FINAL REPORT

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In accordance with the provisions of SI 205 of 1997, the Chief Inspector of Accidents, on 23/06/2005, appointed Jurgen Whyte as the Investigator-in-Charge to carry out a Field Investigation into this occurrence and prepare a Synoptic Report.

Aircraft Type and Registration:	**A/C No. 1:** Bombardier CL-600-2B16, C-FSJR **A/C No. 2:** Gates Learjet 45, G-OLDR
No. and Type of Engines:	**A/C No. 1:** 2 x General Electric CF 34-3B **A/C No. 2:** 2 x Allied Signal TFE731-20AR
Aircraft Serial Number:	**A/C No. 1:** 5413 **A/C No. 2:** 45-161
Year of Manufacture:	**A/C No. 1:** 1999 **A/C No. 2:** 2001
Date and Time (UTC):	23 June 2005 @ 05.45 hrs approx
Location:	Light Aircraft Park Bravo, North Apron, Dublin Airport (EIDW)
Type of Flight:	Private
Persons on Board:	**A/C No. 1:** Crew - 3 Passengers - 4 **A/C No. 2:** Parked/unoccupied
Injuries:	**A/C No. 1:** Crew - Nil Passengers – Nil **A/C No. 2:** Nil
Nature of Damage:	**A/C No. 1:** Scuffing of leading edge tape on winglet **A/C No. 2:** Fibreglass tail cone holed, static wicks severed
Commander's Licence:	Canadian ATP
Commander's Details:	Male, aged 50 years
Commander's Flying Experience:	13,700 hours, of which 1,050 were on type
Information Source:	Dublin Airport Authority (DAA) Report submitted by Operator

SYNOPSIS

While taxiing under marshalling to a parking position in the Light Aircraft Park Bravo, the starboard winglet of a Canadian registered Challenger, struck the tail cone of a UK registered Learjet. There were no injuries and no fire.

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1. FACTUAL INFORMATION

1.1 History of the Flight

Following a transatlantic flight from Charlottetown, Prince Edward Island (PEI), Canada, C-FSJR landed in daylight conditions at Dublin Airport (EIDW) at approximately 05.30 hrs local time. A total of 3 crew and 4 passengers were on board the private flight. A Trip Commander, pilot-non-flying (PNF) was seated in the right-hand seat, while another Captain, pilot flying (PF) was seated in the left-hand seat.

The aircraft was directed by Air Traffic Control (ATC) to the Parking Area Bravo, a light aircraft parking area on the North Apron. As C-FSJR approached the parking area, the flight crew observed a Fixed Based Operator's (FBO) van and a single marshaller indicating an area where the aircraft should be parked.

The parking area was made up of two rows of parked aircraft with a taxi lane running between the two rows and marked by a central yellow line (**See Appendix A**). The allocated position for C-FSJR was the third spot on the right-hand side of the front row.

The flight crew reported to the Investigation that, *as C-FSJR approached the parking area they noticed (*ahead and to the left*) that the area was congested with aircraft. The taxiway width between the two rows of aircraft was not evident from their position, because of their shallow angle of approach to the area and masking from the first aircraft on the front row. Yellow taxi lines indicated the route to our parking spot. The marshaller's indications and action confirmed the routing to the parking spot. With directions from the marshaller, a left turn was conducted* (into entrance of the parking area) *just prior to the first aircraft on the front row, a Cessna Citation. Then a 90º right turn was conducted to pass behind this same aircraft, now placing us between the two rows of aircraft. C-FSJR was successfully manoeuvred between a Citation on the left and the first Citation on the right. The aircraft slowly proceeded forward under the guidance of the marshaller. C-FSJR was to pass next between another Citation on the left and the tail end of a Learjet 45 on the right. As the aircraft neared this juncture, the Captain (PF) decided that there was not enough clearance to safely advance any further and was bringing the aircraft to a stop. At about the same time, the marshaller indicated to stop. As the aircraft stopped, the right winglet of C-FSJR made contact with the tail cone assembly of the Learjet 45. The passengers were deplaned, however, the aircraft remained in its impact position, pending the arrival of the investigative authorities.*

1.2 Damage

Following separation of both aircraft, it was determined that, C-FSJR suffered some minor scuffing to the protective tape on the leading edge of the starboard winglet, and the Learjet 45 (G-OLDR) suffered two broken static wicks and a hole in the fibreglass tail cone measuring approximately 7 cm by 7 cm. The tail cone and static wicks were subsequently replaced. There was no other damage.

1.3 Aircraft Information

1.3.1 C-FSJR, a Bombardier CL-600-2B16 Challenger has the following dimensions:

Overall length: 20.85 metres
Wing span (over winglet): 19.61 metres (Code B Aircraft)

1.3.2 G-OLDR, a Gates Learjet 45 has the following dimensions:

Overall length: 17.68 metres
Wing span: 14.56 metres (Code A Aircraft)

1.3.3 The Gulfstream G550, one of the largest business jets other than a converted commercial airliner business jet, has the following dimensions:

Overall length: 29.39 metres
Wing span (over winglet): 28.50 metres (Code C Aircraft)

1.4 Aerodrome Information

1.4.1 Parking General

Dublin Airport has two light aircraft parking areas. Light Aircraft Park Alpha (LAPA) is located off the North West Apron and is used mainly for light reciprocating type aircraft. Light Aircraft Park Bravo (LAPB) is located on the North Apron and is used mainly by light business jet aircraft and executive turbo prop aircraft.

1.4.2 Light Aircraft Park Bravo (LAPB)

LAPB originally dates back to the early 1970's. At that time the open parking area consisted of a yellow lined taxi lane with spines branching off at approximately 45º on either side to stand numbers and onward to a hammerhead stop marker. As a result of increased activity over the years, the parking area changed, from designated stand numbers, to free parking within defined red lined rectangular areas.

1.4.3 On site Inspection LAPB

An inspection of the LAPB by the Investigator-in-charge (IIC) shortly after the event determined that, in general, the parking area consisted of two large red lined rectangular areas on either side of a central taxi lane. The yellow lines of the original taxi lane and the spines branching off the taxi lane into the open parking area's were still present, however, the old stand numbers were blanked out.

C-FSJR was found on a heading of approximately 130ºM with its nose wheel on the yellow taxi line leading into the parking spot (See **Photo No 1**). The port winglet was protruding approximately 0.5 metres across the red line and into the left-hand side parking area. The starboard winglet had impacted the tail cone of G-OLDR and two static wicks that were located on the trailing edge of the rudder (See **Photo No 2**). The tail cone of G-OLDR was protruding approximately one metre into the taxi lane from the right-hand side parking area. Its entire empennage was protruding approximately two metres into the taxi lane from the right-hand side. The nose of G-OLDR was right up to the forward red line extremity of the parking area facing out to the North Apron taxi lane.

Information provided to the Investigation by the Dublin Airport Authority (DAA) and the Fixed Base Operator (FBO) marshaller confirmed that while the yellow markings were still present in the parking area, they were in fact, not in use. There was no record of any criteria put in place by the Airside Management Unit (AMU) or the handling agents to assess the suitability of the parking area for the different category of aircraft intending to use the LAPB (See **Appendix B**).

Photo No 1. Final resting position of C-FSJR. Note blanked out stand numbers

Photo No 2. Starboard winglet impact with tail cone of G-OLDR

1.5 Initiatives Post Event

Immediately following this particular event, the DAA removed all yellow markings on the LAPB, and limited its use to Code A aircraft only. Code B and C are now assigned to commercial stands adjacent to the LAPB.

In addition, the AMU established a procedure for parking aircraft at the LAPB (29 June 2005), whereby every aircraft intending to use the facility is assessed under its category and suitability for parking in the LAPB. Aircraft assessed as not suitable for the LAPB are assigned commercial stands adjacent to the LAPB.

1.6 Future plans for LAPB

The DAA is presently drawing up plans to re-design LAPB with designated stands for Code A Aircraft. Code B and C Aircraft will be accommodated on new stands adjacent to the existing LAPB. The new LAPB will comply with the provision of Annex 14 for clearance distances on aircraft stands (See **Appendix B**). Completion of this re-design is planned for the end of 2005.

2. CONCLUSION

Ultimately, the pilot-in-command is responsible for the operation and safety of his aircraft from the moment the aircraft is ready to move for the purpose of taking-off, until the moment it finally comes to a rest at the end of the flight and the engine(s) used as primary propulsion unit(s) are shut down.

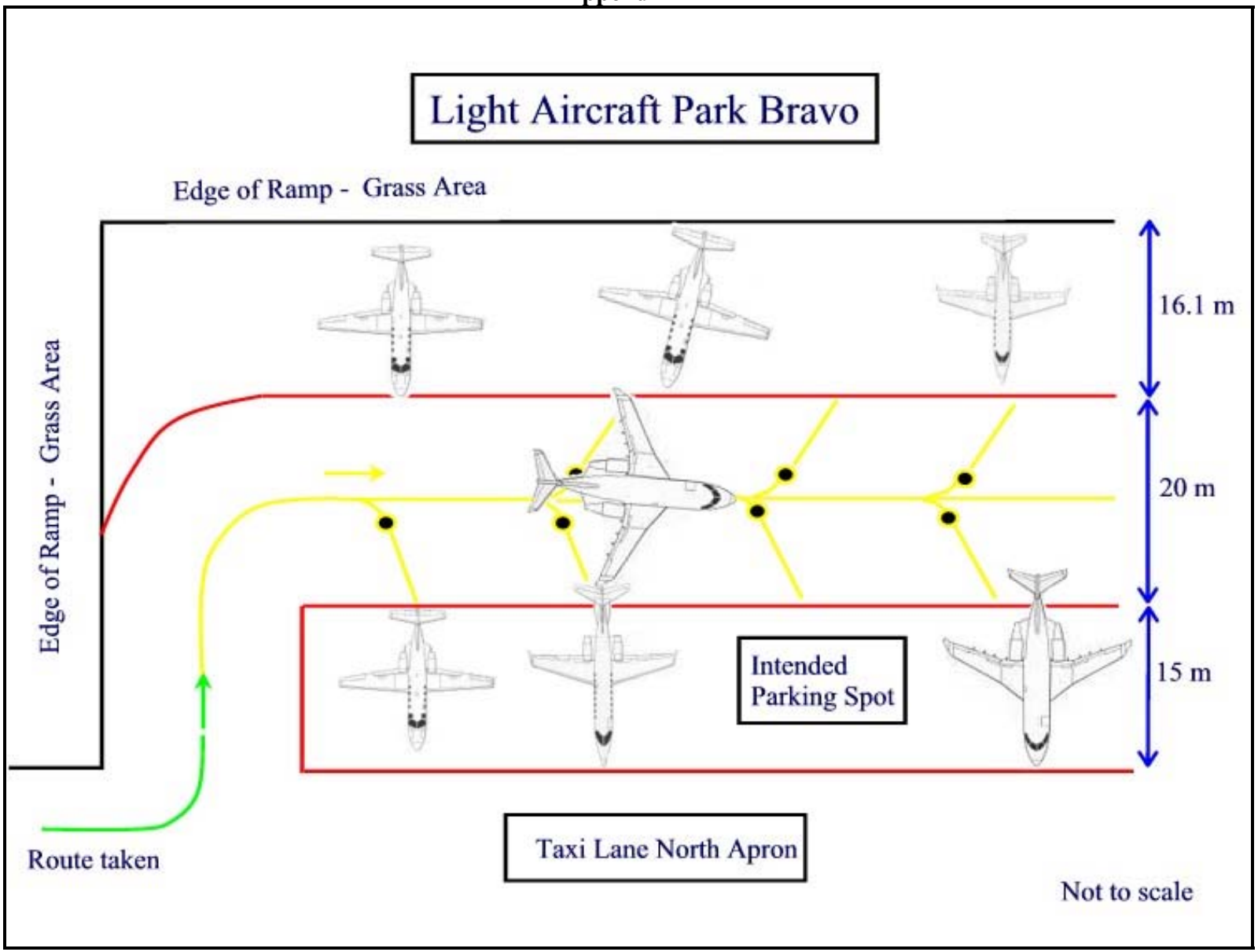
Notwithstanding the responsibilities of the PIC, it is clear to the Investigation that mitigating circumstances did contribute to the final outcome. Having been directed to the LAPB, where yellow taxi lines were present, and a marshaller was in position to direct C-FSJR to its parking spot, the assumption was made by the flight crew that sufficient clearance was available to park the aircraft safely. Once they had entered the taxi lane, which is 20 metres wide, and taxied between two aircraft, it should have been clear to both the flight crew and the marshaller, that only minimal clearance was available, as the wing span (over winglet) of C-FSJR is 19.61 metres. Good airmanship should have dictated at that time that the parking area was not suitable and the aircraft should have been stopped prior to attempting to taxi between the next two aircraft. This is particularly so as G-OLDR's tail was protruding approximately two metres into the taxi lane. In addition, the marshaller should not have continued to marshal the aircraft through such a tight spot. As it happened, the taxiing continued and the impact occurred.

Ultimately, it was remiss of the DAA to allow a situation whereby, yellow taxi lines were present within the LAPB, but were no longer in use, and that the DAA, in conjunction with the airport handling agencies, had no published criteria governing the aircraft type that may use the parking facility. However, the new procedures put in place by the DAA, coupled with the planned future re-design of LAPB, should resolve this matter.

3. SAFETY RECOMMENDATIONS

The Investigation is satisfied that the actions taken by the DAA, including the planned future re-design of the LAPB is satisfactory and therefore this report does not warrant a safety recommendation.

Appendix A


Light Aircraft Park Bravo
Edge of Ramp - Grass Area
Edge of Ramp - Grass Area
16.1 m
20 m
15 m
Intended Parking Spot
Route taken
Taxi Lane North Apron
Not to scale

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Appendix B

ICAO Annex 14 Provisions

The International Civil Aviation Organisation (ICAO) Annex 14 contains Standards and Recommended Practices (specifications) that prescribe the physical characteristics and obstacle limitation surfaces to be provided for at aerodromes, and certain facilities and technical services normally provided at an aerodrome. The follow extracts are relevant to this Investigation

1.6 Reference Code

1.6.4 The code letter for element 2 shall be determined from Table 1-1, column 3, by selecting the code letter which corresponds to the greatest wing span, or the greatest outer main gear wheel span, whichever gives the more demanding code letter of the aeroplanes for which the facility is intended.

Table 1-1 extract

	Code element 2	
Code Letter (3)	**Wing span (4)**	**Outer main gear wheel span (5)**
A	Up to but not including 15m	Up to but not including 4.5m
B	15m up to but not including 24m	4.5m up to but not including 6m
C	24m up to but not including 36m	6m up to but not including 9m
D	36m up to but not including 52m	9m up to but not including 14m
E	52m up to but not including 65m	9m up to but not including 14m
F	65m up to but not including 80m	14m up to but not including 16m

3.13 Aprons

Clearance Distances on Aircraft Stands

3.13.6 **Recommendation[1]. -** *An aircraft stand should provide the following minimum clearances between the aircraft using the stand and any adjacent building, aircraft on another stand and other objects.*

Code Letter	**Clearance**
A	3.0 metres
B	3.0 metres
C	4.5 metres
D	7.5 metres
E	7.5 metres
F	7.5 metres

[1] **Recommended Practice**: Any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity, and to which Contracting States will endeavour to conform in accordance with the Convention.