



# **FINAL REPORT**

**INCIDENT OF AERO LANKA FLIGHT RNL 106,  
HS 748 SERIES 2B, REGISTRATION 4R-SER,  
ON 02<sup>ND</sup> DECEMBER 2006  
AT COLOMBO AIRPORT, RATMALANA – SRI LANKA**

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**LIST OF ABBREVIATIONS**

ACFT	-	Aircraft
ATC	-	Air Traffic Controller
ATIS	-	Automatic Terminal Information Service
ATPL	-	Airline Transport Pilot Licence
CAA	-	Civil Aviation Authority
CDI	-	Closed Deviation Indicator
CPL	-	Commercial Pilot License
CVR	-	Cockpit Voice Recorder
DGCA	-	Director General of Civil Aviation – Sri Lanka
F/O	-	First Officer
FOM	-	Flight Operation Manual
GPS	-	Global Positioning System
GPWS	-	Ground Proximity Warning System
ICAO	-	International Civil Aviation Organization.
IFR	-	Instrument Flight Rules
MET	-	Meteorological
NDB	-	Non Directional Beacon
OJT	-	On-the-Job Training
PAPI	-	Precision Approach Path Indicator
PIC	-	Pilot in command
RMA	-	Ratmalana Airport
RWY	-	Runway
SARPS	-	Standards and Recommended Practices
TOL	-	Take off and Landing
TTS	-	Target Threshold Speed
UTC	-	Universal Time Constant
VASI	-	Visual Approach Slope Indicator
VFR	-	Visual Flight Rules
VHF	-	Very High Frequency
V <sub>REF</sub>	-	Velocity Reference

**AIRCRAFT INCIDENT REPORT****SYNOPSIS:**

Operator : Aero Lanka (Pvt) Ltd,  
No.500, Galle Road,  
Colombo 06

Registered Owner : LAP Group Australia (Pvt) Ltd,  
5A, Jubilee Ave,  
Warrewood, N.S.W.  
Australia

Aircraft Make and Model : BAE System, HS 748 Series 2B

Aircraft Nationality : 4R (Sri Lanka)

Aircraft Registration : SER

Place of Accident : Runway 22,  
Colombo Airport, Ratmalana,  
Sri Lanka

Date and Time : 02<sup>nd</sup> December 2006 at 1310 UTC  
(1840 Hrs local time)

The incident was notified to the Director General of Civil Aviation by the operator through a telephone call. Accordingly, an investigation was initiated by a team comprised of Mr. W.P.M. Fernando, Director Flight Safety as the Team Leader, Mr. N.L. De Silva, Air Navigation Services Inspector as a Team Member and Capt. H.C. Fernando, a member of Accident Investigation Panel of CAA-Sri Lanka as a Team Member appointed by the Director General of Civil Aviation. The incident site was immediately visited by the investigation team. Notifications were sent to the CAA-UK Air Accidents Investigation Branch being the State of Design and State of Manufacturer with a copy to ICAO in conformity with ICAO SARPS in Annex 13 to the Convention.

The subjective flight landed on runway 22 after making a visual approach at dusk. The aerodrome controller observed the aircraft touching down passed the control tower. The aircraft overran the threshold of runway 04 and came to a rest on the stopway.

**1. FACTUAL INFORMATION:**

**1.1. History of Flight:** On 02<sup>nd</sup> December, 2006, Aero Lanka flight RNL 106, British Aerospace HS748, registration 4R-SER, was on a scheduled passenger flight returning from KKS (Palaly- Jaffna) to Colombo Airport, Ratmalana and was making a visual approach on runway 22 at dusk in good weather conditions with a reported surface wind of 030<sup>0</sup>/10 kts gusting occasionally to 15 kts at the time of landing. The crew had completed the landing checklist and discussed the approach to runway 22. The aerodrome controller observed that the aircraft touched down almost two thirds of the way down the runway (passing the Control Tower) and overran the 04 end of the runway.

The starboard inner tyre (wheel #3) deflated while decelerating on the runway and the aircraft came to rest on the soft grass of the overrun area of Runway 22 left of the centreline and heading in a southerly direction. There was no apparent damage to the aircraft other than the deflated tyre. The aircraft engines were shutdown normally. There were no injuries to passengers or crew and the passengers disembarked via the aircraft's aft air stairs.

**1.2. Injuries to Persons:** There were no injuries to the crew or passengers.

**1.3. Damage to Aircraft:** The starboard inner tyre (Wheel No.3) deflated. In order to trace any other damages invisible, extensive inspections were requested from the aircraft manufacture as per the procedures in aircraft maintenance manual.

**1.4. Other Damages:** None.

**1.5. Personnel Information:****Flight Crew**

Pilot-In-Command : Capt. Unang Hassan, Male, 62 years.

Licence : Foreign Licence Validation Certificate (FLVC) No. CV/176/Capt/Aerolanka issued by the DGCA Sri Lanka on the strength of valid Airline Transport Pilot's Licence (No. ATPL16721) issued by the DGCA Indonesia.

Aircraft Ratings : PIC, HS 748

Flying Experience : Total: P1 11,000 hrs.  
Total on type: 3200 hrs as at 02.12.2006.

First Officer : S.B.S. Morais, Male, 38 years.

Licence : Valid CPL (No. CPL/A/264) issued by the DGCA Sri Lanka.

Aircraft Ratings : Co-pilot, HS 748

Flying Experience : Total: 3856 hrs; Total on type: 619 hrs 19 min

Ground Engineer : B. L. Pradhan.



Licence : Validation Certificate 319/VAL/RNL issued by the DGCA Sri Lanka on the strength of valid Aircraft Maintenance Licence (No. 80) issued by the DGCA Nepal.

Aircraft Ratings : 'A' and 'C' on HS 748 airframe/RR Dart 536,

Experience : HS 748 rating endorsed on 14-11-1997

#### 1.6. Aircraft Information:

Type and Model : BAE System HS 748 Series 2B

Manufacture's Serial Number: 1799

Date of Manufacture : 1984

Certificate of Registration : No.197, Registered in Sri Lanka Civil Aircraft Register.

Certificate of Airworthiness : Valid till 16<sup>th</sup> December 2006

Total Airframe Hours : 16,371 hrs

Total Cycles : 22,455

Engines : 02 numbers, RR Dart 536-2 Turbo Prop Engines

Propellers : 02 numbers, Dowty Rotol R251-4-30-4

- 1.7. **Meteorological Information:** Reported wind of 030/10kts gusting occasionally to 15Kts.
- 1.8. **Aids to Navigation:** The airport is equipped a Non Directional Radio Beacon (NDB). There is a published NDB Approach available for Runway 22.
- 1.9. **Communication:** Voice communication between the Aerodrome Controller and the aircraft flight crew had been in good order.
- 1.10. **Aerodrome Information:** Aerodrome meets the basic requirements to support the operation of the HS 748 aircraft. However, the aerodrome is not equipped with Approach Lights and Visual Approach Slope Indicators.
- 1.11. **Flight Recorders:** The aircraft was fitted with a Model A100, Fairchild Industrial Product (S. No. 2852) Cockpit Voice Recorder (CVR) and Model PV 1584V, The Plessey Company Limited (S.No.CH 9229) Flight Data Recorder (FDR). CVR was replayed but it was not possible to replay the FDR due to non availability of initial calibration data to compare decoded parameters in the FDR.
- 1.12. **Wreckage and Impact Information:** Tyre markings of landing gear wheels were found on the runway. The first marks of the Main Landing Gear were found on the runway at 668m away from the 04 end. The first mark of the Nose Landing Gear was found 170m beyond those of the Main Landing Gear, which is 498m away from the runway 04 end. The aircraft came to a rest on the stopway overrunning the 04 end by 213m. Tyre trail markings were visible along the runway from near the touchdown point. The aircraft movement on the stopway made deep markings on soft soil.



- 1.13. **Medical and Pathological Information:** There were no injured passengers. Pilot and Co-pilot were sent for the blood alcoholic test.
- 1.14. **Fire:** There was no fire.
- 1.15. **Survival Aspect:** Not applicable.
- 1.16. **Test and Research:** Not applicable for this incident.
- 1.17. **Additional Information:** Not Applicable.

## 2. ANALYSIS

- 2.1. **General:** The flight crew members were properly licensed and rated. The flight crew failed to go through the checklist and make a stabilized approach and subsequently allowed the aircraft to touch down far down the length of runway 22 during the landing. Communication of the flight crew recorded in the CVR confirms that the aircraft approach speed was higher than the normal. This resulted in the aircraft touching down nearly two thirds of the way down the runway. The remaining runway was inadequate to complete the landing roll thus the aircraft overran the runway and came to a rest 213m along the stopway.
- 2.2 **The approach and landing:** The aircraft returned to destination, Ratmalana at FL 140. On initial contact with Colombo Radar on frequency 124.9Mz, the Area Radar Controller gave the surface wind as 360<sup>0</sup>/05Kts, which was the meteorological wind, and the runway in use as 04. This was written down on the 'Bug Card' and rest of the details were completed accordingly. Later the Air Traffic Controller offered the aircraft to use runway 22 at the pilot's discretion, subject to the wind, given then as 030<sup>0</sup>/10Kts at times gusting to 15Kts. When offering the choice of the runway, the evidence available shows that consideration seems to have not given for the surface wind speed and direction. The pilot and co-pilot jointly carried out the pre-landing checks before the approach. In the final phase of approach the co-pilot realised that the approach speed and angle are high and requested the Commander to go-around, which the Commander ignored and continued with the final phase of approach and the landing while GPWS warning repeatedly sounded for eight times.

The NDB approach for runway 22 is designed and published in such a manner to avoid the Prohibited Area of a circle of one nautical mile radius centred upon the Parliament Complex situated at a distance of 3.7 nm from the threshold of runway 22 with a height unlimited on the approach path. The approach procedure requires an aircraft to fly an inbound track of 246<sup>0</sup> M to intercept the final approach path at a distance of 1.6 nautical miles to the threshold of runway 22 at an altitude of 365ft., which is a significant factor during night without proper visual approach aids.

The Pilot-in-Command had limited experience of flying in Sri Lanka. He has logged thirty five (35) hours of total flying in Sri Lanka with twenty one (21) landing on runway 22 and two (2) landing on runway 04 at Ratmalana Airport. He has carried out five (5) landing at dusk. The co-pilot, on the other hand possessed a total of 519 hours of flying in Sri Lanka on type and has logged one hundred and seventy (170) approaches/landings on runway 22 at Ratmalana Airport.

The Air Traffic Controller, in his interview, stated that in many cases the pilots prefer to select runway 22 for landing. Possibly as guidance over land for final approach is available & go round, climb out area has no prohibited area.



- 2.3 Airfield lighting:** The airfield is equipped only with runway edge lights and threshold lights. The pilot confirmed in his interview said that the intensity of runway lights was not adequate as the perimeter lights were brighter. Further, the runway is not provided with approach lights and VASI type visual approach guidance lighting systems to assist the pilots during the visual phase of the approach and landing especially during night approaches.
- 2.4 Airfield layout:** The position of the aircraft, after it overran the runway, was not visible to the Tower Controller due to the presence of physical obstructions, which also obstructs the view of runway 04 from the Control Tower. As a result, the Tower Controller contacted the crew on VHF to confirm the position of the aircraft and to activate the crash alarm for the deployment of Fire and Rescue services.
- 2.5 Communication:** The communication between Ratmalana Control Tower and the aircraft was not recorded from 1246 UTC to 1317 UTC due to malfunction of the Recorder. However, certain time lines were available with the voice recordings of the Radar Control Centre for comparison of CVR recordings.

The CVR recording reveals that the cock-pit crew carried out landing checks jointly before descending for approach but they appear not to have concentrated on established approach procedures. However the co-pilot indicated to the pilot that they were high on approach speed and the approach angle at the final stages and suggested to go around, which did not happen.

### 3. CONCLUSION

#### 3.1. Findings:

- a) The flight crew members were type rated and properly licensed.
- b) The Pilot-in-Command had very little experience at the landing airfield.
- c) The aircraft had valid Certificate of Registration, Certificate of Airworthiness and the Certificate of Maintenance Release for the flight.
- d) The Approach Controller offered the choice of runway to the pilot under a tailwind with gusty wind conditions.
- e) The flight crew failed to carry out a stabilized approach procedure.
- f) Lack of visual aids made it difficult for the crew to make visual approach at dusk.
- g) The aircraft landed at dusk with a tail wind component of approximately 10kts.
- h) The pilot assumed touching down on the first one third of the runway and continued the landing instead of carrying out a go-around.
- i) The airport perimeter lights were brighter and elevated to higher level than the runway lights, making the runway length difficult to judge
- j) The soft surface soil layer and grass in the Stopway contributed to prevent extensive damage to the aircraft during the overrun.
- k) The 04 end of the runway is not visible to the Aerodrome Control Tower.
- l) The Fire and Rescue Services are unable to monitor the ends of runway.
- m) Aero Lanka FOM Part D-Training Manual contains an indoctrination programme for pilots and specifies an examination to verify knowledge of the FOM. There is no detailed syllabus or sector requirement for line training for qualified Captain joining the company.
- n) The calibration data of CVR and FDR was not available to the airline operator.
- o) The airline operator was unable to provide engineering data needed for de-coding FDR.
- p) The voice communication recording system at Colombo Airport, Ratmalana was found unreliable with no indication of a failure warning.





**3.2 Probable Cause:** Poor judgment of the Pilot-in-Command prompting flight-crew to make an approach at a steeper than normal approach angle and at a higher than normal indicated air speed which contributed to aircraft landing with inadequate length of runway to stop.

#### **4. SAFETY RECOMMENDATIONS**

1. Flight crew members must be made fully conversant with stabilised approaches as defined in the Aero Lanka Flight Operations Manual Part B, 11.3. Missed approaches should be practiced in PPC's as a routine exercise.
2. The very bright sodium security lights installed around and at close proximity to the runway at Colombo Airport, Ratmalana should be shaded on the runway side or be facing away from the runway.
3. A Visual Approach Slope Indicator (VASI) should be installed as a priority to assist the pilot during approach at runway 22
4. Fire vehicle should be positioned at a place where both ends of the runway are visible to handle emergencies.
5. Air Traffic Controller should determine the Runway- in -use based on wind direction and speed. This should be incorporated in SOPs.
6. Foreign pilots joining Aero Lanka as PICs should undergo a specified line training programme approved by the DGCA.
7. The CAA of Sri Lanka shall check the CVR and FDR calibration data at the time of importing an aircraft.
8. A reliable ATC Voice Communication Recording System at Colombo Airport, Ratmalana should be installed immediately with adequate backup facilities.

**APPENDIX – 1 -PHOTO EXPRESSION OF THE INCIDENT**



**Night time picture of the aircraft on the stopway after the overrun**



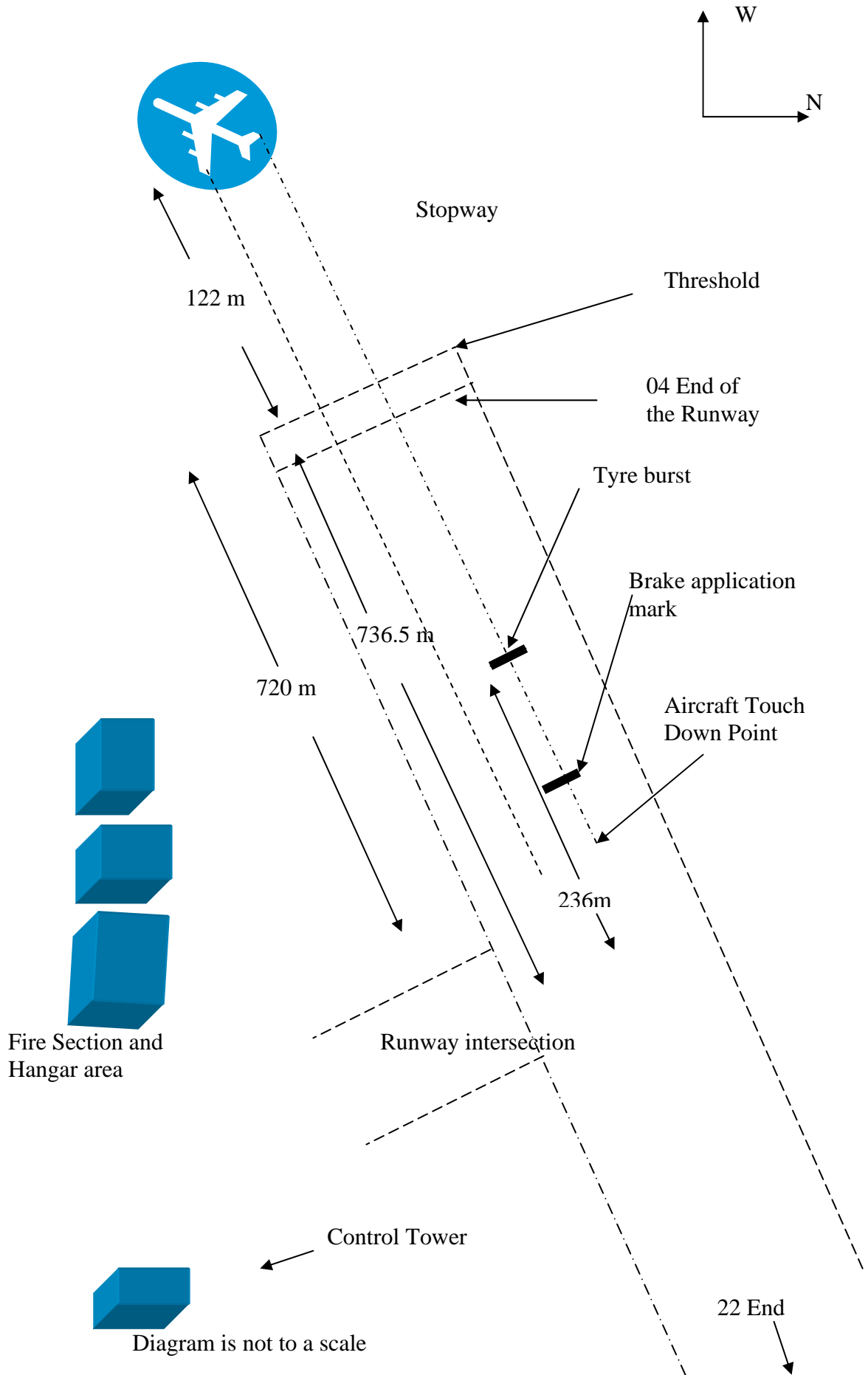
**Day time picture of the Aircraft on the Stopway after the overrun**



**Aircraft right inboard tyre bust**



APPENDIX -2- SKETCH OF THE ACCIDENT SITE





**APPENDIX 3, 4, 5 AND 6**

Publication of the Appendices 3, 4, 5 and 6 withheld in compliance with Chapter 5 Paragraph 5.12 of ICAO Annex 13 to the convention.