sukkur - Bhawalpur sectors without any snag of nose landing gear warning system or any abnormality reported in nose landing gear system.
- 19.2. Return flight PK-589 from Bhawalpur was normal, but while preparing for landing at Sukkur, Pilot observed nose landing gear red warning light on when landing gear were selected down.
- 19.3. He exercised few times extension and retraction of landing gears but the nose gear green light remained off and red warning light on. As per Pilot there was also no normal thudding noise of nose gear when selected down.
- 19.4. After consuming fuel, the Pilot landed the aircraft safely after carrying out emergency check list. Both engines were shut down soon after touchdown. The aircraft was stopped in the centre of the main runway. Ground locks were installed. Crew and Passengers were disembarked from normal exit doors.

- 19.5. Ground Engineer while installing the nose gear ground lock, noticed bundle of papers stuck between the bracket and nose gear down lock latch which was preventing nose gear down lock to fully sit home, and thus causing red warning light to illuminate.
- 19.6. The Engineer informed and showed to the Pilot of the presence of bundle of paper. The Pilot instructed the Engineer not to tamper with nose gear and wait for assistance from Karachi.
- 19.7. Despite the instructions from the Pilot, the Ground Engineer came back from Terminal building and took initiative to rectify the snag. He installed nose wheel change jack without fixation tools. (Wrong type of jack for this purpose).
- 19.8. He tried to remove the bundle of paper with a knife, but it was stuck too tightly between the nose lock latch.
- 19.9. The nose wheel change jack used by the Engineer was inappropriate type and caused nose gear to collapse, as the force applied being off the centre. The Engineer tried to lift partially locked down latch, the nose gear collapsed, thus crushing the Ground Engineer between the nose wheel and forward wheel well housing. This resulted in fatal injury to the Ground Engineer.
- 19.10. Later the bundle of papers were removed by the investigation team was traced out to be Newspaper Hürriyet with weekly

magazine of same day's flight i.e. 15.6.89, which somehow or the other was left in the nose gear bay by PIA Staff. Of the many staff members including ASF, Traffic, Loaders, PIA Security, Ground Engineering Staff, Cockpit and Cabin Crew interrogated, no one has come out as to who placed the Newspapers in the nose gear bay or pointed out if any one was seen reading the Newspapers in the vicinity of the nose gear bay. This careless action caused the defect and led to eventual fatal injury to the Ground Engineer.

- 19.11. During pre-flight at Bhawalpur, both Pilots carried out a pre-flight checks of the aircraft. If the pre-flight and walk around checks had been carried out properly, the Newspaper should have been found; thereby avoiding the incident. It may be emphasised here that all Pilots/Co-Pilots, must have in their possession a torch with which they can scan areas like wheel bays which are usually dark.

20. FINDINGS

- 20.1. The aircraft was airworthy and properly certificated for the flight.
- 20.2. The flight crew was medically fit, properly licenced and held valid licences/rating to operate F-27 aircraft.
- 20.3. The aircraft was correctly refuelled and properly loaded with passengers and baggage for the subject flight. The C.G. position, take off and landing weights were within limits.

/20.4. The flight

- 20.4. The flight crew adopted proper technique to shut off both engines after normal landing at the centre of main runway. After ensuring ground lock installed, passengers and crew disembarked.
- 20.5. CAA Fire tenders and Ambulances were well organised and properly positioned prior to landing of above aircraft to meet any adverse situation.
- 20.6. There was no injury to any passenger and operating crew.
- 20.7. There was no fire during or after landing or after the unfortunate incident.
- 20.8. Bundle of paper stuck between nose gear bracket and partially under the nose gear down lock latch was shown to Pilots by the late Ground Engineer which was causing restricted down lock latch movement in the fully down locking of nose landing gear.
- 20.9. The Pilot Captain Riffat Jamil failed to locate the newspaper stuck inside the nose wheel bay during pre-flight inspection at Bhawalpur.

21. CAUSE

- 21.1. Nose gear collapse occurred because of wrong type of nose jack used by the late Ground Engineer to remove bundle of newspaper stuck partially under the nose down lock latch.
- 22.2. Contributory cause in this incident is that the Captain of the aircraft failed to spot the newspaper stuck in the nose wheel well area.

22. RECOMMENDATIONS

- 22.1. On-Job training to be imparted by the PIA Training Centre as to the use of fixation tools with the wheel change jack. Specific instruction should be passed to students to use nose fuselage jack for other work on nose landing gear system, when nose wheel change is not required.
- 22.2. Security, observation, vigilance checks by both PIA Security and ASF Personnel to be strictly carried out.
- 22.3. Both Ground Engineers and Pilots to carry out walk around checks with special emphasis on foreign objects in sensitive areas with torches if required.
- 22.4. Front fuselage jack A-0016 to be positioned at Quetta, Sukkur and Pasni, where ever Maint Engineer is available or accompanies F-27 flight..

APP 'C1'



APP 'C2'



AP-BBF -
Nose landing gr. collapsed
PIC 58915-6-89 at Sukkur.

APP. 'C3'



5

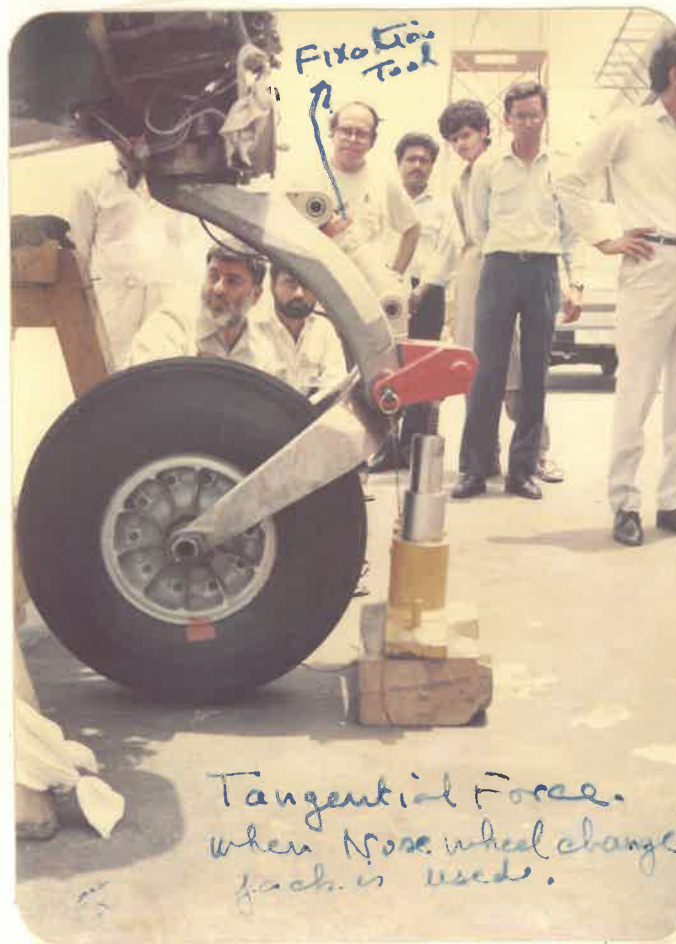
APP. 'C4'



APP. C5"



6

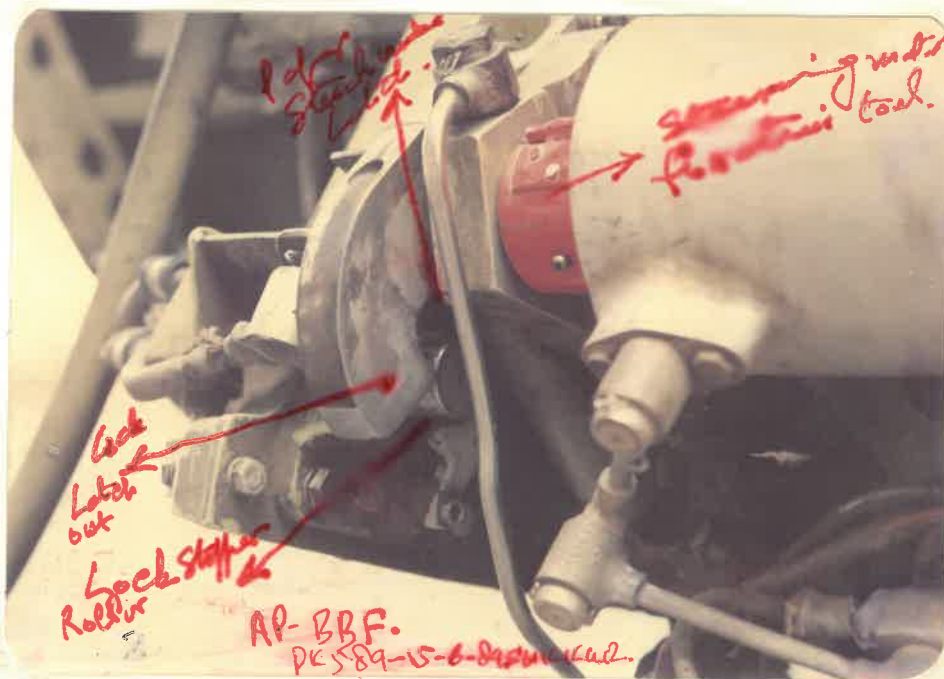


APP. C6"

APPC7



7



APPC8