
Type Acceptance Report

TAR 3/21B/11

Lindstrand A-Series Balloons

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Introduction

This report details the basis on which Type Acceptance Certificate No.3/21B/11 was granted in the standard category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

- (a) Record the airworthiness certification standard used for type acceptance of the applicable model(s) in New Zealand;
- (b) Summarise any outstanding requirements which must be complied with for the issue of a NZ Airworthiness Certificate to any models covered by the Type Acceptance Certificate.

Foreign Type Certificate Details

Type Certificate: Number BB2

Issued by: United Kingdom Civil Aviation Authority

Manufacturer: Lindstrand Balloons Ltd

Model: A - Series

Noise Category: N/A

The certification basis of the hot air balloons covered by type certificate BB2 is British Civil Airworthiness Requirements Part 31, Issue dated 31/8/84, Appendix 1 to CAA Letter ref 9/30 IPA dated 27/2/1989. (The certification basis of the FAA type certificate is FAR 31, dated July 1, 1964, as amended by 31-1 through 31-4 inclusive.)

This is an acceptable certification basis in accordance with NZCAR Part 21B paragraph §21.41, as FAR Part 31 is the basic standard for Manned Free Balloons called up under Part 21 Appendix C. There are no non-compliances and no special conditions have been prescribed by the Director under §21.23.

Type Acceptance Application

The application for New Zealand type acceptance was from the agent, Mr Hugh McLellan of Sunrise Balloon Adventures Ltd, dated 26th September 2002. (An application was also received, along with a full documentation package, directly from the manufacturer.) The first-of-type example was an LBL 260A serial number 866, registered ZK-BFL.

Type Acceptance Certificate No.3/21B/11 was granted on 14 November 2002.

Lindstrand Balloons was established by the well-known balloonist Per Lindstrand, who left Thunder & Colt in 1992 to set up his own company next door. It eventually absorbed many of the personnel from the Thunder & Colt company, which went into receivership.

A-Type balloons have multi-gore horizontal cut envelopes, and are characterised by a low amount of “billow” in the panel (because of minimal excess fabric). They are designated according to size i.e. the 42-A has a volume of 42000 cubic feet and a maximum weight of 924 lb. The largest is the 425-A with a maximum weight of 7942 lb. (FAI Class AX12)

Type Data

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents:

(1) Type certificates:

UK CAA TCDS No. BB2 – Draft Issue dated April 2002

FAA Balloon Type Certificate (Import) No. B82EU issued December 22, 1984

FAA TCDS Number B82EU at Revision 3 dated August 27, 1998

(2) Airworthiness design requirements: Already held by the CAA

(3) Certification compliance listing:

Compliance Checklist to BCAR 31 – 31 August 1984 – Lindstrand A Type Series

Report EA-GEN-C-001 Issue 1 – Stress and Loading Analysis – 24 February 1993

EA-GEN-C-035 Issue 1 – Application for Certificate of Airworthiness – 12 July 1996

Report EA-GEN-C-100 Issue 6 – Strength of Materials for Construction of

Lindstrand Balloons Ltd Thermal Aircraft – 12 July 1996

Report EA-GEN-C-035 Issue 1 – Stress Analysis of the Structural Elements of

Lindstrand Balloons Ltd Hot Air Balloon Baskets – 13 September 2002

Report BU-GEN-G-002 – Endurance Test of a Jetstream Double Burner – 28.01.93

Report BU-GEN-G-006 – Endurance Test to FAR 31.47 – 18.11.93

Report EA-GEN-G-002 Issue 3 – A Summary of Results of Tests on the Force to Operate the Parachute Valve – 09.11.95

FTR 2 – Flight Test Report for a 77,000 cu.ft. A Type Balloon – 27.03.93

FTR 9 – Flight Test Report for 150,000 cu.ft. A Type Balloon – 02.08.93

FTR 10 – Flight Test Report for 180,000 cu.ft. A Type Balloon – 04.06.93

FTR 18 – Flight Test Report for a 42,000 cu.ft. A Type Balloon – 01.05.95

FTR 39 – Flight Test Report for an LBL 260 A Type Balloon – 18.07.96

(4) Flight manual: UK CAA-Approved Lindstrand Balloons Ltd Flight Manual
Document LBL HABFM Issue 1.0 – CAA Accepted as AIR 2805
(Applicable to all natural shaped Lindstrand hot air balloons –
Supplements are provided for special shapes.)

(5) Illustrated Parts Catalogue:

Lindstrand Balloons Spares, Accessories & Product Support Catalogue/Price List

(6) Maintenance manual and service data for balloon:

Maintenance Schedule for all Lindstrand Hot Air Balloons – MS/BBAC/1-K Iss. 2.0

Maintenance Manual for all Lindstrand Hot Air Balloons – LBL HABMM Iss. 1.0

(7) Agreement from manufacturer to supply updates of data in (4), (5) and (6):

CAA 2171 form from Lindstrand Balloons General Manager dated 15/9/02

Additional New Zealand Certification requirements

Compliance with the following additional NZ requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

Civil Aviation Rules Part 26

Subpart B - Additional Airworthiness Requirements

Appendix B - All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	<i>Not Applicable</i> – No doors or exits
B.2	Crew Protection Requirements - CAM 8 Appdx. B # .35	<i>Not Applicable</i> – Agricultural aircraft only

Civil Aviation Rules Part 91

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Shoulder Harness if Aerobatic; >10 pax; Flight Training	<i>Not Applicable</i> – Balloons excluded from the requirement
91.507	Pax Information Signs - Smoking, safety belts fastened	<i>Not Applicable</i> – Balloons excluded from the requirement
91.509	Minimum Instruments and Equipment	<i>Not Applicable</i> – Unpowered aircraft
91.511	Night VFR Instruments and equipment	<i>Not Applicable</i> – Unpowered aircraft
91.513	VFR Communication Equipment	Operational requirement – Compliance as applicable
91.517	IFR Instruments and Equipment	<i>Not Applicable</i> – Not approved for IFR Flight
91.519	IFR Communication and Navigation Equipment	<i>Not Applicable</i> – Not approved for IFR Flight
91.523	Emergency Equipment	<i>Not Applicable</i> – No certificated seating capacity
91.529	ELT - TSO C91a after 1/4/97 (or replacement)	<i>Not Applicable</i> – Balloons excluded from the requirement
91.531	Oxygen Indicators - Volume/Pressure/Delivery	Operational requirement – Compliance as applicable
91.533	Oxygen for non-Pressurised Aircraft	Operational requirement – Compliance as applicable
91.541	SSR Transponder and Altitude Reporting Equipment	Operational requirement – Compliance as applicable
91.543	Altitude Alerting Device - Turbojet or Turbofan	<i>Not Applicable</i> – Unpowered aircraft
91.545	Assigned Altitude Indicator	<i>Not Applicable</i> – Not approved for IFR Flight
A.15	ELT Installation Requirements	<i>Not Applicable</i> – Balloons excluded from the requirement

Note: Full details are given in the Flight Manual of approved burners and cylinders, and their applicability, along with interchangeability with equipment from Cameron, Thunder & Colt and Sky Balloons.

Summary

Type Acceptance Certificate No. 3/21B/11 has been granted to Lindstrand A Type Hot Air Balloons and all serial numbers are now eligible for the issue of a New Zealand Airworthiness Certificate in the Standard Category in accordance with CAR §21.177, subject to any outstanding operational requirements noted above being met.

Attachments

The following documents form attachments to this report:

Copy of UK CAA Type Certificate/Type Certificate Data Sheet BB2

Sign off

David Gill
Team Leader Airworthiness

Date: 14 November 2002