CIVIL AVIATION SAFETY AUTHORITY AUSTRALIA

Advisory Circular

AC 21.6(0) **OCTOBER 1998**

RESTRICTED CATEGORY AIRCRAFT — CERTIFICATION

CONTENTS

1. REFERENCES

Civil Aviation Safety Regulations (CASRs) Part 21 Subpart H, and Parts 23, 25, 27, 29, 33 and 35, and Civil Aviation Regulation (CAR) 262AL.

Note: CASRs referred to above are currently enacted as CARs, 1998.

2. PURPOSE

This advisory circular (AC) provides guidance and information for CASA staff and to applicants applying for type certification and special certificates of airworthiness issued for aircraft in the restricted category in Australia, subsequent to the issue of the CASRs and specifically CASR Part 21 Subpart H, "Certificates of Airworthiness".

3. STATUS OF THIS AC

This is the first AC to be written on this subject.

Advisory Circulars (ACs) are advisory only. ACs provide recommendations and guidance to illustrate a method, or several methods, not necessarily being the only method by which legislative requirements may be met. They also provide a means of illustrating the meaning of certain requirements by offering interpretive and explanatory guidance. ACs should always be read in conjunction with the referenced regulations.

4. BACKGROUND

4.1 Standard Certificates of Airworthiness (CoAs) are issued to individual Australian aircraft which:

(a) meet the requirements of an applicable comprehensive airworthiness code as required by Part II, Section 2.2 of the International Civil Aviation Organisation (ICAO) Annex 8, "Airworthiness of Aircraft"; and

(b) have been issued with a type certificate.

4.2 A CoA is required for each aircraft engaged in international operations.

4.3 Any aircraft which does not have a standard CoA cannot be operated unless it has been issued a special CoA (including an experimental certificate), or a special flight permit.

4.4 CASR 21.185 allows an authorised person or CASA to issue special CoAs for restricted category aircraft to allow operation of such aircraft for designated special purpose operations that are set out in CASR 21.25(2), and listed for convenience in paragraph 6 below. For the procedures to apply for a special certificate of airworthiness refer to AC 21.3 "Application for Issue a Special Certificate of Airworthiness".

4.5 Such special purposes were in the past accommodated by certification of aircraft in accordance with the requirements of three now-repealed Civil Aviation Orders (CAO's):

(a) CAO 101.16, "Airworthiness Certification Requirements — Aeroplanes of Australian Manufacture not above 5700 Kilograms in the Agricultural Category";

(b) CAO 101.17, "Airworthiness Certification Requirements — Imported Aeroplanes not above 5700 kilograms in the Agricultural Category".

(c) CAO 100.2, "Administration and Procedure — Certificates of Airworthiness". (Note 2 to paragraph 3.1, covering Special Category, was relevant).

4.6 A list of CASA District Airworthiness offices and contact details is given in Advisory Circular AC 11.1(0).

5. GENERAL GUIDELINES

The following general guidelines establish the working base for the regulatory oversight of restricted category aircraft:

(a) the category is based on the restricted category as prescribed by the U.S. Federal Aviation Administration (FAA);

(b) issue of a restricted category type certificate is a prerequisite for issue of a special CoA in the restricted category for an individual aircraft;

(c) a restricted category aircraft is required to comply with appropriate civil airworthiness standards or a specific design code;

(d) the aircraft can be of any shape, weight, engine configuration or size, and may be ex-military aircraft;

(e) restricted category aircraft can only be operated for one or more special purposes for which the CoA is in force;

(f) restricted category aircraft can only carry persons who perform an essential function in the operation, or are needed to accomplish the work activity directly associated with the special purpose;

(g) restricted category aircraft cannot carry cargo for compensation or hire;

(h) restricted category aircraft may also be eligible for CoAs in other categories.

6. PRESCRIBED PURPOSES

6.1 Restricted category aircraft may be certificated for one or more of the following special purpose operations:

(a) agricultural operations (for example, spraying, dusting, and seeding, and livestock and feral animal control); or

(b) forest and wildlife conservation; or

(c) firefighting; or

(d) aerial surveying (for example, scientific research, photography, mapping, and oil and mineral exploration); or

(e) patrolling (for example pipelines, power lines, and canals); or

(f) weather control (for example, atmospheric research and cloud seeding); or

(g) aerial advertising (for example, sky writing, banner towing, airborne signs and public address systems); or

(h) glider towing; or

(i) target towing; or

(j) target designation; or

(k) any other similar operation.

6.2 Nothing precludes the aircraft being certificated for more than one of the purposes listed above.

6.3 A restricted category aircraft may also be used for any or all of the following operations but only in support of a special purpose operation for which the type certificate and special certificate of airworthiness were issued:

(a) bringing the aircraft to or from a place where a demonstration or display of the aircraft is to take place or has taken place during an air display, and participation in an air display;

(b) practice flying of the aircraft for participation in an air display;

(c) bringing the aircraft to or from a place where maintenance on the aircraft is to be carried out, or has been carried out;

(d) carrying out a test of the aircraft following maintenance or rectification of defects;

(e) training a person to qualify for an aircraft endorsement for an aircraft of the type or category in which the aircraft is included;

(f) practice in flying the aircraft, or training in a special purpose operation for which the aircraft is certificated;

(g) carrying out a demonstration or test of the aircraft with a view to sale, or delivering the aircraft to a person under a contract of sale; or

(h) an operation necessary to accomplish the special purpose operation.

7. ELIGIBILITY FOR TYPE CERTIFICATION

7.1 The following are the basic eligibility requirements for Australian type certification of restricted category aircraft:

(a) the aircraft is of a type which has been designed from the outset to fulfil the restricted category requirements, either in Australia or a foreign country;

OR

(b) the aircraft complies with the airworthiness requirements of the standard category, i.e. transport, normal, utility, aerobatic, commuter, manned free balloons, or certificated special classes, except those requirements that CASA considers are inappropriate for the special purpose for which the aircraft is to be used;

OR

(c) the aircraft is of a type that has been manufactured in accordance with the requirements of, and accepted for use by, the Australian Defence Force (ADF), and/or an armed force of Canada, the UK and/or the USA, and has been later modified for the special purpose operation(s);

AND

(d) the aircraft can reasonably be expected to be safe for its intended use (as per paragraph 6 above) when it is operated under any conditions limiting such intended use.

7.2 Thus aircraft may be manufactured specifically from the outset for the restricted category (usually for the agricultural application); may be aircraft that have been type certificated in another category and altered for special purpose operation(s), e.g. the addition of winches for target towing; or may be ex-military aircraft altered for special purpose operation(s), e.g. the fitment of water tanks for fire bombing.

7.3 Note: Applicants must assess the ramifications of aircraft noise prior to any consideration of use of ex-military aircraft for restricted category operations. See paragraph 13.2 for further information.

8. APPLICATION FOR TYPE CERTIFICATE

8.1 An aircraft must have an Australian restricted category type certificate, or type acceptance certificate, issued for the type, before a CoA for an individual aircraft can be issued. Five groupings may be considered in regard to the issue of the type certificate:

Group I. Foreign-manufactured aircraft eligible for issue of a type acceptance certificate under the so-called "automatic acceptance" procedure covered by CASR 21.29A (including ex-military aircraft; see subparagraph 9.1.2). Refer to AC 21.30, "Type Acceptance Certificates - Automatic Issue".

Group II. Foreign-manufactured, civil-design aircraft not eligible for issue of a type acceptance certificate, but eligible for issue of a type certificate after a modification certification process and possibly a design validation process by CASA is carried out. Refer to AC 21.31, "Type Certificates - Non-Automatic Issue", and AC 21.15, "Supplemental Type Certificates".

Group III. Aircraft of Australian manufacture, type certificated in a standard category, where the manufacturer seeks to re-certificate the aircraft in the

restricted category. Refer to AC 21.13, "Type Certificates - Australian-designed Aircraft".

Group IV. Aircraft of Australian manufacture, designed from the outset as a restricted category aircraft. Refer to AC 21.13, "Type Certificates - Australian-designed aircraft".

Group V. Other ex-military aircraft.

8.2 An overview of the type certification procedures for each group are discussed in paragraph 9. In all cases, the type certification process with CASA is initiated by the applicant lodging an "Application for Type Certificate , Type Acceptance Certificate, Production Certificate, or Supplemental Type Certificate". Any person is eligible to apply for issue of the certificate.

9. SPECIFIC TYPE CERTIFICATION PROCEDURES BY GROUP

9.1 Group I

9.1.1 If one or more of the following aviation regulatory authorities:

(a) the Federal Aviation Administration (FAA) of the USA;

(b) Transport Canada (Civil Aviation);

(c) the Direction Generale de l'Aviation Civile (DGAC) of France;

(d) the Civil Aviation Authority of New Zealand (CAA{NZ});

(e) the Civil Aviation Authority of the United Kingdom of Great Britain and Northern Ireland (CAA{UK});

(f) the Rijks Luchtvaart Dienst (RLD) of the Kingdom of the Netherlands;

has issued a type certificate in a standard category, or in the restricted category, then the applicant may apply for a type acceptance certificate in the restricted category. CASA can automatically issue an Australian type acceptance certificate in the restricted category, subject to the requirements explained in AC 21.30, "Type Acceptance Certificates-Automatic Issue".

Note: In this context, "type certificate" means a type certificate issued by one or more of the six national airworthiness authorities (NAAs) listed above, but does not include a type acceptance certificate (however called or described) issued by one or more of these NAAs solely on the basis of a type certificate (however called or described), issued by the NAA of another country.

9.1.2 Note that the regulatory authorities referred to above may have issued type certificates and TCDSs on ex-military types, as well as standard category types, or those designed from the outset as restricted category aircraft.

9.1.3 It is most important for applicants to realise that the previous overseas type certification for an aircraft leading to the issue of a restricted category type certificate will have centered around a specific purpose in relation to its future use. This is not normally then directly transferable to a different purpose. For example: an ex-military Grumman S2E Tracker has been extensively modified in the USA for fire control water bombing, and a FAA restricted category type certificate and TCDS have been issued for the aircraft, noting that the certification basis listed on the TCDS is simply a reference to the applicable special purpose operation(s) listed in FAR 21.25 (b). If an Australian applicant wishes to use the same type/model aircraft for geophysical survey, modifying the Magnetic Anomaly Detection tail stinger for such a purpose, then the FAA type certificate can <u>not</u> be

automatically accepted under CASR 21.29A, as the extensive type modifications applicable to one purpose are quite different to those applicable to the other.

9.1.4 To consider an example of a civil design aircraft: an Australian operator wishes to carry out target towing operations for an ADF application using an IAI 1124 Westwind corporate jet. The FAA has issued a restricted category type certificate covering this type using the Acme Mk. III target towing reel and CG towed target. This equipment satisfies the Australian requirement, and no modifications will be involved. CASA may then issue an Australian restricted category type acceptance certificate under CASR 21.29A.

9.2 Group II

9.2.1 An example would be the aircraft referred to in subparagraph 9.1.4 above, but with the intending Australian operator wishing to use a Delmar 4B reel with the Smith Mark 1 sea-skimming target. The type certification process would ultimately require CASA to be assured that "the aircraft can reasonably be expected to be safe for its intended use when it is operated under any conditions limiting its intended use", and, for this example, the aircraft complies with the transport category airworthiness requirements "except those requirements that CASA considers are inappropriate for the special purpose for which the aircraft is to be used" (CASR 21.25 refers).

9.2.2 This would then require CASA involvement, and probably involvement of an authorised person in the sense of major modification program development and approval. If the program was carried out overseas, then CASA would be involved in a major modification validation process, involving data review and possible flight test validation of the major modification; this would culminate in issue of the Australian type certificate in the restricted category. If the major modification program is to be carried out in Australia, CASA would be directly involved from the outset.

9.2.3 If the basic aircraft type involved has not had an Australian type certificate issued in a standard category, and a type certificate cannot be automatically issued under CASR 21.29A, then a type design validation process will also have to be undertaken by CASA, for the basic aircraft type. This involves scrutiny of detailed design data by CASA technical specialists, and possibly a team technical visit to the manufacturer's site. The applicant for this process is liable for costs of such an exercise. The whole validation process, including the design validation of the alteration, culminates in issue of an Australian type certificate in the restricted category. Further detail on type design validation is provided in AC 21.31, "Type Certificates-Non-Automatic Issue".

9.3 Group III

The degree of CASA involvement and cost for this group would be dependent on the extent of the alteration. It may be extensive as per the mission equipment examples discussed above, or relatively minor, e.g. fitment of two bubble windows to a Nomad to facilitate forest fire spotting. In all cases, CASA involvement culminates, for this phase of certification, in issue of the Australian restricted category type certificate. Refer to AC 21.13, "Type Certificates-Australian Designed Aircraft".

9.4 Group IV

This group could include, for example, an aircraft designed from the outset in Australia as an agricultural crop spraying type. This would require a full aircraft type certification exercise. For full details, see AC No. 21.13, "Type Certificates - Australian-designed Aircraft".

9.5 Group V

An example of this group would be the Tracker aircraft discussed in subparagraph 9.1.3 above. CASA would follow the guidelines for type certification of such ex-military aircraft as prescribed by the FAA:

(a) restricted category type certification of ex-military aircraft is primarily based on military records and service history, and safe history of operation of the type, to ensure that the aircraft are acceptable for civil certification;

(b) the alteration for the special purpose operation must be approved in accordance with the type certification procedures for major changes. The certification basis for the alteration could be that provided by CASR 21.27 or the appropriate airworthiness standards in accordance with CASR 21.101, and any special conditions pursuant to CASR 21.16 as necessary. Refer also to AC 21.15 "Supplemental Type Certificates";

(c) the holder of the restricted category type certificate will be the person originating the modification (the applicant), and this will usually not be the manufacturer of the aircraft;

(d) it must be shown that no feature or characteristic of the aircraft makes it unsafe when operated under limitations prescribed for its intended use;

(e) the aircraft must be in conformity with the data presented for both the basic aircraft and the alteration; and

(f) there must be provisions for the continuing airworthiness of the aircraft. When an airworthiness directive (AD) is issued for a restricted category ex-military aircraft, all of the restricted category type certificate holders of that model will be listed on the AD as applicable.

9.6 The following summary guidelines apply to restricted category type certification of civil-designed aircraft:

(a) aircraft manufactured for the restricted category or aircraft that have been type certificated in another category and altered for a special purpose operation must meet the applicable civil aircraft airworthiness standards, and it must be shown that no feature or characteristic of the aircraft makes it unsafe when operated under the limitations prescribed for its intended use. These aircraft are type certificated in the restricted category under CASR 21.25 (1);

(b) the levels of certification and the levels of safety may be reduced from that for aircraft meeting the airworthiness requirements of a standard aircraft category. However, through operating limitations and operating rules, such as aircraft flight manual limitations and/or the requirements of *Civil Aviation Regulations 1988* (CAR 1988) 262AL, equivalent levels of safety must be maintained for the public. This policy is not intended to eliminate any type certification procedural requirements, such as the need to address continuing airworthiness;

(c) the basic airworthiness requirements that are inappropriate for the special purpose operation for which the aircraft is to be used may be exempted or varied. CASA is responsible for determining those airworthiness requirements that are inappropriate for the special purpose operation for which the aircraft is to be used. Formal exemption/variation documentation procedures will be followed;

(d) any reduction in the level of safety from that defined by the appropriate airworthiness standards must be based on requirements found inappropriate for the special purpose; modified requirements, which are not entirely appropriate; or an operating environment less stringent than that envisaged by the appropriate standards;

(e) the US CAR 8/CAM 8 is not an acceptable airworthiness standard for current type certification programs. It is only acceptable when the requirements are appropriate for alterations of small agricultural aeroplanes which were originally type certificated to CAR 8;

(f) for aircraft type certificated in multiple categories (such as restricted and normal), the certification activity for the restricted category must not permit degradation of the aircraft for use in the normal category. Multiple category certification is discussed in section 14; and

(g) the certification basis for an aircraft, being altered for special purpose operation, that was previously certificated in a standard category, is the original certification basis, except for the airworthiness requirements that CASA determines are inappropriate for the special purpose operation. Exceptions are made to the extent that an appropriate level of safety for the public is maintained. It is never acceptable to waive a rule merely because the applicant cannot show compliance.

10. OTHER SPECIAL PURPOSE OPERATIONS

10.1 CASR 21.25 is quite specific in regard to special purpose operations. CASR 21.25 (2) (k) allows for "any other similar operation". Should an applicant wish to pursue this aspect, then he or she must make a submission in writing to CASA including full supporting justification to substantiate that permitting the proposed operation would be in the public interest, and that safety would not be compromised.

10.2 In regard to carriage of cargo: an Australian restricted category aircraft operator may carry material necessary to accomplish the approved special purpose operation e.g. pesticide for crop dusting; a water/fire retardent load for fire bombing; a supply of boxed targets for target towing, for a deployment away from home base. This is accepted as carriage of cargo that is incidental to the operator's business, and is not dedicated carriage of cargo for compensation or hire. The CoA Annex will identify any authorised cargo that may be carried. Regulations covering the carriage of hazardous materials might also be involved.

11. AGRICULTURAL AIRCRAFT ASPECTS

11.1 Restricted category certification may be granted to agricultural aircraft, i.e. those carrying out operations under a special purpose as specified in subparagraph 21.25 (2) (a) of the CASRs, based on the broad principles expressed in this AC.

11.2 The airworthiness design standards for certification of agricultural aircraft in Australia were specified in CAOs 101.16 and 101.17. Aircraft with a current CoA in the agricultural categories may continue to operate on that CoA. The minimum design requirements are now those required for a standard category of aircraft as per CASR 21.175(a), except those requirements which CASA considers are inappropriate for the agricultural purposes for which the aircraft is to be used.

11.3 For small single-engined agricultural aeroplanes where an automatic acceptance procedure vide subparagraph 9.1.1 above cannot be utilized, the principles which have been

established by the U.S. FAA will be followed, i.e. the aircraft must meet an airworthiness standard called up by CASR Part 23, less those subparts and paragraphs as agreed by CASA, plus any special conditions which CASA sees fit to impose in the interests of safety.

11.4 For other agricultural aircraft, e.g. aeroplanes above 5700 kilograms MTOW, rotorcraft etc., the airworthiness design requirements will be established by a similar process, for example:

(a) the basis for a small agricultural helicopter would be the airworthiness standard called up by CASR Part 27, less particular subparts and paragraphs, plus special conditions as appropriate; or

(b) a basis for an agricultural aeroplane above 5700 kilograms MTOW would be an airworthiness standard called up by CASR Part 25, less certain subparts and paragraphs, plus special conditions as appropriate.

12. OVERWEIGHT OPERATIONS

12.1 The very nature of restricted category operations may involve the need for overweight flights, principally in the area of agricultural and water bombing load carriage. Overweight operations involve an aircraft taking off at a weight exceeding maximum takeoff weight (MTOW).

12.2 An increase in the maximum certificated takeoff weight is a major alteration, in the context of restricted category certification. The applicant should approach an authorised person or CASA, in the first instance, with an operating proposal and any substantiating data to hand. Involvement with the aircraft type manufacturer is usually required, and aircraft structural load, fatigue and flight handling studies, and flight tests, will normally be necessary. If approval is ultimately granted, then relevant operating conditions will be reflected in the CoA Annex and an amendment to the flight manual will also be required.

13. OTHER ASSOCIATED MATTERS

13.1 The following matters are associated with CoA exercises. In some countries, they are integral with CoA application/issue procedures, and this has introduced confusion for some Australian CoA applicants.

13.2 Noise Certification

13.2.1 Noise certification for individual aircraft is required before the aircraft can legally be operated in Australian territory. Aircraft noise is regulated through the Air Navigation (Aircraft Noise) Regulations, introduced under the Air Navigation Act 1920, in 1984. Noise certification or lack of such has no legal impact on type approval, or individual CoA issue. However, if an individual aircraft does not meet the Australian noise requirements, then it is illegal for that aircraft to operate in Australian territory, even though the aircraft may have a valid special CoA;

13.2.2 Application for noise assessment for individual aircraft can be made to:

The Manager Environment Monitoring
Airservices Australia
GPO Box 367
Canberra. ACT 2601
AUSTRALIA
Facsimile: +61 2 6288 4210
email: environment@airservices.gov.au

13.2.3 Applicants for restricted category certification of ex-military aircraft should very carefully note that many of these aircraft types do not meet the Australian aircraft noise limitations. If civil use of such aircraft is contemplated, then, as a matter of priority, contact should be made with the Manager of Environment Monitoring, at the above address. Noise characteristics of the type involved may preclude civil use in Australia, even as restricted category aircraft.

13.3 Aircraft import

13.3.1 The formalities of aircraft import with respect to Customs requirements are not matters which involve CASA.

13.3.2 The liaison required between the applicant and Australian Customs Service in regard to import formalities is straight forward. The applicant may choose to use a customs broker, or lodge an application directly with the Australian Customs Service.

13.4 Unpaved runway certification

Individual aeroplanes with MTOWs of less than 5700 kilograms may operate on unpaved runways in Australia, without the need for formal certification. Aeroplanes with MTOWs above 5700 kilograms are required to be certificated (by aircraft type) for such operations, with appropriate flight manual supplements or integrated data in the Aircraft Flight Manual. Applicants should follow up queries in this regard with the aircraft manufacturer, or previous operators, armed force airworthiness authorities etc.

13.5 Maintenance release

A maintenance release is not issued prior to CoA issue. However, an aircraft operating on a special CoA in the restricted category cannot legally fly until a maintenance release has been issued and is in force.

14. MULTIPLE AIRWORTHINESS CERTIFICATION

14.1 An aircraft issued with a special CoA in the restricted category can also be issued concurrently with a CoA in a standard or the limited category.

14.2 For the case of concurrent limited category certification, this will require the applicant filling out the “limited” and purpose box(s), additional to what is completed for application for a special certificate of airworthiness in the restricted category. For further information refer to the companion AC 21.5, “Limited Category Aircraft - Certification”.

14.3 For the case of concurrent standard category certification, make application on CASA Form No 717 “Application for issue of a standard certificate of airworthiness”, and refer to AC 21.2, “Standard Certificate of Airworthiness”.

14.4 Compliance must be shown with the requirements of each category when the aircraft is in the configuration for that category. Additionally, the applicant must show, to the satisfaction of an authorised person or CASA, that the aircraft can be converted from one category to the other by removing or adding equipment using simple mechanical means.

15. REVERSION TO STANDARD CATEGORY

In the case of an aircraft that was previously type certificated in the standard category, and is to be permanently returned to the standard category after operation in the restricted category, an authorised person or CASA will ensure that appropriate inspection requirements are included in the instructions for conversion of the aircraft back to standard configuration. The nature of cargo that may have been carried, the areas where the

operations had been conducted, the surface conditions of the airports that had been used, and whether the aircraft had been operated at weights above those approved for standard category, would all be factors to consider in developing an inspection program that would determine whether structural damage or damage due to corrosion caused by the kind of cargo carried or areas of operation, had occurred. The continuing airworthiness of the aircraft, including life limited parts, ADs, and corrosion or structural damage surveillance, must be addressed.

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