



Air ambulance / air search and rescue service standard

Version 1.0: 2011

This Standard is endorsed by:



National Ambulance Sector Office



RESCUEcoordinationcentre
NEW ZEALAND



This Standard takes effect from 1st July 2011



COMMITTEE REPRESENTATION

EXPERT COMMITTEE

The Expert Committee responsible for the preparation of the Standard consisted of the following representatives:

Mark Masters	Ambulance New Zealand & Committee Chair
David Waters	Ambulance New Zealand & Project Manager
Rea Wikaira	Aviation Industry Association of NZ (Inc)
John Funnell	Chief Pilot
Pete Turnbull	Chief Pilot
Peter Kidd	Chief Pilot
Francis Kruger	Chief Pilot
Grant Withers	Chief Pilot
Roger Hortop	Chief Pilot
Brent Williams	Chief Pilot
Graeme Gale	Chief pilot
Toby Clark	Chief Pilot & AIA Representative
Grant Bremner	Chief Pilot
Dona Shiell	NASO
Nigel Clifford	RCCNZ
Shay McGuinness	DHBNZ Auckland DHB
Troy Browne	DHBNZ Bay of Plenty DHB
Dianna Keys	DHBNZ Bay of Plenty DHB
Karyn Hathaway	New Zealand Flight Nurses' Association
Fernah Peacey	New Zealand Flight Nurses' Association
Henny Nicholls	DHBNZ Capital and Coast DHB
Flt Sgt Russell Clarke	NZDF
Dave Comber	LandSAR NZ
John Fogden	CAA
Dave Greenberg	Crewmember Life Flight Trust

REVIEW PERIOD

It is intended that this Standard remains a dynamic document, reflecting the challenges and changes experienced by the aviation sector.

In order to achieve this, a regular review of the Standard is required to ensure it remains appropriate and applicable. It is intended to review this publication every three years.

COPYRIGHT

It is intended that this Standard is made readily available at no cost, and can be obtained from Ambulance New Zealand in hardcopy by request or by electronic means via the organisation's web site.

Sections of this document may be duplicated with appropriate reference to the source.

EFFECTIVE DATE

This Standard takes effect from 1st July 2011. From that date all services covered by the scope of this Standard shall demonstrate compliance through independent audit from the date their current Certification expires. It is anticipated that all services will have transitioned to this Standard and be certified by 30th June 2012.



CONTENTS

Foreword	5
1 GENERAL	6
1.1 Scope of application	6
1.2 Interpretation and key definitions	6
1.3 Referenced documents	6
1.4 Administration of the Standard	7
2 PILOTS	8
2.1 Pilot in Command (PIC)	8
2.2 Co-pilot	9
2.3 Pilot Experience (Rotary) – Minimum Requirements	10
2.4 Pilot Experience (Fixed wing) – Minimum Requirements	12
3 CREWMEMBER ROLES	16
3.1 Crewmember- General	16
3.2 Winch Operator	16
3.3 Air Observer	17
3.4 Clinical Support Crew	18
3.5 Medical Passengers	18
Table 1—Aircraft Groups	19
Table 2—Aircraft Mission Capability	20
Table 3—Minimum Equipment Requirements	22
Table 4—Minimum Education and Training Requirements	24
4 RISK MANAGEMENT	26
4.1 Human Factors and Crew Resource Management (CRM)	26
4.2 Safety Management Systems	26
5 AIR AMBULANCE OPERATIONS	27
5.1 Availability for Tasking	27
5.2 Preparedness and Activation	27
5.3 Crew Combinations	28
5.4 Equipment	28
6 SEARCH AND RESCUE OPERATIONS	29
6.1 Availability for Tasking	29
6.2 Preparedness and Activation	29
6.3 Crew Combinations	30
6.4 Equipment	30
7 CAPABILITY REQUIREMENTS FOR SPECIALIST OPERATIONS	31
7.1 Rotary Night Operations – aided and unaided	31
7.2 External Load Operations (Ref Civil Aviation Rule Part 133)	33
7.3 Inshore/OffShore Operations	34
7.4 Beacon Search Operations	35
8 GROUND FACILITIES AND HELIPOINTS	36
8.1 Helipads	36
9 COMMUNICATIONS	37
9.1 Communication Equipment	37
10 FLIGHT SAFETY ENHANCEMENT DEVICES	38
10.1 Collision Avoidance Systems (TCAS)	38
11 PATIENT SAFETY	39
11.1 Patient Loading and Unloading Procedures	39
11.2 Stretcher patients	39
11.3 Assisted Ambulatory patients	39
12 INDEPENDENT CERTIFICATION	40
12.1 Certification	40
APPENDIX A — Explanation of Terms (Informative)	41
APPENDIX B — Definitions (Normative)	42
APPENDIX C — Source (Normative)	44
APPENDIX D — Exemption Panel Selection Procedure (Normative)	45
APPENDIX E — Action Plan Checklist (Informative)	46
Request for Changes, Updates, or Corrections	47

FOREWORD

The goal of this Standard is to ensure that the quality of service provided by air ambulance/air rescue services in New Zealand promotes safety, consistency and is patient or recipient focused. The concept of safety and risk minimisation underpins the development of this document and builds upon the excellent safety record experienced in the sector to date. Air providers wishing to provide these services are expected to meet the Standards required within this document.

These Standards have been peer reviewed and critiqued not only by the providers of air ambulance/air rescue services, but also key stakeholder organisations such as RCCNZ, NASO, other health providers, search and rescue organisations and medical experts. To ensure ongoing provision of the quality of standards required and ongoing compliance with CAA Rules, operators are required to demonstrate compliance to this Standard through certification. This ensures the Standards are maintained and that the operators' Expositions comprise a living document, which can be amended and enhanced to keep in line with ongoing developments in technology and techniques.

The Standard contains the air sector-agreed Standards for pilots, crew, aircraft and essential equipment. The desired outcome of this Standard is the promotion of national consistency, best practice and quality, and risk management practices that ensure patient and crew safety remains paramount in all aspects of air ambulance and air rescue service provision.

It is anticipated that this Standard will provide the framework for the contracting of air ambulance and air search and rescue services throughout New Zealand. It is therefore pleasing to note that this inaugural Ambulance New Zealand Standard has been endorsed by many of our key stakeholders.

We would like to thank the many individuals who have contributed to this Standard, either in face to face consultation, in writing or by other means. In particular, we would like to recognise the significant input provided by the Expert Committee whose experience and knowledge have made the development of this Standard possible.

Mark Masters
Chair - Ambulance New Zealand Air Sector Committee
November 2010



1 GENERAL

1.1 Scope of application

This Standard applies to:

- a. Air-based primary (emergency) ambulance services;
- b. Air-based secondary (IHT) ambulance services;
- c. Air-based search and rescue (SAR) responses;
- d. Aircraft nominated to provide the back-up operations to certified operators;
- e. Hospital helipads

Note: - Air Ambulance and Air SAR dispatch operations (tasking centres) should ensure dispatch staff are conversant with this Standard and incorporate the requirements into their decision-making process to ensure the most appropriate resource is tasked to meet the specific patient and mission requirements where these are known.

1.2 Interpretation and key definitions

For the purposes of this Standard, the word 'shall' refers to practices that are mandatory for compliance with this Standard, while the word 'should' refers to practices that are advised or recommended.

The terms “Normative” and “Informative” have been used in this Standard to define the application of the Appendix to which they apply.

The “Normative” Appendix is an integral part of the Standard, whereas the “Informative” Appendix is only for information and guidance. Informative provisions do not form part of the mandatory requirements of the Standard.

See Appendix A and B for a list of defined terms and abbreviations used in this Standard.

1.3 Referenced documents

Reference is made in this Standard to the following National and International Standards:

AS NZS 1891.1	Industrial fall-arrest systems and devices Part 1: Safety belts and harnesses
AS/NZS 3551	Technical management programmes for medical devices
DSP 83	US State Dept. End User Agreement for purchasers of US NVGs
ISO 31000	Risk Management - Principles and Guidelines
NZS 8156	Ambulance and paramedical services
SNZ HB 8156	Ambulance services' Sector Standard – Assessment workbook

Reference is made in this Standard to the following legislation:

Civil Aviation Act 1990
Civil Aviation Rules

1.4 Administration of the Standard

This Standard will be administered by the Ambulance New Zealand Standards and Accreditation Committee.

If any section of this Standard becomes conflicted with the Civil Aviation Act and CA Rules, then the CA Act and CA Rules take precedence. The Administrator of this Standard shall be notified and will arrange to have the conflict resolved in the Standard.

It is recognised that in exceptional circumstances, services may be unable to fully meet the requirements of this Standard on all occasions.

The administrators of this Standard shall have in place an accessible and approved process that ensures any formal exemptions are provided in a transparent manner and that the agreed exemption in no way creates significant additional risk to the pilot, crew or passengers utilising the resource or service.

Any operator who has a requirement to operate outside of the Standard shall submit an application in writing to the administrator of the Standard, requesting an exemption from the Standard.

Any request shall contain at least the following information:

- 1 Area of the Standard they seek an exemption from;
- 2 Risk assessment of proposed operations;
- 3 Mitigation or elimination procedures in place or proposed;
- 4 Additional supervision or restrictions to be placed on the exemption area requested;
- 5 The period of time required to meet compliance requirements.

Exemption process requirements:

1. All exemptions shall be considered within the requirements of the Civil Aviation Act (Part 37 Exemption Power of Director) and any other relevant legislation.
2. Granting of the exemption shall be by a panel which includes recognised air ambulance/ air SAR experts, technically qualified and competent to assess the specific nature of the request. Appendix D sets out the parameters for the selection of the Exemption Panel. This panel should comprise a minimum of three persons who have demonstrated they are not conflicted by either the exemption request or subsequent decision.
3. Any contracting party and dispatching authority shall be advised of any exemptions granted by the party seeking the exemption.
4. The exemption shall be fully documented for audit purposes and shall clearly describe the risk mitigation process and the rationale for granting the exception. The period for which the exemption is granted shall be detailed and a process instigated to ensure the agreed time frame is not exceeded.
5. The administrators of this Standard will have in place a robust disputes resolution process.

**2 - PILOTS****2.1 Pilot in Command (PIC)**

Outcome: 2.1 *The Pilot in Command shall have the required experience, training and current competency to provide the safe operation of the aircraft in flight and maintain the safety and wellbeing of all passengers and crew.*

Criteria 2.1.1 All Pilots in Command shall have acquired the minimum flying hours/ experience specified in clause 2.3 or 2.4 Pilot Experience – Minimum Requirements

Criteria 2.1.2 All Pilots in Command shall meet the minimum training requirements specified in Table 4 – Minimum Education and Training Requirements for air ambulance and air-SAR activities (Pilots).

Criteria 2.1.3 All Pilots in Command shall participate in activities that maintain the required skills and competencies as specified in Table 4 to operate as a Pilot in Command. Up-to-date records shall be maintained to demonstrate the on-going maintenance and acquisition of the required skills and experience for the role.

Criteria 2.1.4 The Pilot in Command shall operate their aircraft in a safe manner with respect to performance in compliance with Table 1 – Aircraft Categorisation and Table 2 – Aircraft Mission, and in compliance with the operating limitations specified in the aircraft Flight Manual.

Criteria 2.1.5 The Pilot in Command shall communicate, either directly or through a co-pilot, flight progress and or environmental conditions to all crewmembers as the pilot duties permit throughout the flight, especially before take off and prior to approach to land.

2.2 Co-pilot

Outcome: 2.2 *The Co-pilot shall have the required experience, training and current competency to assist the Pilot in Command in the safe operation of the aircraft in flight and maintain the safety and wellbeing of all passengers and crew.*

Criteria 2.2.1 All Co-pilots shall have acquired the minimum flying hours/experience specified in clause 2.3 or 2.4 Pilot Experience – Minimum Requirements for Co-Pilot.

Criteria 2.2.2 All Co-pilots shall meet the minimum training requirements specified in Table 4 – Minimum education and training requirements for air ambulance and air-SAR activities (Co-pilots).

Criteria 2.2.3 All Co-pilots shall participate in activities that maintain the skills and competencies required to operate as a Co-pilot. Up-to-date records shall be maintained to demonstrate the on-going maintenance and acquisition of the required skills and experience for the role.

Note: Reference to the term “pilot” and “co-pilot” are aligned to the CAA definition of “flight crewmember”. The use of the terms “crewmember” and “clinical crewmember” are for the purpose of this document only, and do not supersede the formal CAA definitions of these terms in the aviation context.

Criteria 2.2.4 If the aircraft is certified Single Pilot the Operator may elect to carry a second pilot as a Safety Pilot to assist with the pilot workload and air ambulance operations such as loading and medical ground transport communications etc, provided the Operator has documented the Safety Pilot tasks, training and currency procedures in the Company Operations Exposition. These procedures are to be in compliance with Safety Pilot minimum requirements in clause 2.4.1.2 thru to 2.4.1.4



PILOT EXPERIENCE - ROTARY

2.3 Pilot Experience (Rotary) – Minimum Requirements

Outcome: 2.3 *The pilot's experience shall be at a level necessary to safely operate a rotary wing aircraft within the potential range of environmental and metrological conditions likely to be experienced in an air ambulance or air rescue operation.*

Criteria 2.3.1 The following requirements are considered to be the minimum pilot experience necessary to safely operate each of the rotary air ambulance and air rescue categories.

2.3.1.1 Rotary: Group 1

Pilot in Command: Group 1 IFR/VFR Operation

Pilot Licence	Commercial pilot's licence
Total Flight Experience	2000 hours rotary time as pilot (Up to 500 hours of fixed wing pilot time may be credited towards the 2000 hour requirement)
Night Experience	30 rotary hours and unrestricted night endorsement
Air Transport Operations (ATOPs)	75 rotary hours air operations time as PIC
Night Vision Goggles (NVG) Endorsement	Current as per AC 91.13 (NVG Endorsement)
Instrument Flight Rules (IFR)	Meet the above requirements plus instrument rating
Single Pilot (IFR)	100 hours instrument time as pilot (should include 50 hours multi-pilot IFR)
Instrument Metrological Conditions (IMC)	20 rotary hours as Pilot in Command
X-country	50 hours as Pilot in Command
External Load Operations Experience	10 hours as Pilot in Command

2.3.1.2 Rotary: Group 1

Co-Pilot: Group 1

Pilot Licence	Commercial pilot's licence
Instrument Flight Rules (IFR)	Instrument rating

2.3.1.3 Rotary: Group 2 and 3**Pilot in Command:
Group 2 and 3 VFR Operation**

Pilot Licence	Commercial pilot's licence
Total Flight Experience	2000 hours rotary time as pilot (Up to 500 hours of fixed wing pilot time may be credited towards the 2000 hour requirement)
Night Experience	30 rotary hours with unrestricted night endorsement
Air Transport Operations (ATOPs)	75 rotary hours air operations time as pilot
Night Vision Goggles Endorsement	Current as per AC 91.13 (NVG Endorsement)
Instrument Flight Experience	20 hrs instrument flight experience, experience may be gained either in a fixed wing or helicopter 50% may be credited from a simulator
X-country	15 hours as Pilot in Command
External Load Operations Experience	10 hours as Pilot in Command

2.3.1.4 Rotary: Group 2 and 3**Co-Pilot:
Group 2 and 3**

Pilot Licence	Commercial pilot's licence
Instrument Flight Experience	Refer clause 7.1.3

2.3.1.5 Rotary: Group 4**Pilot in Command: Group 4**

Pilot Licence	Commercial pilot's licence
Visual Flight Rules (Day-only)	1000 hours rotary time as Pilot in Command



PILOT EXPERIENCE - FIXED WING

2.4 Pilot Experience (Fixed wing) – Minimum Requirements

Outcome: 2.4 *The pilot's experience shall be at a level necessary to safely operate a fixed wing aircraft within the potential range of environmental and metrological conditions likely to be experienced in an air ambulance or air rescue operation.*

Criteria 2.4.1 The following requirements are considered to be the minimum pilot experience necessary to safely operate each of the fixed wing air ambulance and air rescue categories.

2.4.1.1 Fixed Wing: Group 1

	Pilot in Command:
	Part 125 Single or Multi-Engine Turbine
Pilot Licence	Airline Transport pilot's licence
Total Flight Experience	2000 hours total time as Pilot in Command (Up to 500 hours of helicopter pilot time may be credited towards the 2000 hour requirement)
Multi-engine Instrument rating	Current in aircraft category
Type rated on aircraft	500 hours on type (or on an aircraft of similar performance capability)
IFR Multi-Engine Experience	200 hours time operational as Pilot in Command
Instrument Metrological Conditions	100 hours as Pilot in Command
Night Experience	100 hours with night endorsement
Air Transport Operators (ATOPs)	100 hours air operations time as pilot (fixed wing)
X-country	150 hours as Pilot in Command
	Co-Pilot:
	Part 125 Single or Multi-Engine Turbine
Pilot Licence	Commercial pilot's licence
Instrument Flight Rules (IFR)	1000 hours total time as Pilot in Command
Multi-Engine Instrument rating	Current in aircraft category
Type rated on aircraft	40 hours on type
IFR Multi-Engine Experience	100 hours time operational as Pilot in Command
Instrument Metrological Conditions	50 hours as Pilot in Command
Night Experience	50 hours as Pilot in Command

2.4.1.2 Fixed Wing: Group 2

	Pilot in Command: Part 135 Multi-Engine Piston Single Pilot IFR
Pilot Licence	Commercial pilot's licence
Total Flight Experience	1000 hours total time as Pilot in Command (Up to 300 hours of helicopter pilot time may be credited towards the 1000 hour requirement)
Multi-Engine Instrument rating	Current with Single Pilot IFR Privileges in aircraft category
Type rated on aircraft	40 hours on type
IFR Multi-Engine Experience	200 hours time operational as Pilot in Command
Instrument Metrological Conditions	100 hours as Pilot in Command
Night Experience	50 hours with unrestricted night endorsement
Air Transport Operators (ATOPs)	50 hours air operations time as pilot (fixed wing)
X-country	150 hours as Pilot in Command
	Co-Pilot: Part 135 Multi Engine Piston IFR
Pilot Licence	Commercial pilot's licence
Instrument Flight Rules (IFR)	500 hours total time as a pilot
Instrument rating	Current in aircraft category
Type rated on aircraft	5 hours on type
Instrument Metrological Conditions	50 hours as Pilot in Command
Night Experience	25 hours with unrestricted night endorsement



2.4.1.3 Fixed Wing: Group 2

	Pilot in Command: Part 135 Multi-Engine Turbine Single Pilot IFR
Pilot Licence	Commercial pilot's licence
Total Flight Experience	1500 hours total time as pilot (Up to 500 hours of helicopter pilot time may be credited towards the 1500 hour requirement)
Multi-engine Instrument rating	Current with Single Pilot privileges
Type rated on aircraft	40 hours on type
Instrument Flight Rules Multi-Engine (IFR ME)	200 hours time operational as Pilot in Command
Instrument Metrological Conditions	150 hours as Pilot in Command
Night Experience	50 hours night endorsement
Air Transport Operators (ATOPs)	100 hours air operations time as pilot (fixed wing)
X-country	150 hours as Pilot in Command

	Co-Pilot: Part 135 Multi-Engine Turbine IFR
Pilot Licence	Commercial pilot's licence
Total Flight Experience	500 hours total time as a pilot
Instrument rating	Current
Type rated on aircraft	5 hours on type
Instrument Metrological Conditions	50 hours as Pilot in Command
Night Experience	50 hours night endorsement

2.4.1.4 Fixed Wing: Group 3 - VFR - daylight only	Pilot in Command: Multi-Engine or Single Engine Turbine
Pilot Licence	Commercial pilot's licence
Total Flight Experience	1000 hours total time as pilot (Up to 150 hours of helicopter pilot time may be credited towards the 1000 hour requirement)
Type rated on aircraft	40 hours on type
Air Transport Operators (ATOPs)	30 hours air operations time as pilot (fixed wing)
Night Experience	25 hours night endorsement
X-country	150 hours as Pilot in Command
	Co-Pilot:
Pilot Licence	Commercial pilot's licence
Total Flight Experience	Pilot in Command - 500 hours total time as pilot
Instrument rating	Current
Type rated on aircraft	5 hours on type
X-country	75 hours as Pilot in Command
2.4.1.5 Fixed Wing: Group 4 - VFR - daylight only	Pilot in Command: Single Engine Piston
Pilot Licence	Commercial pilot's licence
Total Flight Experience	750 hours total time as pilot (Up to 150 hours of helicopter pilot time may be credited towards the 1000 hour requirement)
Type rated on aircraft	40 hours on type
X-country	50 hours as Pilot in Command



3 - CREWMEMBER ROLES

3.1 Crewmember - General

Outcome: 3.1 *The Crewmember shall have the required experience, training and current competency in their specific roles to assist the Pilot in Command in the safe operation of the aircraft in flight and maintain the safety and wellbeing of all passengers and clinical support crew.*

Criteria 3.1.1 All Crewmembers shall meet the minimum training requirements for their specific roles specified in Table 4 – Minimum education and training requirements for air ambulance and air-SAR activities (non-pilot personnel). The Operator shall ensure that each Crewmember is competent to perform his/her duties in accordance with approved Expositions.

Criteria 3.1.2 All Crewmembers shall participate in activities that maintain the skills and competencies for their specific roles (ref table 4) required to operate as a Crewmember, as prescribed in the approved Expositions. Up-to-date records shall be maintained by the Operator to demonstrate the on-going maintenance and acquisition of the required skills and experience.

Note: For the purposes of this document the term 'Crewmember' differs from that of the definition for 'Crew member' in Civil Aviation Rule Part 1.

3.2 Winch Operator

Outcome: 3.2 *The Winch Operator shall have the required experience, training and current competency to assist the Pilot in Command in the safe operation of the aircraft in flight whilst conducting winch operations.*

Criteria 3.2.1 All Winch Operators shall have satisfactorily completed a course of training that meets current accepted practice, and be certified by an approved person.

Note: An approved person is an operator's check and training pilot or winch operator as designated within their approved Expositions.

Criteria 3.2.2 In addition to 3.2.1 all Winch Operators shall meet the minimum training requirements specified in Table 4 – Minimum education and training requirements for air ambulance and air-SAR activities (non-pilot personnel) for rotary wing operations.

Criteria 3.2.3 All Winch Operators shall participate in winching activities that maintain the skills and competencies required to operate competently as a Winch Operator, as prescribed in the approved Expositions. Up-to-date training records shall be maintained by the operator to demonstrate the on-going maintenance and acquisition of the required skills and experience.

3.3 Air Observer

Outcome: 3.3 *The Air Observer(s) should have the required experience, training and current competency to safely and effectively conduct visual observation duties during the flight.*

Criteria 3.3.1 All Air Observers should participate regularly in air operations that enable them to maintain the skills required to be an effective Air Observer.

Criteria 3.3.2 All Air Observers should complete an Air Observers training course recognised by New Zealand Police and RCCNZ.

Criteria 3.3.3 All Air Observers shall meet the minimum training requirements specified in Table 4 – Minimum education and training requirements for air ambulance and air-SAR activities (non-pilot personnel). The operator shall ensure that each Air Observer is competent to perform his/her duties in accordance with their approved Expositions.

Criteria 3.3.4 Prior to any search flight, or series of flights, Air Observers shall be briefed on the following (as per table 4):

- Familiarisation with the helicopter/aeroplane type operated;
- Entry and exit under normal and emergency conditions both for self, other crewmembers and patients;
- Use of the relevant equipment to ensure security of the individual;
- The use of aircraft intercommunication system;
- Location and use of onboard fire extinguishers and first aid equipment;
- Any other relevant safety or security requirements specific to the mission or onboard equipment.

Criteria 3.3.5 All Air Observers shall participate in activities that maintain the skills and competencies required to be an effective Air Observer. Up-to-date records shall be maintained by the operator to record the on-going practice of the skills and attitudes required to demonstrate proficiency in the role.



3.4 Clinical Support Crew

Outcome: 3.4 *Clinical Support Crewmembers (doctors, nurses, paramedics and ambulance officers who regularly fulfil this role) have the required experience, training and current competency to care for the patients on board.*

Criteria 3.4.1 All Clinical Support Crewmembers shall meet the minimum training requirements for their specific roles specified in NZS 8156: 2008, and Table 4 – Minimum education and training requirements for air ambulance and air-SAR activities (non-pilot personnel).

Criteria 3.4.2 All Clinical Support Crewmembers shall participate in activities that maintain the skills and competencies for their specific roles required to operate as a Crewmember, as prescribed in NZS 8156: 2008 and in accordance with approved Expositions.

3.5 Medical Passengers

Outcome: 3.5 *Medical Passengers (doctors, nurses, paramedics and ambulance officers who infrequently fulfil this role) have the required experience, training and skills to care for the patients on board.*

Criteria 3.5.1 Medical Passenger - Prior to any flight, or series of flights, Medical Passengers shall be briefed on the following by the most appropriate Crewmember:

1. Familiarisation with the helicopter/aeroplane type operated;
2. Entry and exit under normal and emergency conditions both for self and patients;
3. Use of the relevant onboard specialist medical equipment;
4. Method of supervision of other medical staff;
5. The use of aircraft intercommunication system;
6. Location and use of onboard fire extinguishers and axe;
7. Any other relevant safety or security requirements specific to the mission or onboard equipment;
8. Lifejacket and life raft pre-flight briefing where appropriate;
9. Aviation command structure with certified Flight Nurse in charge;
10. Physiological effects of attitude;
11. Refuelling of aircraft with patient on board where applicable.

AIRCRAFT GROUPS

Table 1 - Aircraft Groups

For the benefit of this Standard, aircraft have been grouped in the following manner:

Rotary aircraft	Technical capability	Mechanical capability	Night vision goggles	T-CAS	Ground proximity warning system and EGPWS	Flight Tracking	Radar Altimeter	Standby artificial horizon
Group 1	IFR/VFR operations	Multi engine - Turbine	Yes	Recommended in congested traffic areas	TAWS/HTAWS recommended Or moving map with terrain warning	Yes	Yes	Yes
Group 2	VFR operations	Multi engine - Turbine	Yes	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Yes	Yes
Group 3	VFR operations	Single engine - Turbine	Yes	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Yes	Yes
Group 4	VFR operations	Single engine – Turbine or Piston	Not applicable	Not applicable	Moving map with terrain warning or GPS	Recommended	Recommended	Recommended
Fixed wing aircraft	Technical capability	Mechanical capability	Cabin capability	T-CAS	Ground proximity warning system and EGPWS	Flight Tracking	Radar Altimeter	Standby artificial horizon
Group 1 CAR Part 125	IFR/VFR operations	Single or Multi engine - Turbine	Pressurised	Recommended in congested traffic areas	TAWS	Yes	Yes	Yes
Group 2 CAR Part 135	IFR/VFR operations	Multi engine – Turbine or Piston	Limited where non-pressurised	Recommended in congested traffic areas	TAWS recommended Or Moving map with terrain warning	Yes	Recommended	Recommended
Group 3	VFR operations	Multi engine or Single engine - Turbine	non-pressurised	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Recommended	Recommended
Group 4	VFR operations	Single engine - Piston	non-pressurised	Not applicable	Moving map with terrain warning	Yes	Recommended	Recommended



AIRCRAFT MISSION CAPABILITY

Table 2 - Aircraft Mission Capability

For the benefit of this Standard, aircraft mission capability has been defined for each aircraft group in the following manner:

Rotary aircraft	Mission capability	Hours of operation	EMS Primary response dispatched by EACCs	Level 1 patient transfer (ICU)	Level 2 patient transfer (non-ICU)	SAR - Search and rescue	SAR - Search only
Group 1	Air ambulance Search and Rescue	24 hr	Yes	Yes	Yes	Yes	Yes
Group 2	Air ambulance Search and Rescue	24 hr Limited at night as not IFR	Yes	Yes	Yes	Yes - Limited at night as not IFR	Yes - Limited at night as not IFR
Group 3	Air ambulance Search and Rescue	24 hr Limited at night as not IFR	Yes	Yes	Yes	Yes - Limited at night as not IFR	Yes - Limited at night as not IFR
Group 4	Search and Rescue	24 hr Limited at night as not IFR	No	No	No	Yes - Limited at night as not IFR	Yes - Limited at night as not IFR

Fixed wing	Mission capability	Hours of operation	EMS - Level 1 patient transfer (ICU)	EMS - Level 2 patient transfer (non-ICU)	SAR - Search only
Group 1 CAR Part 125	Air ambulance Search and Rescue	24 hr	Yes	Yes	Yes
Group 2 CAR Part 135	Air ambulance Search and Rescue	24 hr	Yes – limited where unpressurised	Yes	Yes
Group 3	Air ambulance Search and Rescue	Daylight only - Limited at night as not IFR	No	Yes	Yes
Group 4	Search only	Daylight only - Limited at night as not IFR	No	No	Yes - Limited at night



MINIMUM EQUIPMENT REQUIREMENTS

Table 3 – Minimum equipment requirements for air ambulance and air-SAR activities

Rotary aircraft	<i>Survival gear (adequate and appropriate)</i>	<i>Ambient temperature / climate control</i>	<i>Communication equipment – radio to tasking authority</i>	<i>Communications equipment – inter-crew</i>	<i>Communications equipment – satellite phone</i>	<i>Stretchers</i>	<i>Medical securing system or rack</i>	<i>Power supply 12, 24v Dc / 240v AC</i>	<i>Overhead hooks</i>	<i>Lighting – task/patient lighting</i>	<i>Oxygen supply</i>	<i>Direction finding/homing (406 MHz)</i>	<i>Direction finding/homing (121.5 MHz)</i>	<i>Protective clothing / helmets suitable for task</i>
Group 1	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 2	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 3	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 4	Yes	Yes	Desirable for SAR Op	Yes	Yes – for SAR Op	N/A	N/A	N/A	N/A	N/A	N/A	Desirable for SAR Op	Yes – for SAR Op	Yes

Table 3 – Minimum equipment requirements for air ambulance and air-SAR activities (continued)

Fixed wing aircraft	<i>Survival gear (adequate and appropriate)</i>		<i>Ambient temperature / climate control</i>		<i>Communication equipment – radio to tasking authority</i>		<i>Communications equipment – inter-crew</i>		<i>Communications equipment – satellite phone</i>		<i>Stretchers</i>		<i>Medical securing system or rack</i>		<i>Power supply 12, 24v Dc / 240v AC</i>		<i>Overhead hooks</i>		<i>Lighting – task/patient lighting</i>		<i>Oxygen supply</i>		<i>Direction finding/homing (406 MHz)</i>		<i>Direction finding/homing (121.5 MHz)</i>		<i>Protective clothing / helmets suitable for task</i>	
	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Group 1 Part 125	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes
Group 2 Part 135	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes
Group 3	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes
Group 4	Yes	Yes	Desirable for SAR Op	Yes	Yes – for SAR Op	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Desirable for SAR Op	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes



MINIMUM EDUCATION AND TRAINING REQUIREMENTS

Table 4 – Minimum education, training and ongoing competency requirements for air ambulance and air-SAR activities (Pilots and Crewmembers)

	Rotary aircraft operations	Pilot in command	Co-pilot	Crew member	Clinical support crew	Air observer	Medical passenger
1	<i>Induction inc Standard Operating Procedures (SOPs)</i>	Yes	Yes	Yes			
2	<i>Aircraft type rating</i>	Yes	Yes				
3	<i>Specific aircraft orientation</i>	Yes	Yes	Yes	Yes	Yes	Yes
4	<i>In-flight procedures</i>	Yes	Yes	Yes	Yes	Yes	Yes
5	<i>Role specific equipment orientation</i>	Yes	Yes	Yes	Yes	Yes	Yes
6	<i>Safety in and around aircraft</i>	Yes	Yes	Yes	Yes	Yes	Yes
7	<i>Human factors / CRM /Threat & error management</i>	Yes	Yes	Yes	Yes	Yes	
8	<i>Physiological effects of altitude</i>	Yes	Yes	Yes	Yes	Yes	Yes
9	<i>Stressors of flight</i>	Yes	Yes	Yes	Yes	Yes	
10	<i>Survival training/HUET</i>	Yes	Yes	Yes	Yes	Yes	
11	<i>Day and night flying protocols</i>	Yes	Yes	Yes	Yes	Yes	
12	<i>EMS and general communications</i>	Yes	Yes	Yes	Yes	Yes	Yes
13	<i>Aircraft evacuation procedures</i>	Yes	Yes	Yes	Yes	Yes	Yes
14	<i>In-flight and ground fire suppression</i>	Yes	Yes	Yes	Yes	Yes	Yes
15	<i>In-flight emergency procedures</i>	Yes	Yes	Yes	Yes	Yes	Yes
16	<i>NVG Protocols (for night operations only)</i>	Yes	Yes	Yes	Yes	Yes	
17	<i>Emergency landing procedures</i>	Yes	Yes	Yes	Yes	Yes	Yes
18	<i>Management of oxygen supplies</i>	Yes	Yes	Yes	Yes	Yes	
19	<i>Use of emergency locator beacons</i>	Yes	Yes	Yes	Yes	Yes	
20	<i>Visual search techniques</i>	Yes	Yes	Yes	Yes	Yes	
21	<i>Patient loading and un-loading</i>	Yes	Yes	Yes	Yes		
22	<i>Refuelling procedures with patient on board</i>	Yes	Yes	Yes	Yes		
23	<i>Hazardous materials recognition</i>	Yes	Yes	Yes	Yes		
24	<i>Human sling loads, strops and harnesses</i>	Yes	Yes	Yes	Yes		
25	<i>Winching operations training</i>	Yes	Yes	Yes			
26	<i>Direction controlled light protocols</i>	Yes	Yes	Yes		Yes	
27	<i>Flight following</i>	Yes	Yes	Yes			
28	<i>Aviation terminology</i>	Yes	Yes	Yes	Yes	Yes	

Table 4 – Minimum education, training and ongoing competency requirements for air ambulance and air-SAR activities (Pilots and Crewmembers) (continued).

	Fixed wing aircraft operations	Pilot in command	Co-pilot	Crew member	Clinical support crew	Air observer	Medical passenger
1	<i>Induction inc. SOPs and aircraft type rating</i>	Yes	Yes				
2	<i>Specific aircraft orientation</i>	Yes	Yes	Yes	Yes	Yes	Yes
3	<i>In-flight procedures</i>	Yes	Yes	Yes	Yes	Yes	Yes
4	<i>Role specific equipment orientation</i>	Yes	Yes	Yes	Yes	Yes	Yes
5	<i>Safety in and around aircraft</i>	Yes	Yes	Yes	Yes	Yes	Yes
6	<i>Human factors / CRM /Threat & error management</i>	Yes	Yes	Yes	Yes	Yes	
7	<i>Physiological effects of altitude</i>	Yes	Yes	Yes	Yes	Yes	Yes
8	<i>Stressors of flight</i>	Yes	Yes	Yes	Yes	Yes	
9	<i>Survival training</i>	Yes	Yes	Yes	Yes	Yes	
10	<i>Day and night flying protocols</i>	Yes	Yes	Yes	Yes	Yes	
11	<i>EMS and general communications</i>	Yes	Yes	Yes	Yes	Yes	Yes
12	<i>Aircraft evacuation procedures</i>	Yes	Yes	Yes	Yes	Yes	Yes
13	<i>In-flight and ground fire suppression</i>	Yes	Yes	Yes	Yes	Yes	Yes
14	<i>In-flight emergency procedures</i>	Yes	Yes	Yes	Yes	Yes	Yes
15	<i>Emergency landing procedures</i>	Yes	Yes	Yes	Yes	Yes	Yes
16	<i>Management of oxygen supplies</i>	Yes	Yes	Yes	Yes	Yes	
17	<i>Use of emergency locator beacons</i>	Yes	Yes	Yes	Yes	Yes	
18	<i>Visual search techniques</i>	Yes	Yes	Yes		Yes	
19	<i>Patient loading and un-loading</i>	Yes	Yes	Yes	Yes		
20	<i>Refuelling procedures with patient on board</i>	Yes	Yes	Yes	Yes		
21	<i>Hazardous materials recognition</i>	Yes	Yes	Yes	Yes		
22	<i>Flight following</i>	Yes	Yes	Yes			
23	<i>Aviation terminology</i>	Yes	Yes	Yes	Yes	Yes	



4 RISK MANAGEMENT

4.1 Human Factors and Crew Resource Management (CRM)

Outcome: 4.1 *The service shall have a fully implemented CRM Programme that ensures professional and proficient crew communication and participation in order to maximise safe flying and operational practices.*

Criteria 4.1.1 The service shall have a Crew Resource Management programme that all operational staff are familiar with and includes the following:

- 4.1.1.1 Improving communication and leadership skills among all team members;
- 4.1.1.2 Integrating checklists and error traps into everyday practice;
- 4.1.1.3 Reducing the risk of error;
- 4.1.1.4 Promoting a culture that supports professional development;
- 4.1.1.5 Improving employee performance and staff retention;
- 4.1.1.6 Making facilities and operations safer and more efficient.

Criteria 4.1.2 Crew Resource Management training should include but is not limited to:

- 4.1.2.1 Human error and reliability, error chain, error prevention and detection;
- 4.1.2.2 Company safety culture, SOPs, organisational factors;
- 4.1.2.3 Stress, stress management, fatigue and vigilance;
- 4.1.2.4 Information acquisition and processing, situation awareness;
- 4.1.2.5 Workload management;
- 4.1.2.6 Decision making;
- 4.1.2.7 Communication and co-ordination inside and outside the cockpit;
- 4.1.2.8 Leadership and team behaviour synergy.

4.2 Safety Management Systems

Outcome: 4.2 *The service has a fully implemented Safety Management System that maximises aviation safety.*

Criteria 4.2.1 The operator should have a fully implemented Safety Management System (SMS) which utilises the principles of risk assessment, mitigation and management.

Note: A Safety Management System is a systematic, explicit and comprehensive process for managing safety risks. As with all management systems, a Safety Management System provides for goal setting, planning, and measuring performance.

5 AIR AMBULANCE OPERATIONS

5.1 Availability for Tasking

Outcome: 5.1 *The air ambulance aircraft shall be available for tasking for the date and time periods as agreed in formal contract or Service Level Agreements concluded with the tasking agency or contracting authority.*

Criteria 5.1.1 The response aircraft is available for tasking.

Criteria 5.1.2 Specialist role equipment necessary to ensure the required ambulance capability is fitted or available to be fitted to the aircraft in compliance with Table 3. All modifications attached to the aircraft shall be approved as required by CAA rules.

Criteria 5.1.3 Appropriate personnel are available to crew and operate the aircraft for the air ambulance incident in accordance with clause 2.3 or clause 2.4.

Criteria 5.1.4 Pilots and Crewmembers have ready access to weather reports for both the route, destination of missions and alternate landing areas. Where practicable, low level rotary route structure and approach should be pre-determined and documented.

5.2 Preparedness and Activation

Outcome: 5.2 *The air ambulance aircraft shall meet the preparedness requirements as agreed in formal contract or Service Level Agreements concluded with the tasking agency or contracting authority.*

Criteria 5.2.1 Air ambulance aircraft are to respond to requests for dispatch in a timely manner with due consideration for all safety planning and preparation necessary to ensure a safe response. Air ambulance aircraft shall inform the tasking authority of the anticipated time to get airborne following a request to dispatch in light of the requirement above.

Criteria 5.2.2 Tasking authorities shall have procedures in place to inform the operator that an alternate provider has refused to respond to the mission due to flight safety concerns.

Note: It is the primary goal for air ambulance aircraft to respond in as short a time period as possible, but this shall never be to the detriment to flight safety. Therefore, while there are no stated response time requirements in this Standard, all operators shall undertake to respond as soon as operational and safety requirements allow.



5.3 Crew Combinations

Outcome: 5.3 *The air ambulance aircraft provides the appropriate crewing capabilities for the known patient's status, and any specialised skills necessary to transport the patient safely.*

Criteria 5.3.1 The combination of crew roles shall be determined by the requirements of each specific mission as set out in Table 2.

Criteria 5.3.2 Minimum clinical crewing requirements as specified in NZS 8156 shall be met. Safety of the operation and the crew is however the top priority.

5.4 Equipment

Outcome: 5.4 *The air ambulance aircraft provides the appropriate equipment for the known patient's status, and any specialised requirements necessary to retrieve the patient safely.*

Criteria 5.4.1 The requirements of each specific mission set out in Table 2 shall be based on the clinical needs of the patient, and this shall determine the selection of air ambulance assets, general and specialised medical equipment and recovery equipment in accordance with Table 3.

Criteria 5.4.2 Minimum clinical equipment requirements as specified in NZS 8156 shall be met.

Criteria 5.4.3 Medical equipment, stretchers, and associated restraint systems shall meet the required CAA Standards and be maintained in compliance with the manufacturer's specifications. All modifications attached to the aircraft shall be approved as required by CAA Rules.

Criteria 5.4.4 Oxygen supplies shall be maintained in order to assure an adequate supply is available for the tasking.

Criteria 5.4.5 Equipment power supplies shall ensure an uninterrupted supply at the appropriate voltage.

6 SEARCH AND RESCUE OPERATIONS

6.1 Availability for Tasking

Outcome: 6.1 *The response aircraft is available for tasking for the date and time periods as agreed in formal contracts or Service Level Agreements concluded with the tasking agency or authority.*

Criteria 6.1.1 The designated response aircraft as listed in Table 1 and 2 is available for tasking.

Criteria 6.1.2 Specialist role equipment necessary to ensure the required SAR capability is fitted or available to be fitted to the aircraft.

Note: All modifications attached to the aircraft shall be approved as required by Civil Aviation Rules.

Criteria 6.1.3 Appropriate personnel are available to crew and operate the aircraft for the SAROP in accordance with clause 2.3 or 2.4.

6.2 Preparedness and Activation

Outcome: 6.2 *The response aircraft will meet the preparedness requirements as agreed in formal contracts or Service Level Agreements concluded with the tasking agency or authority.*

Criteria 6.2.1 SAR aircraft are to respond to requests for dispatch in a timely manner with due consideration for all safety planning and preparation necessary to ensure a safe response. Following a request to dispatch, SAR assets shall inform the tasking authority of the anticipated time to get airborne in light of the requirement above.

Criteria 6.2.2 Tasking authorities shall have procedures in place to inform the operator that an alternate provider has refused to respond to the mission due to flight safety concerns.

Note: It is a primary goal for SAR aircraft to respond in as short a time period as possible, but this shall never be to the detriment to flight safety. Therefore, while there are no stated response time requirements in this Standard, all operators shall undertake to respond as soon as operational and safety requirements allow.



6.3 Crew Combinations

Outcome: 6.3 *The response aircraft crewing provides the appropriate capabilities for the SAROP tasking.*

Criteria 6.3.1 For a SAROP that is expected to involve a search element and a rescue element the following criteria should be met:

6.3.1.1 Safe and effective support of the operation of the aircraft in the prevailing and forecast conditions;

6.3.1.2 Safe and effective operation of the search equipment deployed on the aircraft;

6.3.1.3 Safe and effective operation of the human deployment and recovery system(s) fitted to the aircraft;

6.3.1.4 Safe and effective air observation capability;

6.3.1.5 Safe and effective clinical support for person(s) in distress;

6.3.1.6. Safe and effective operation and survival if deployed from the aircraft, given the prevailing and forecast environmental conditions in the operating area.

Criteria 6.3.2 For a SAROP that is expected to involve only a search element the following criteria should be met:

6.3.2.1 Safe and effective support of the operation of the aircraft in the prevailing and forecast conditions;

6.3.2.3 Safe and effective air observation capability.

6.4 Equipment

Outcome: 6.4 *The SAR asset provides the appropriate equipment when the patient's status is known and any specialised requirements necessary to retrieve the patient safely.*

Criteria 6.4.1 Where known, the equipment requirements of each specific mission shall be based on the clinical needs of the patient, and this shall determine the selection of SAR assets, general and specialised recovery equipment in accordance with Table 3.

Criteria 6.4.2 Rescue equipment, search equipment, and recovery systems shall meet the required CAA Standard and be maintained in compliance with the manufacturer's specifications. All modifications attached to the aircraft shall be approved as required by CAA rules.

7 CAPABILITY REQUIREMENTS FOR SPECIALIST OPERATIONS

7.1 Rotary Night Operations – aided and unaided

Outcome: 7.1 *All rotary night air ambulance and search and rescue operations are conducted in a safe manner, minimising the risks to patients and crew.*

Criteria 7.1.1 All helicopter night air ambulance and search and rescue operations should be conducted utilising Night Vision Imaging Systems (NVIS) in accordance with CAA Advisory Circular AC 91-13 and DSP 83 for US purchased night vision goggles (NVGs).

Criteria 7.1.2 For all rotary night air ambulance and search and rescue operations the pilot shall have the required experience and training relevant to the specific aircraft type as specified in Section 2.3 – Pilot experience (rotary) minimum requirements, and Table 4 – Minimum education and training requirements for air ambulance and air-SAR activities. The Pilot in Command shall have undergone sufficient on-the-job line and route training to allow them to be familiar or have been briefed on the departure, en-route and approach to all intended landing areas in their area of operation, including unprepared landing areas.

Criteria 7.1.3 Where a Crewmember is being used in a single pilot operation at night, it is recommended the Crewmember is trained in the use of aviation radios, GPS and other navigation equipment. The Crewmember should have reasonable access to the radio and navigation equipment.

Criteria 7.1.4 Where night vision goggles are used, flight crew are required to have at least “Generation 3” night vision goggles and have undergone an approved course of training, relating to the use of the night vision goggles, and the helicopter interior shall be equipped with internal instrument lighting compatible with night vision goggles.

Criteria 7.1.5 All pilots operating at night should undergo six monthly training scenarios that simulate night approaches and departures into prepared and unprepared landing areas and Inadvertent Instrument Metrological Conditions (IIMC) to a competent standard, thereby permitting the safe retrieval of IIMC situation to operations by visual reference. The use of a simulator is acceptable.

Criteria 7.1.6 All pilots undertaking VFR night flying operations shall maintain a minimum visibility of 8 kilometres at all times, operate within VFR MET minima and be in sight of the surface. A visible horizon should be maintained at all times.



- | | | |
|-----------------|---------------|--|
| Criteria | 7.1.7 | <p>As part of any safety management system for the operation of an aircraft, a risk assessment shall be done before any night vision goggle operation. The risk assessment needs to take into account at least the following:</p> <ul style="list-style-type: none"> 7.1.7.1 Illumination level of the flight environment; 7.1.7.2 Weather; 7.1.7.3 Recency of experience for pilot and crew; 7.1.7.4 Crew composition; 7.1.7.5 Operator/crew experience with NVG flight operations; 7.1.7.6 PIC field of regard; 7.1.7.7 PIC/crew rest, condition and health; 7.1.7.8 Aircraft serviceability (MEL); 7.1.7.9 Windshield/window condition; 7.1.7.10 NVG tube performance, battery condition; 7.1.7.11 Types of operation allowed and applicable SOPs; 7.1.7.12 External lighting environment. |
| Criteria | 7.1.8 | <p>The aircraft shall comply with the minimum equipment requirements specified in Table 3 if conducting operations at night. In addition to Table 3 the aircraft shall have at least one of the following:</p> <ul style="list-style-type: none"> i. Autopilot – capable of holding attitude and heading; or ii. A crew of two pilots (or crewmen trained to an acceptable standard). The non-flying crew must have access to the radio, and GPS, be able to sight the flight instruments and communicate with Air Traffic Control to obtain clearances (provided the Crewmember holds FRTO), and assist the flying pilot with radio work and overseeing the approach, ensuring heading and altitudes are correctly followed. iii. To lit heliports a crew of at least one pilot on night vision goggles, and to unlit helipads or remote locations a crew of at least one pilot and co-pilot and/or a crewman on night vision goggles. |
| Criteria | 7.1.9 | <p>En-route, all VFR flights at night shall be conducted by climbing to the minimum safe altitude, as depicted on the radio navigation chart or company en-route guide, or a minimum of 1000 feet above the en-route terrain including 5 nautical miles each side of the track.</p> |
| Criteria | 7.1.10 | <p>On approach, the pilot of a VFR night flight should only descend below the minimum safe altitude to an established helipad, illuminated by permanently fixed lights or ground lighting provided by ground vehicles if the helipad is visible to the pilot, or by use of NVGs. Additionally, it is a requirement that flights into unprepared landing areas are only permitted where the helicopter is fitted with a Nitesun or other pilot controlled search light.</p> |
| Criteria | 7.1.11 | <p>On departure, all VFR flights at night shall be undertaken over a flight path that ensures the helicopter will remain clear of any obstructions during the climb to cruise altitude. The pilot is required to be capable of transition safely from visual reference, to outside lighting, to flight by reference to the aircraft instruments if necessary.</p> |

Criteria 7.1.12 Inadvertent Instrument Meteorological Conditions (IIMC) – All flight crew are required to be familiar with the procedures that should be adopted in the event of IMC conditions being experienced. The pilot is required to adopt and implement procedures that will result in the quickest and safest return to visual meteorological conditions, dependent on the equipment contained in the helicopter, and on the experience of the flight crew.

Criteria 7.1.13 The pilot flying the helicopter should hold an Instrument Rating and shall be current within the last 90 days on instrument procedures to be adopted when inadvertently entering IMC. Where pilots do not hold an instrument rating the organisation's Expositions shall clearly define the level and competency of instrument skill required to safely react in an IIMC situation should it be encountered.

7.2 External Load Operations (Ref Civil Aviation Rule Part 133)

Outcome: 7.2 *The operator conducts safe external load operations.*

Criteria 7.2.1 The organisation's Expositions clearly describe their Standard Operating Procedures appropriate to the type of CAR Part 133 operation they conduct.

Criteria 7.2.2 Human Static Line - All pilots, crewmembers and rescue personnel who conduct human static line operations shall complete a training course comprising of equipment familiarisation, normal and emergency operations.

Criteria 7.2.3 Winch - All pilots, crewmembers and rescue personnel who conduct winch operations shall complete a training course comprising of equipment familiarisation, normal and emergency operations.

Criteria 7.2.4 All equipment shall meet CAA requirements and AS/NZ 1891.1 for testing/checking and lifetime criteria as applicable.

Criteria 7.2.5 All pilots and crewmembers shall complete annual external load operation proficiency training.

Criteria 7.2.6 The use of a winch or human static line shall be decided by the Pilot in Command in consultation with the crew and other parties as appropriate as to the best method to deploy or recover the person/s.

Criteria 7.2.7 Human static-line operations shall not be performed at night.



7.3 Inshore/Off Shore Operations

Outcome: 7.3 *The operator conducts safe overwater operations.*

Criteria 7.3.1 Lifejackets

7.3.1.1 Beyond auto-rotational or gliding distance from shore - all single engine aircraft, lifejackets shall be worn.

7.3.1.2 Fixed wing – multi engine – as per CAA requirements

Criteria 7.3.2 Life rafts

7.3.2.1 Up to 10 nautical miles from shore - all aircraft, life rafts not required.

7.3.2.2 Beyond 10 nautical miles from shore - all aircraft, life rafts sufficient to accommodate all occupants must be carried as per CAA requirements. Life rafts to be equipped to CAR 91.525 (b).

Criteria 7.3.3 Aircraft floats

7.3.3.1 Up to 10 nautical miles from shore - all aircraft, not required.

7.3.3.2 Beyond 10 nautical miles from shore - single engine helicopters, shall be float equipped, or occupants shall wear survival suits. All other aircraft, floats not required.

Criteria 7.3.4 Survival suits

7.3.4.1 Up to 10 nautical miles from shore - all aircraft, not required.

7.3.4.2 Beyond 10 nautical miles from shore - Single engine helicopters, occupants must wear survival suits unless float equipped.

All other aircraft - occupants must have available survival suits. These should be worn where the sea water temperature is forecast to be below 15 degrees centigrade or less.

Criteria 7.3.5 Top Cover

7.3.5.1 Up to 100 nautical miles from shore - all aircraft, top cover is recommended. (Top cover requires a communications platform at a minimum and should have the ability to provide search and rescue support or assistance).

7.3.5.2 Beyond 100 nautical miles from shore - all helicopters, top cover should be provided at the discretion of the operator and in consultation with the tasking authority.

- Criteria 7.3.6** Helicopter Underwater Emergency Training (HUET)
- 7.3.6.1 Regular helicopter crewmembers (crewmembers participating in over water operations greater than 10 nautical miles offshore) shall undergo HUET training twice yearly.
- 7.3.6.2 Non-regular crewmembers shall be briefed on all aspects of offshore, emergency, and non-emergency operations and should complete HUET.

7.4 Beacon Search Operations

- Outcome: 7.4** *The operator provides safe, effective and efficient location of distress beacons and homing signals.*
- Criteria 7.4.1** Tasking. The Coordinating Authority that tasks the search asset will provide all available information concerning the task.
- Criteria 7.4.2** Direction finders. Search assets:
- 7.4.2.1 Shall have capability (equipment, training, experience, and currency) to detect and locate transmissions made on 121.5 MHz.
- 7.4.2.2 Should have the capability (equipment, training, experience, and currency) to detect and locate transmissions made on 406 MHz.
- Criteria 7.4.3** Search techniques. Search assets shall have the capability (equipment, training, experience and currency) to employ standard search techniques and complete standard search patterns as passed to them by the Coordinating Authority.
- Criteria 7.4.4** Specialised training. Search assets should undertake any specialised training necessary to ensure that the search capability is available when tasked.
- Criteria 7.4.5** Crew and equipment. Search assets shall be crewed and equipped so as to ensure safe and effective operation of the search equipment deployed.



8 GROUND FACILITIES AND HELIPORTS

8.1 Helipads

- Outcome:** 8.1 *All hospital helipad operators should meet the Standards of heliports as recommended in the CAA Advisory Circular AC 139-8 Aerodrome design, heliports.*
- Criteria** 8.1.1 Any alterations or infringements that affect existing hospital helipads / landing areas shall be notified to their service provider prior to change, renovation or modification.
- Criteria** 8.1.2 Any new hospital helipads shall meet the requirements of AC 139-8, and the local or air ambulance service provider to be consulted prior to implementation.
- Criteria** 8.1.3 Hospital heliports should have facilities to access hospitals without an ambulance required as well as access via pathways to allow for stretcher trolleys and equipment.
- Criteria** 8.1.4 Fencing or barrier systems shall prevent unauthorised access to the helipad when in use.

9 COMMUNICATIONS

9.1 Communication Equipment

Outcome: 9.1 *The service has a range of communication devices approved for the aviation environment that provides two-way communication with the tasking agency and deployed personnel in the expected operational environment.*

Criteria 9.1.1 In addition to the aviation radios and navigation equipment required to meet the CAA rules for IFR or VFR operations, the aircraft shall be equipped with a range of communication devices to enable safe and efficient communication with relevant agencies throughout the mission.

Criteria 9.1.2 The service has a GPS device suitable for the aviation environment that provides in-flight programming of a search pattern, with recording and up-loading of the tracks flown to the tasking agency provided by the GPS or tracking tool.

Criteria 9.1.3 The service has an in-flight position reporting device for the aviation environment that provides position reporting at a minimum of 5 minute intervals to the tasking and flight following agency.

Criteria 9.1.4 For SAROPs in the marine environment, assets shall be equipped with marine radios able to communicate with surface vessels.

Criteria 9.1.5 For SAROPs at low level in hilly or mountainous terrain where communications difficulties are likely to arise, consideration should be given to tasking an additional aircraft to a position overhead to act as a communications relay platform for the coordinating authority.

Criteria 9.1.6 Aircraft supporting land, search and rescue missions shall be equipped with radios able to communicate with the Search Management Team and deployed land assets.

**10 FLIGHT SAFETY ENHANCEMENT DEVICES****10.1 Collision Avoidance Systems**

Outcome: 10.1 *It is recommended any service that operates continually in an airspace where there is heavy traffic and the majority of other traffic have transponders operating, the service should have a TCAS / TAS/ TPAS Traffic Advisory System approved for the aviation environment that provides a backup to the "SEE and AVOID" concept in areas of high traffic density.*

Criteria 10.1.1 The system shall have an audible advisory of traffic threat.

Criteria 10.1.2 The system shall have a visual display to show location and bearing of traffic threat.

11 PATIENT SAFETY

11.1 Patient Loading and Unloading Procedures

Outcome: 11.1 *Patient loading and unloading promotes safe staff lifting practices.*

Criteria 11.1.1 Where necessary, for the safe loading and unloading of patients, loading devices shall be made available by the aircraft operator and meet relevant OSH requirements;

Criteria 11.1.2 The loading device shall be able to be stored at airport locations or carried on the aircraft;

Criteria 11.1.3 That lifting devices are maintained according to manufacturer's instructions;

Criteria 11.1.4 The weight safety limit is documented on the device;

Criteria 11.1.5 A pre-loading and planning briefing should be undertaken between air and ground crew.

Note: The loading and unloading of bariatric patients will require special consideration.

11.2 Stretcher patients

Outcome: 11.2 *The stretcher system used in the aircraft meets all service and safety requirements.*

Criteria: 11.2.1 The stretcher is able to be secured and meets safety requirements;

Criteria 11.2.2 The stretcher is light and easily loaded into the aircraft;

Criteria 11.2.3 That lifting risks have been minimised by the service;

Criteria 11.2.4 The stretcher is fitted with appropriate occupant restraints with at least four harness points for supine patients, and complies with load tests requirements as per CAA FAR 23.561;

Criteria 11.2.5 Stretchers should be compatible with all interfacing services, eg, ambulance.

Criteria 11.2.6 Stretcher bridges should be able to be easily applied and securely fitted.

11.3 Assisted ambulatory patients

Outcome: 11.3 *Ambulatory patients are safely assisted on or off the aircraft..*

Criteria 11.3.1 Clinical crew are aware of the weight limitation of the stairs;

Criteria 11.3.2 Patients/relatives are assessed in order to comply with space and weight limitations;

Criteria 11.3.3 Infants and children are secured in the appropriate restraining devices.



12 INDEPENDENT CERTIFICATION

12.1 Certification

Outcome: 15.2 *The service is independently certified to this Standard.*

Criteria 15.2.1 The administrators of this Standard will:

15.2.1.1 Maintain and make available a list of independent auditors/audit agencies approved to assess operators against this Standard.

15.2.1.2 Ensure the independent audit agency is endorsed by a recognised accreditation scheme or equivalent that ensures good audit practice and audit consistency.

15.2.1.3 Ensure the independent audit agency utilises an appropriate mix of auditor competency and specific industry and technical knowledge to audit the service against this Standard.

15.2.1.4 Ensure the independent audit agency adopts a risk management approach to agreeing time frames for addressing non-compliance and audit findings. An example of this is provided in SNZ HB 8156 Ambulance Service Sector Standard - Assessment Handbook and the risk matrix is provided in Appendix C.

15.2.1.5 Ensure the independent audit agency has an escalation process that alerts the administrators of the Standard when non-compliance issues rated as 'high' or 'critical' are not resolved in the required timeframe as specified by the risk matrix.

Criteria 15.2.2 The service shall demonstrate compliance with this Standard via an independent audit process, resulting in certification.

Criteria 15.2.3 The service shall ensure each air-frame (including any designated back-up air-frames) is designated as compliant to either Group 1, Group 2, Group 3, or Group 4 as described in Tables 1, 2 and 3.

Criteria 15.2.4 The service shall produce on demand evidence of current certification in relation to each air-frame used in the delivery of air ambulance and/or air SAR services. This shall include air-frames contracted to provide back up service when the primary air-frame is out of service.

APPENDIX A - EXPLANATION OF TERMS (NORMATIVE)

For the purpose of this Standard, the following abbreviations shall apply:

Abbreviation	Description
ACC	Accident Compensation Corporation.
AIA	Aviation Industry Association of New Zealand Inc.
ALS	Advanced Life Support.
AMPLANZ	Ambulance National Major Incident Plan for New Zealand
ATOPS	Air Transport Operations
AVL	Automatic Vehicle Location system. A system that can track ambulances or vehicles and display them on a digital map.
BLS	Basic Life Support.
CAA	Civil Aviation Authority of New Zealand.
CIMS	Co-ordinated Incident Management System.
DHB	District Health Board.
FRTO	Flight radio telephone operator rating or licence
IHT	Inter-hospital transfer.
ILS	Intermediate Life Support.
LTNZ	Land Transport New Zealand.
MNZ	Maritime New Zealand.
SAR	Search and Rescue.
SAROP	Search and Rescue Operation*
SMS	Safety Management System.

*A Search and Rescue Operation (SAROP) is an operation undertaken by a coordinating authority to locate and retrieve persons missing or in distress. The intention of the operation is to save lives, prevent or minimise injuries and remove persons from situations of peril by locating the persons, providing for initial medical care or other needs and then delivering them to a place of safety.



APPENDIX B DEFINITIONS (NORMATIVE) FOR THE PURPOSES OF THIS STANDARD THE FOLLOWING DEFINITIONS APPLY

Accountability	A clinical provider's responsibility to account for, or be liable for, fulfilling an action – whether or not that action is carried out by that service.
Ambulance	Any conveyance which is either designed or equipped for the transport of sick or injured person(s), and or the transport of clinical personnel to such person(s).
Authority to practice	Refers to the right to provide a healthcare service within the constraints and according to the conditions of a scope of practice and terms of appointment to an organisation.
Bariatric	Relating to the treatment of obesity.
Clinical governance	A system of accountability participated in by clinical staff in an organisation, and at all levels in an organisation, to assure quality, safety and efficacy.
Clinical personnel	Individuals who are responsible for performing the service on behalf of an organisation. This includes the provision of care and treatment to the patient by all staff that are responsible or accountable to the organisation when providing care and treatment to the patient.
Clinical support crew	Is defined as anyone apart from the pilot or co-pilot who is required as part of their role to assist or care for patients whilst in transit and is expected to perform this clinical role regularly as required by their position specification.
Crewmember	Is defined as anyone apart from the pilot or co-pilot who is required as part of their role assigned to assist the pilot or co-pilot in the execution of their duties.
Competency-based training and assessment	The development of competency-based training and assessment should be based on a systematic approach whereby competencies and their standards are defined. Training is based on the competencies identified, and assessments are developed to determine whether these competencies have been achieved.
Continuing clinical education	Evidence of ongoing professional development through reading, participation in professional affairs, and contribution to or attendance at courses/conferences, etc
Co-ordinated incident management system	The system is designed to improve the management of the response phase to emergency incidents through better co-ordination between the major emergency organisation (eg, fire, rural fire, police, ambulance, civil defence) and between the many other organisations which also have a role in mounting an emergency response.
Coordinating authority	A coordinating authority is the agency or body responsible for the overall conduct of a search and rescue operation. The coordinating authority will lead and manage the operation. The New Zealand Police and the Rescue Coordination Centre New Zealand are the recognised coordinating authorities in New Zealand.
Credentiailling	The formal process used to verify the qualifications, experience and other relevant attributes for the purpose of forming a view about the competence and performance of an individual to provide safe healthcare within specific environments.

Current accepted best practice	Involves the current accepted range of safe and reasonable practice included to oversee efficient and effective use of available resources to achieve quality outcomes for patients. Current accepted practice should also reflect standards for service delivery where these exist. This may include but is not limited to: <ul style="list-style-type: none"> (a) Codes of practice; (b) Research; (c) Evidence-based practice; (d) Professional standards; (e) Best practice guidelines; (f) Recognised/approved guidelines; and (g) Benchmarking.
Educate	Includes teaching theory and practice, simulating practice by rehearsal of scenarios, training on specific skills and developing rationale for actions and mentoring in aviation standard practice.
Level 1 (full ICU team) Inter-hospital transfer	The transport of a patient who requires or has the potential to require assisted ventilation and/or other organ support.
Level 2 (nurse only) Inter-hospital transfer	The transport of a stable patient who is unlikely to require increases in therapy during transfer.
Medical passenger	Is defined as anyone apart from the pilot or co-pilot who is required as part of their role to assist or care for patients whilst in transit on a non-regular or one-off basis.
Night Vision Imaging System (NVIS)	NVIS is defined as the integration of all elements required to successfully operate an aircraft with NVGs.
Organisation	Includes companies, associations, statutory bodies, agencies, trusts, groups, incorporated societies, independent practitioners and individuals accountable for the delivery of the service to the consumer.
Patient	The recipient of the service. Where appropriate this may include the family/whānau or other representatives.
Patient transfer ambulance services	Secondary ambulance services include the transport of patients to and from outpatient appointments, planned healthcare facility admissions, discharged home and inter-hospital transfers. It also includes the transfer of specialist hospital clinical teams and equipment, without an accompanying patient, as part of an inter-hospital transfer.
RCCNZ	Rescue Coordination Centre New Zealand.
Response priorities	A travel priority assigned to a dispatch in response to a call.
Review	A formal process of updating, amending or re-planning, based on the evaluation of outcomes as part of a quality assurance process.
Risk management	A formal process of minimising the likelihood of adverse events within the context of the overall management of an individual, group or community, to achieve the best possible outcome, and deliver a safe and appropriate service.



APPENDIX C – SOURCE - SNZ HB 8156 AMBULANCE SERVICE SECTOR STANDARD - ASSESSMENT HANDBOOK RISK MANAGEMENT MATRIX (NORMATIVE)

		Likelihood					
Level of Risk	The probability of this occurring is almost certain	The probability of this occurring is likely	The probability of this occurring is moderate	The probability of this occurring is unlikely	The probability of this occurring is rare	Action Required	
Consequence	The consequence of these criteria not being met would put consumers at an extreme risk of harm or actual harm is occurring	Critical	Critical	High	Moderate	Low	Critical <i>This would require immediate corrective action in order to rectify the identified issue including documentation and sign off by the auditor within 24 hours to ensure consumer safety</i>
	The consequence of these criteria not being met would put consumers at significant risk of harm.	Critical	High	Moderate	Low	Nil	High <i>This would require a negotiated plan in order to rectify issue within one month or as agreed between the service and auditor</i>
	The consequence of these criteria not being met would put consumers at moderate risk of harm	High	Moderate	Moderate	Low	Nil	Moderate <i>This would require a negotiated plan in order to rectify issue within a specified and agreed time frame e.g. within 6 months</i>
	The consequence of these criteria not being met would put consumers at minimal risk of harm	Moderate	Low	Low	Low	Nil	Low <i>This would require a negotiated plan in order to rectify issue within a specified and agreed time frame e.g. within one year</i>
	The consequence of these criteria not being met would put consumers at no significant risk of harm	Low	Low	Nil	Nil	Nil	Nil <i>This would require no additional action or planning</i>

The impact on safety:

This process requires the auditor to identify the degree of risk to safety associated with the level of compliance achieved by the service for each clause. The “risk” should be assessed in relation to the possible impact on the consumer, based on the consequence and likelihood of harm occurring as a result of the criterion not being fully implemented

APPENDIX D – EXEMPTION PANEL SELECTION PROCEDURE (NORMATIVE)

The administrator of this Standard shall apply the following criteria in selecting at least 3 relevant experts for the Exemption Panel:

1. Experienced Air Ambulance Management, eg. Chief Pilot for at least 3 years, Operations Manager, SAR Manager, etc; and
2. Technical competence and knowledge of the area of standard the exemption involves; and
3. Experienced Air Ambulance or SAR Management in the category of aircraft that the exemption involves; and
4. Has demonstrated and recorded in writing they have no conflict of interest in determining the exemption or outcome.

**APPENDIX E - ACTION PLAN CHECKLIST (INFORMATIVE)****Action Plan Checklist**

1. Details of the Mission
2. Pilot / Crew Requirements
3. Weather Information
 - Departure
 - Enroute
 - Destination
 - Significant weather, fog, turbulence, cloud base
 - Weather forecasts METAR's TAF's etc
 - Sea state
 - Mountain conditions
4. Helicopter / Role Equipment Serviceability
 - Known defects (use of MEL?)
5. Flight Plan with Alternative
 - VFR /IFR
6. Fuel Required with Reserve
 - Fuel dump/ refuel
7. Area Charts
 - Topographical
 - Aeronautical
 - Marine
8. Communication / Navaid Information
 - RCCNZ
 - Marine
 - Police/Fire
 - Ambulance/DHB
 - Airways
9. Mission Equipment
 - Long range fuel tank
 - Floats
 - Off shore equipment — life rafts/ life jackets
 - Mountain / alpine equipment
 - Winch equipment
 - Medical equipment

 - Special equipment / personnel
 - Night Equipment
 - NVIS
 - Nite-sun (night scanner-)
 - TAWS
10. Patient/ Medical details
 - Pressurised
 - Non-pressurised
 - Height limitations
 - Medical equipment required

Request for changes, updates or corrections

Please contact:

Air Standard Administrator

- Email - dwaters@ambnz.org.nz

**- PO Box 714
Wellington 6140
New Zealand**

VFR MET Minima

