CIVIL AVIATION AUTHORITY
OF NEW ZEALAND

PURSUANT to Sections 28 and 30 of the Civil Aviation Act 1990

I, HARRY JAMES DUYNHOVEN, Minister for Transport Safety,

HEREBY MAKE the following ordinary rules.

SIGNED AT Wellington

This 22nd day of November 2006

by **HARRY JAMES DUYNHOVEN**

Minister for Transport Safety

Civil Aviation Rules

Part 43, Amendment 5

General Maintenance Rules

Docket 1/CAR/1357

Contents

Rule objective

The objective of amendment 5 to Part 43 is to amend and update the various rule requirements dealing with the maintenance of aircraft, the certification of the release to service of aircraft and aircraft components after maintenance, and the recording of maintenance.

Amendment 5 to Part 43 is associated with the following amendments to other Parts:

- amendment 32 to Part 1:
- amendment 15 to Part 91:
- amendment 7 to Part 145.

Extent of consultation

In 1999 the Civil Aviation Industry Rules Advisory Group (CIRAG) Executive established a Technical Study Group (TSG) to participate in a rule making project to amend and update various rules relating to the airworthiness and maintenance requirements for aircraft. A number of the issues to be addressed arose from an investigation carried out by the CAA in 1997 into the concerns about maintenance standards and practices for aircraft less than 5,700 kg maximum certified take-off weight (MCTOW). Other issues to be addressed arose from various petitions for amendments to be made to airworthiness and maintenance rules.

The TSG was made up of representatives from general aviation (fixed wing operators), aircraft maintenance organisations, helicopter operators, and the Aircraft Owners and Pilots Association. The TSG met 4 times and concluded its work in early 2002. The CAA continued to refine the draft rule proposals during 2002 and 2003 and released the draft rules to a representative industry group for comment before they were published for public consultation.

A Notice of Proposed Rulemaking, NPRM 05-04, containing the proposed rule amendments to Parts 1, 43, 91, and 145 was issued for public consultation under Docket 1/CAR/1357 on 5 May 2005.

Two other associated Notices of Proposed Rulemaking, NPRM 05-05 dealing with amendments to Parts 21, 26, 39, 146, and 148, and NPRM 05-06 dealing with amendments to Parts 119, 103, 104, 121, 125, 135, and 137, were also issued for public consultation under Docket 1/CAR/1357 on 5 May 2005.

The publication of these NPRMs was notified in the Gazette on 5 May 2005 and advertised in the daily newspapers in the five main provincial centres on 7 May 2005. The NPRMs were published on the CAA web site and mailed to identified stakeholders including representative organisations who were considered likely to have an interest in the proposal.

A period of 46 days was initially allowed for comment on the proposed amendments to the rules and this was extended upon industry request for a further 10 days.

New Zealand Transport Strategy

The development of the NPRM and the proposed rule changes took into account the objectives of the New Zealand Transport Strategy (NZTS) and the provisions of the Civil Aviation Amendment Act (No 2) 2004.

Amendment 5 to Part 43 has been assessed as follows against the NZTS:

Assisting Economic Development— the rule amendment is unlikely to affect economic development:

Assisting safety and personal security— the rule amendment is unlikely to affect safety and personal security issues:

Improving access and mobility—the rule amendment is unlikely to affect access and mobility issues:

Protecting and promoting public health— the rule amendment is unlikely to affect public health:

Ensuring environmental sustainability—the rule amendments are unlikely to affect environmental sustainability.

Summary of submissions

Eighty written submissions were received on the 3 NPRMs. Fifty eight submissions related to the proposed amendments to Part 43. These submissions and comments have been considered and as a result the following significant changes have been made to the rules in amendment 5 to Part 43:

- deletion of the "double approval" in 43.51(c) regarding "non-qualified" person performing specified maintenance tasks on aircraft maintained by a Part 145 maintenance organisation.

- revision back to current rule requirement in 43.113(b)(1) regarding person responsible for certifying duplicate safety inspection.

- clarification of the extent of a duplicate safety inspection and certification statement required in 43.113.

- rules in subpart D regarding annual review of airworthiness have been amended to provide a 30 day period for the annual review inspection to be completed, and requirements for recording the next due date for a review have been inserted.

A change was also made to the purpose statement for Part 43 to delete reference to subpart D, annual review of airworthiness, in the provisions for maintenance to be carried out in another State under a technical arrangement. An annual review of airworthiness must be carried out by a person holding a New Zealand authorisation.

Some editorial and other minor changes have also been made in the final rules to address other minor issues from the submissions and to clarify the rule requirements.

The rule as amended was then referred to Parliament's Regulations Review Committee before being signed by the Minister for Transport Safety. The Committee raised a concern about the rules that provide the Director with a power of discretion on what might be acceptable to meet a rule requirement but were silent on what the Director should take into consideration when exercising that discretion. The relevant rules were

amended to address the Committee's concerns before being signed by the Minister.

Examination of submissions

Submissions may be examined by application to the Docket Clerk at the Civil Aviation Authority between 8:30 am and 4:30 pm on weekdays, except statutory holidays.

Insertion of Amendments

The amendments to the rules in this Part are reflected by the revocation of some existing rules, the revocation of some existing rules and replacing them with new rules, and the insertion of new rules.

Effective date of rule

Amendment 5 to Part 43 comes into force on 1 March 2007.

Availability of rules

Civil Aviation Rules are available from–

CAA web site: http://www.caa.govt.nz/
Freephone: 0800 GET RULES (0800 438 785)

Part 43 Amendments

Subpart A — General

Rule 43.1 is revoked and replaced by the following new rule:

43.1 Purpose

(a) Except as provided in paragraph (b), this Part prescribes rules governing—

(1) the maintenance of aircraft that are required by Part 91 to have an airworthiness certificate issued in accordance with subpart H of Part 21; and

(2) the release-to-service after maintenance of aircraft that are required by Part 91 to have an airworthiness certificate issued in accordance with subpart H of Part 21; and

(3) the maintenance, and the release-to-service after maintenance, of components to be fitted to aircraft that are required by Part 91 to have an airworthiness certificate issued in accordance with subpart H of Part 21; and

(4) the maintenance, and the release-to-service after maintenance, of instruments and equipment that, subject to other applicable operating rules, are required by Part 91 to be fitted to an aircraft; and

(5) the annual review of airworthiness.

(b) Unless specified otherwise in a technical arrangement, the requirements of subparts B and C do not apply to a person performing maintenance on a New Zealand registered aircraft or on a component intended to be fitted to a New Zealand registered aircraft if the maintenance is performed—

(1) in another State that is party to a technical arrangement; and

(2) under the authority of and in accordance with a maintenance organisation certificate or approval issued by the State referred to in paragraph (b)(1); and

(3) in accordance with the relevant procedures and authorisations of the maintenance organisation referred to in paragraph (b)(2); and

(4) in accordance with the relevant maintenance standards and procedures of the State referred to in paragraph (b)(1) unless specified otherwise in the technical arrangement; and

(5) in accordance with any conditions specified in the technical arrangement.

Rule 43.3 is revoked and replaced by the following new rule:

43.3 Definitions

Definitions relating to this Part are contained in Part 1.

Subpart B — Maintenance

Rule 43.51 is revoked and replaced by the following new rule:

43.51 Persons to perform maintenance

(a) Except as provided in paragraphs (b), and (d), and subject to rule 43.54, a person must not perform maintenance on an aircraft or component unless that person—

(1) holds a current aircraft maintenance engineer licence in an appropriate category and with an appropriate rating issued in accordance with Part 66; or

(2) holds an appropriate current aircraft maintenance engineer licence and an appropriate rating issued by the Civil Aviation Safety Authority of Australia, and has had that licence registered by the Director in New Zealand under the Trans Tasman Mutual Recognition Act 1997; or

(3) is authorised to perform the maintenance by the holder of an aircraft maintenance organisation certificate issued with an appropriate rating in accordance with Part 145; or

(4) holds a current certificate of maintenance approval, with appropriate endorsement, issued in accordance with Part 66; or

(5) for maintenance performed outside of New Zealand, holds an appropriate current maintenance engineer licence or approval issued under the authority of an ICAO Contracting State for the type of aircraft or component; or

(6) performs the maintenance under the direct supervision of an appropriate person referred to in paragraphs (a)(1), (a)(2), (a)(3), (a)(4), or (a)(5).

(b) Subject to paragraph (c), a person who does not meet the requirements of paragraph (a) but holds any of the following licences may perform the maintenance specified in Appendix A.1 on an aircraft that is used to perform air operations under the authority of an air operator certificate issued in accordance with Part 119, or may perform the maintenance specified in Appendices A.1 and A.2 on an aircraft that is not used to perform air operations :

(1) a current pilot licence with an aircraft type rating for the aircraft issued in accordance with Part 61:

(2) a current aircraft maintenance engineer licence issued in accordance with Part 66:

(3) a current aircraft maintenance engineer licence issued by the Civil Aviation Safety Authority of Australia if that licence is registered by the Director in New Zealand under the Trans Tasman Mutual Recognition Act 1997.

(c) The person referred to in paragraph (b) must—

(1) be authorised in writing by the operator of the aircraft to perform the maintenance and be appropriately trained by the holder of a current and appropriate aircraft maintenance engineer licence with an appropriate rating issued in accordance with Part 66; or

(2) for an aircraft that is required by this Part or Parts 121, 125, or 135, to be maintained under the authority of a maintenance organisation certificate issued in accordance with Part 145, be appropriately trained and hold an appropriate authorisation, issued by the holder of the maintenance organisation certificate, to perform the maintenance on the aircraft type.

(d) A person who does not meet the requirements of paragraph (a) may perform maintenance on a glider or glider component if that person—

(1) is authorised by a gliding organisation to perform maintenance on a glider or glider component; or

(2) performs the maintenance under the direct supervision of a person who is authorised by a gliding organisation to perform maintenance on a glider or glider component.

Rule 43.53 is revoked and replaced by the following new rule:

43.53 Performance of maintenance

A person performing maintenance on an aircraft or component must—

(1) be familiar with the maintenance actions required for the continued airworthiness of the aircraft or component; and

(2) use adequate housing and facilities for the disassembly, inspection, and reassembly of the aircraft or component; and

(3) use—

(i) methods, techniques, and practices that are specified in the instructions for continued airworthiness issued for the aircraft or component; or

(ii) equivalent methods, techniques, and practices that are acceptable to the Director; and

(4) use materials, parts, and appliances in accordance with the requirements of subpart K of Part 21; and

(5) use the tools, equipment, and test equipment necessary to ensure completion of the work in accordance with paragraph (3); and

(6) use the test equipment recommended by the manufacturer, or equivalent test equipment that provides the same capability for the person conducting the test to ensure that the component being tested is in an airworthy condition; and

(7) if specified in the maintenance procedures, use the special test equipment recommended by the manufacturer or equivalent test equipment that is acceptable to the Director; and

(8) perform the maintenance so as to ensure that the aircraft or component meets every applicable airworthiness requirement; and

(9) on completion of the maintenance, ensure that the condition of the aircraft or component is satisfactory for release-to-service and is at least equal to its original or properly modified condition with regard to—

(i) aerodynamic function; and

(ii) structural strength; and

(iii) resistance to vibration and deterioration; and

(iv) other qualities affecting airworthiness; and

(10) on completion of the maintenance, ensure that the aircraft or component complies with the applicable certification requirements for aircraft noise and engine emission; and

(11) not perform the maintenance unless he or she has been relieved from the performance of maintenance on an aircraft or component for—

(i) a period of at least 8 consecutive hours in the 24-hour period immediately before the maintenance is performed; and

(ii) at least 4 periods of at least 24 consecutive hours each in the 30-day period immediately before the maintenance is performed.

The following new rule is inserted after rule 43.53:

43.54 Maintenance required under Part 145

(a) A person must not (except under the authority of, and in accordance with the provisions of, a maintenance organisation certificate issued in accordance with Part 145) perform maintenance on, or release-to-service,—

(1) an aircraft that is used to perform air operations under the authority of an air operator certificate issued in accordance with Part 119 and has—

(i) a MCTOW of more than 5700 kg; or

(ii) a maximum certificated passenger seating configuration, excluding any required crew member seat, of 10 seats or more; or

(2) a component fitted or intended to be fitted to an aircraft referred to in paragraph (a)(1).

(b) Except as provided in paragraph (c), a person must not (except under the authority of, and in accordance with the provisions of, a maintenance organisation certificate issued in accordance with Part 145) perform any of the following kinds of maintenance on an aircraft or component, or certify the aircraft or component for release-to-service after the maintenance:

(1) overhaul of a component:

(2) maintenance on an aircraft or component if the relevant instructions for continued airworthiness require the use of a jig that is approved or certified by the manufacturer or that is approved by the Director:

(3) maintenance on a component if the maintenance involves the disturbance of any part of the component that is supplied as a bench tested unit, except if—

(i) the disturbance is for the replacement or adjustment of a part normally replaceable or adjustable in service; and

(ii) subsequent functioning of the part disturbed can be demonstrated without the use of test apparatus that is additional to the test apparatus used for normal functioning checks:

(4) maintenance on an aircraft engine if the maintenance involves—

(i) dismantling and reassembly of a piston engine, except where the dismantling and reassembly is to obtain access to the piston or cylinder assembly; or

(ii) dismantling and reassembly of a main casing or main rotating assembly of a turbine engine, except if the dismantling and reassembly is for the replacement of a main casing or rotating assembly and the instructions for continued airworthiness for the engine provides instructions for the replacement, and the replacement of the main casing or rotating assembly of the engine is achieved solely by disconnecting the flanges of main casings; or

(iii) disturbance of reduction gear:

(5) aircraft propeller balancing other than in situ dynamic propeller balancing in accordance with the aircraft manufacturer's instructions:

(6) maintenance on a helicopter if the maintenance involves the dismantling of any transmission gearbox, except if the dismantling is for separation of casings to obtain access for the purpose of internal inspection in accordance with the helicopter manufacturer's instructions.

(c) Paragraph (b) does not apply to an aircraft issued with a *special category – experimental*, airworthiness certificate or to a microlight aircraft, glider, powered glider, or balloon.

Rule 43.57 is revoked and the number is reserved

43.57 Reserved

Rule 43.69 is revoked and replaced by the following new rule:

43.69 Maintenance records

(a) Except as provided in paragraph (b), a person performing maintenance on an aircraft or a component must, on completion of the maintenance, record the following information in the appropriate maintenance logbook:

(1) details of the maintenance including, if applicable,—

(i) the identity of any inspection carried out; and

(ii) a description of the work performed; and

(iii) the technical data used; and

(iv) the requirement for an operational flight check if the maintenance requires a flight check under rule 43.103(a)(4):

(2) if a component is removed or fitted during the maintenance,—

(i) a description of the component; and

(ii) its part number and serial number, if any; and

(iii) the references to the applicable release documentation:

(3) details of any measurements or test results, including the results of any ground or air tests that have been performed as part of the maintenance:

(4) for altimeter system test and inspection, the date and maximum altitude to which the altimeter has been tested:

(5) if an AD is actioned as part of the maintenance,—

(i) the AD number; and

(ii) the revision date; and

(iii) the means of compliance:

(6) the location and, if applicable, the name of the facility where the maintenance was carried out:

(7) the reasons for performing the maintenance.

(b) A person performing maintenance on an aircraft or a component may use associated worksheets to record the details of the maintenance performed if—

(1) a summary of maintenance performed is recorded in the appropriate maintenance logbook; and

(2) the worksheets are referenced in the summary of maintenance required under paragraph (b)(1).

(c) A person performing maintenance on an aircraft to rectify a defect that is entered in the technical log or to carry out an inspection that is entered in the technical log must on completion of the maintenance—

(1) record the completion of the maintenance in the technical log; and

(2) record the details required by paragraph (a) in the appropriate maintenance logbook; or

(3) if the maintenance logbook is not readily available, forward written details of the maintenance to the place where the maintenance logbooks are held by a means, where practicable, other than carriage in the aircraft on which the maintenance has been performed.

(d) A person performing maintenance on an aircraft or a component must, after recording the details required by paragraphs (a) to (c), include the following information as part of the maintenance record:

(1) the person's name:

(2) the person's signature except if the maintenance logbook or worksheet is in electronic format:

(3) if applicable, the person's licence, approval, or authorisation number:

(4) the date of completion of the maintenance.

(e) A person performing scheduled maintenance on an aircraft that is required by rule 91.509(b) to be fitted with a time-in-service recorder must, on completion of that maintenance, record in the appropriate maintenance logbook—

(1) the total time-in-service reading of the recorder; and

(2) any indication that the time-in-service recorder has been tampered with since the last scheduled inspection.

(f) The person required under any of paragraphs (a) to (e) to record the details of maintenance performed must record the details accurately and legibly in ink or by other permanent means.

Subpart C — Release-to-service

Rule 43.101 is revoked and replaced by the following new rule:

43.101 Persons to certify release-to-service

(a) Except as provided in paragraph (b), and subject to paragraph (c) and rule 43.54, a person must not certify an aircraft or component for release-to-service after maintenance unless that person—

(1) holds a current aircraft maintenance engineer licence in an appropriate category and an appropriate rating issued in accordance with Part 66; or

(2) holds an appropriate current aircraft maintenance engineer licence and an appropriate rating issued by the Civil Aviation Safety Authority of Australia, and has had that licence registered by the Director in New Zealand under the Trans Tasman Mutual Recognition Act 1997; or

(3) is authorised to certify such aircraft or components for release-to-service by the holder of an aircraft maintenance organisation certificate issued with an appropriate rating in accordance with Part 145; or

(4) holds a current certificate of maintenance approval, with appropriate endorsement, issued in accordance with Part 66; or

(5) for maintenance performed outside New Zealand, holds an appropriate current maintenance engineer licence or approval issued under the authority of an ICAO Contracting State, acceptable to the Director, for the type of aircraft or component; or

(6) has performed the maintenance under rule 43.51(b).

(b) A person may certify a glider or glider component for release-to-service after maintenance if that person is authorised by a gliding organisation to certify such a glider or glider component for release-to-service.

(c) A person must not certify an aircraft or component for release-to-service after maintenance unless that person has been relieved from the performance, supervision, or certification of maintenance on an aircraft or component for—

(1) a period of at least 8 consecutive hours in the 24-hour period immediately before certifying the release-to-service; and

(2) at least 4 periods of at least 24 consecutive hours each in the 30-day period immediately before certifying the release-to-service.

Rule 43.103 is revoked and replaced by the following new rule:

43.103 Requirements for certifying release-to-service

(a) A person must not certify an aircraft or component for release-to-service after maintenance unless—

(1) the maintenance has been performed in accordance with this Part; and

(2) the person meets the requirements of rule 43.101; and

(3) in respect of that maintenance, the aircraft or component is fit for release-to-service; and

(4) if the aircraft has undergone maintenance that may have appreciably affected the flight characteristics or operation of the aircraft,—

(i) a satisfactory operational flight check has been carried out in accordance with rule 91.613 and the completion of the flight check is recorded in the aircraft maintenance logbook or worksheet, and the technical log; or

(ii) ground tests, inspections, or both, show conclusively that the maintenance has not appreciably changed the flight characteristics or substantially affected the flight operation of the aircraft and details of the ground tests and inspections, as the case may be, have been recorded in the aircraft maintenance logbook or worksheet; or

(iii) the release-to-service is for the purpose of performing the operational flight check required under paragraph (a)(4)(i).

(b) A person must not certify an aircraft or component for release-to-service after the performance of a major modification or a major repair unless—

(1) the person meets the requirements of rule 43.101; and

(2) the major modification or major repair has been certified for conformity with acceptable technical data in accordance with subpart E; and

(3) in respect of that major modification or major repair, the aircraft or component is fit for release-to-service; and

(4) if the acceptable technical data under paragraph (b)(2) includes changes to the operating limitations or flight data in the flight manual, the changes have been incorporated into the flight manual.

(c) The person responsible for certifying an aircraft for release-to-service under paragraph (a)(4)(iii) for the purpose of an operational flight check must record in the aircraft maintenance logbook or worksheet, and the technical log —

(1) the following statement of release-to-service:

In respect of the recorded work, the aircraft is released-to-service for an operational flight check only; and

(2) adjacent to the statement of release-to-service—

(i) the person's name; and

(ii) the person's signature except if the maintenance logbook or worksheet is in electronic format; and

(iii) the person's licence, approval, or authorisation number; and

(iv) the date of entry.

Rule 43.105 is revoked and replaced by the following new rule:

43.105 Certifying release-to-service after maintenance

(a) Except as required in paragraph (b), a person who certifies an aircraft or component for release-to-service after maintenance must record the following information in the appropriate maintenance logbook or worksheet, and the technical log as may be necessary,

immediately adjacent to the details of the maintenance that is required to be recorded under rule 43.69—

(1) the person's name; and

(2) the person's signature except if the maintenance logbook or worksheet is in electronic format; and

(3) the person's licence, approval, or authorisation number; and

(4) the date of entry; and

(5) the following statement of release-to-service if the maintenance logbook, worksheet, or technical log, as the case may be, does not include a preformatted equivalent statement:

"The maintenance recorded has been carried out in accordance with the requirements of New Zealand Civil Aviation Rule Part 43 and in respect of that maintenance the (aircraft) (component)* is released to service".*

* *delete as applicable*

(b) If a component is not installed on, or allocated to an aircraft, the person certifying the component for release-to-service must certify the release-to-service on—

(1) *CAA Form One – authorised release certificate* if—

(i) rule 43.54 requires the maintenance to be performed under the authority of, and in accordance with the provisions of, a maintenance organisation certificate issued in accordance with Part 145; or

(ii) the component is to be exported in accordance with the provisions of a maintenance organisation certificate issued in accordance with Part 145 or an aircraft manufacturing organisation certificate issued in accordance with Part 148; or

(2) *CAA Form Two – New Zealand domestic part label.*

Rule 43.107 is revoked and replaced by the following new rule:

43.107 Inoperative equipment

A person who certifies an aircraft or component for release-to-service that includes inoperative instruments or equipment that are permitted to be inoperative under rule 91.537 must, before signing the statement of release-to-service as required under rule 43.105,—

(1) list the inoperative instruments and equipment in the technical log; and

(2) place a placard on each inoperative instrument and on or adjacent to the cockpit controls of each item of inoperative equipment, marking each item *Inoperative*.

Rule 43.109 is revoked and replaced by the following new rule:

43.109 Defects

If a person who is responsible under this Part for certifying an aircraft or component for release-to-service does not certify the aircraft or component for release-to-service because a defect has not been cleared, that person must before further flight of the aircraft—

(1) enter the details of the defect in the technical log if the defect is not already entered in the log; and

(2) if practicable, ensure that defect is entered in the appropriate maintenance logbook; and

(3) adjacent to the details of the defect that the person may have entered under paragraphs (1) and (2), enter—

(i) his or her name and signature; and

(ii) his or her licence, approval, or authorisation number; and

(iii) the date of entry.

Rule 43.113 is revoked and replaced by the following new rule:

43.113 Duplicate safety inspection of control system

(a) A person must not certify an aircraft or component for release-to-service after the initial assembly, subsequent disturbance, or adjustment of any part of the control system of the aircraft or the control system of the component unless—

(1) the applicable requirements of Subpart C have been complied with; and

(2) a duplicate safety inspection has been carried out to ensure that—

(i) the control system of the aircraft or the component, as the case may be, functions correctly; and

(ii) in respect of the maintenance that has been performed, the control system is assembled correctly and every required locking mechanism is in place; and

(3) the certification and signatures required by paragraphs (c) and (d) have been completed.

(b) The duplicate safety inspection required by paragraph (a)(2) must be carried out by—

(1) a person who meets the requirement in rule 43.101 to certify the aircraft or component for release-to-service; and

(2) another person who is nominated by the person specified in paragraph (b)(1) and has adequate training, knowledge and experience to carry out the safety inspection, and who holds—

(i) a current aircraft maintenance engineer licence issued in accordance with Part 66; or

(ii) a current certificate of maintenance approval issued in accordance with Part 66; or

(iii) a current pilot licence with a rating on the aircraft type issued in accordance with Part 61; or

(iv) a current authorisation issued by the holder of a maintenance organisation certificate issued in accordance with Part 145; or

(v) a current appropriate maintenance engineer licence or approval issued under the appropriate authority of an ICAO Contracting State.

(c) The person specified in paragraph (b)(1) must enter in the appropriate maintenance logbook or worksheet—

(1) the identification of the control system that has been inspected; and

(2) the detailed scope and extent of the safety inspection that has been carried out; and

(3) the following statement—

"We certify that a duplicate safety inspection has been carried out and the identified control system of the aircraft/component functions correctly, and in respect of the maintenance performed, the control system is assembled and locked correctly."

(d) The following details of each person specified in paragraphs (b)(1) and (b)(2) must be entered the maintenance logbook or worksheet adjacent to the statement required under paragraph (c)(3):

(1) the name of each person:

(2) the signature of each person except if the maintenance logbook or worksheet is in electronic format:

(3) the licence number, approval number, or authorisation number for each person:

(4) the date of entry.

Rule 43.115 is revoked and replaced by the following new rule:

43.115 Engine performance checks

(a) Except as provided in paragraph (c), a person must not certify an aircraft for release-to-service after the following maintenance activities unless an engine performance check has been performed in accordance with the aircraft manufacturer's recommendations:

(1) a 100-hour, or equivalent inspection carried out in accordance with the aircraft manufacturer's maintenance schedule:

(2) an engine change:

(3) a propeller change:

(4) any other maintenance if the aircraft manufacturer recommends an engine performance check after the maintenance.

(b) A person who certifies an aircraft for release-to-service after an engine performance check that is required in paragraph (a) must ensure that the following information is recorded in the appropriate maintenance logbook or worksheet:

(1) the ambient conditions of temperature and atmospheric pressure:

(2) the details of the results of the engine performance check.

(c) Paragraph (a) does not apply to an aircraft that is maintained in accordance with a maintenance programme—

(1) approved under Part 119; or

(2) approved under rule 91.607.

Rule 43.117 is revoked.

Rule 43.119 is revoked.

Subpart D — Annual Review of Airworthiness

Rule 43.153 is revoked and replaced by the following new rule:

43.153 Review requirements

(a) Except as provided in paragraph (b), a person performing an annual review of airworthiness for an aircraft must, within the 30 day period immediately before certifying that the review has been completed,—

(1) check that the aircraft conforms to its type certificate data sheet or equivalent type data that is acceptable to the Director; and

(2) check that every instrument and item of equipment required under subpart F of Part 91 is fitted; and

(3) for an aircraft that is required under rule 91.509(b) to be fitted with a time-in-service recorder,—

(i) record the time-in-service recorder reading in the appropriate maintenance logbook; and

(ii) compare the aircraft's total time-in-service recorded in the technical log with the time-in-service recorder reading; and

(iii) ensure that any discrepancy in the aircraft's total time-in-service that is identified under paragraph (a)(3)(ii) is included in the reports required under rule 43.155(a)(4); and

(4) check that since the last annual review of airworthiness or inspection for the issue of an *airworthiness certificate*—

(i) every modification and repair has been correctly recorded and certified for release-to-service referencing the applicable technical data listed in Appendix D to Part 21; and

(ii) all due maintenance specified in the applicable maintenance programme has been correctly recorded and certified for release-to-service; and

(iii) every airworthiness directive relevant to the aircraft type and its installed components has been assessed and certified as being 'embodied', 'found embodied', or 'not applicable', and if an airworthiness directive is repetitive, check that it is recorded in the repetitive section of the appropriate maintenance logbook; and

(iv) every defect recorded in the technical log has been rectified and the aircraft released to service or the defective instruments and equipment are recorded in the technical log, and placarded as inoperative if they are permitted to be inoperative under rule 91.537; and

(v) every applicable release-to-service has been completed and certified in accordance with subpart C; and

(vi) the recorded weight and balance data reflects any changes to the aircraft's weight and balance and that the recorded weight and balance data is within the published weight and balance limitations for the aircraft; and

(vii) the flight manual, including every applicable supplement is the current version for the aircraft in its existing state; and

(5) check that the overhaul and finite life of each lifed component is recorded and is within the limits laid down in the applicable manufacturer's document and, if practicable, verify serial numbers by physical inspection; and

(6) perform a general condition inspection of the aircraft.

(b) The requirements in paragraphs (a)(1) and (a)(4)(i) do not apply to an aircraft that is issued with a *special category airworthiness certificate – experimental* under subpart H of Part 21.

(c) The person performing the annual review of airworthiness must record any new defects identified during the review in the technical log and in the appropriate maintenance logbook.

Rule 43.155 is revoked and replaced by the following new rule:

43.155 Certifying review

(a) Subject to paragraph (b) a person who performs an annual review of airworthiness for an aircraft must on completion of the review—

(1) certify that the review has been completed by entering the following statement in the appropriate maintenance logbook:

"I certify that an annual review of airworthiness has been carried out on this aircraft and that the requirements of Civil Aviation Rule Part 43.153(a) have been complied with"; and

(2) adjacent to that statement, enter—

(i) the person's name; and

(ii) the person's signature except if the maintenance logbook is in electronic format; and

(iii) the person's inspection authorisation number; and

(iv) the date that the review was completed; and

(3) in accordance with paragraph (c), enter the due date for the next annual review of airworthiness in the technical log; and

(4) forward a report of the review to the Director in a form acceptable to the Director—

(i) within 7 days from the date of completing and certifying the review in accordance with paragraphs (a)(1) and (a)(2); or

(ii) if the review is not completed and certified in accordance with paragraphs (a)(1) and (a)(2), within 7 days from the expiry of the 30 day period specified in rule 43.153(a) for completing the review.

(b) Except for instruments and equipment that are permitted to be inoperative in accordance with rule 91.537, a person who performs an annual review of airworthiness for an aircraft must not certify the review as being complete unless every defect has been rectified and the aircraft certified for release-to-service in accordance with subpart C.

(c) The due date for the next annual review of airworthiness must not be more than 1 year after—

(1) the date that the review is certified under paragraph (a); or

(2) the beginning of the extension period if the due date for the annual review has been extended under rule 91.615(c)(1).

Rule 43.157 is revoked.

Subpart E — Certifying Conformity following Major Modification or Major Repair

Rule 43.201 is revoked and replaced by the following new rule:

43.201 Purpose

This subpart prescribes rules governing the certification of an aircraft, that is issued with a standard or restricted category airworthiness certificate under subpart H of Part 21, for conformity with acceptable technical data following major modifications or major repairs.

Rule 43.203 is revoked and replaced by the following new rule:

43.203 Persons to certify conformity

(a) A person must not certify that an aircraft or component conforms to acceptable technical data following a major modification or a major repair unless that person—

(1) holds a certificate of inspection authorisation issued in accordance with subpart E of Part 66; or

(2) holds an authorisation, issued by the holder of a maintenance organisation certificate issued in accordance with Part 145, to certify conformity of the aircraft or component; or

(3) is authorised by the manufacturer of the aircraft or component to certify conformity of the aircraft or component.

(b) Notwithstanding paragraph (a), a person may certify that a glider or glider component conforms to acceptable technical data following a major modification or a major repair if that person—

(1) is authorised by a gliding organisation to certify conformity of gliders and glider components; and

(2) has attended a course of instruction and passed an examination on the inspection of gliders and glider components that is acceptable to the Director as an equivalent to the requirements in Subpart E of Part 66 for the issue of a certificate of inspection authorisation.

Appendix A is revoked and replaced by the following new appendix:

Appendix A — Maintenance performed by a person under rule 43.51(b)

A.1 Aircraft used to perform air operations

The following maintenance may be performed by a person under rule 43.51(b) on an aircraft that is used to perform air operations under the authority of an air operator certificate issued in accordance with Part 119:

(1) greasing and lubrication that does not require disassembly other than removal of access panels, fairings, or cowls:

(2) replacing the aircraft battery:

(3) replacing fuses and lights:

(4) GPS equipment maintenance including—

(i) the installation and removal of GPS receivers if the receiver has quick disconnect capabilities, and any subsequent test requirements are built in to the receiver, and the applicable information for the installation and removal of the receiver is immediately available; and

(ii) the routine updating of GPS receiver database information:

(5) compressor washing if—

(i) the installation of the wash equipment does not require the disassembly of any primary engine control system; and

(ii) the applicable information for the washing is immediately available and includes procedures for the installation and removal of any wash equipment and the safe operation of the engine during the wash runs and any necessary drying runs:

(6) installation and removal of seats, doors, and role equipment if—

(i) the configuration of the aircraft with the particular equipment installed or removed has been approved; and

(ii) the flight manual incorporates the necessary information for the safe operation of the aircraft with the equipment installed or removed, including weight and balance data for each configuration; and

(iii) the applicable information for the installation and removal of the equipment is immediately available; and

(iv) no special tooling, special equipment, or subsequent inspection is required:

(7) the completion of repetitive airworthiness directive inspections between scheduled maintenance inspections if—

(i) the airworthiness directive states that a pilot may complete the inspection; and

(ii) any conditions stated in the airworthiness directive are complied with; and

(iii) no special tooling or special equipment is required:

(8) replenishment of engine oil:

(9) deferral of defects relating to inoperative instruments and equipment if the aircraft can be operated with inoperative instruments and equipment in accordance with rule 91.537:

(10) the performance of routine maintenance that is intended by the aircraft manufacturer to be performed by a pilot provided no special tooling or equipment is required.

A.2 Aircraft not used to perform air operations

The following maintenance, in addition to the maintenance listed in Appendix A.1, may be performed by a person under rule 43.51(b) on an aircraft that is not used to perform air operations:

(1) replacement of landing gear tyres or tail skid shoes:

(2) simple or temporary fabric patch repairs if—

(i) the repair is not applied to any flying control surface; and

(ii) the repair does not require the removal of any control surface or structural part; and

(iii) the repair does not involve restringing or rib stitching:

(3) restoration of damaged or worn decorative coatings and application of preservative or protective material to components, if the work does not involve—

(i) the removal or disassembly of any primary structure; or

(ii) the disturbance of any operating system; or

(iii) the restoration, preservation, or protection of a control surface; or

(iv) a significant repaint of the aircraft:

(4) simple or temporary repairs to fairings or non-structural cover plates:

(5) replenishment of hydraulic fluid in hydraulic reservoirs:

(6) replacement of engine oil:

(7) replacement of pressure oil filters:

(8) removal and replacement of turbine engine igniters:

(9) removal and replacement of piston engine spark plugs:

(10) removal and replacement of brake pads:

(11) removal and replacement of batteries in 121.5/243 MHz ELT.

Appendix C is revoked and the heading Appendix C is reserved

Appendix C – Reserved

Appendix F is revoked and replaced by the following new appendix:

Appendix F – Emergency Locator Transmitter Inspections and Tests

The following inspection and tests must be carried out by the person referred to in rule 43.65 to ensure compliance with the requirements prescribed in subpart G of Part 91 for the inspection and testing of emergency locator transmitters:

(1) inspect the emergency locator transmitter and its mountings and aerial connection for general condition particularly for corrosion or corrosion deposits:

(2) test the impact switch of the emergency locator transmitter for correct operation:

(3) test the RF output of the emergency locator transmitter, using an appropriate test set, to ensure that the output meets the manufacturer's specification.

The following new Appendix G is inserted after Appendix F:

Appendix G – Transitional Arrangements (Annual and 100-hour inspections)

A person who performs an annual and a 100 hour inspection on an aircraft in accordance with the transitional arrangements in Appendix B

of Part 91 must carry out the annual and 100 hour inspection in accordance with Appendix C of Part 43 that was in force immediately before 1 March 2007.

Consultation Details

(This statement does not form part of the rules contained in Part 43. It provides details of the consultation undertaken in making the rules.)

A review of the continuing airworthiness and maintenance requirements for New Zealand aircraft has been under development since 1998 following a review of the state of aircraft maintenance that was carried out in 1997. The changes to Part 43 are the central part of a package of changes that update rules relating to the maintenance of aircraft. The package was developed under docket 1/CAR/1357 and published in May 2005 as 3 separate Notices of Proposed Rule Making, NPRM 05-04 dealing with Part 43 and related rule Parts 91, and 145, NPRM 05-05 dealing with Part 21 and related Parts 26, 39,146, and 148, and NPRM 05-06 dealing with Part 119 and related Parts 103, 104, 121, 125, 135, and 137. The changes to the various rules are based on the 1997 review of aircraft maintenance and proposals arising from a CAA-Industry Technical Study Group (TSG) set up in 1999.

The 3 Notices of Proposed Rulemaking, NPRM 05-04 Part 43 General Maintenance Rules, NPRM 05-05 Part 21 Certification of Products and Parts, and NPRM 05-06 Part 119 Air Operator – Certification, containing the proposed rules were issued for public consultation under Docket 1/CAR/1357 on 5 May 2005.

Comments arising from the NPRM

A total of eighty written submissions were received on the three NPRMs, mostly in relation to the Part 43 and 91 changes. The CAA has worked through these submissions and as a result has amended the rules where appropriate.

The structure of some rules has been amended and editorial changes have been made to provide clarity and, in some cases, to maintain consistency in the terminology used.

Comments on NPRM 05-04

NPRM 05-04 was issued for public comment on 5 May 2005, with submissions closing on 20 June 2005. At the request of one submitter, Airwork Limited, this date was extended by 10 days to 30 June 2005. Submissions were received from a number of aircraft maintenance

organisations, licensed aircraft engineers (LAME), individual aircraft owners and the Aircraft Owners and Pilots' Association (AOPA). One submission was received from overseas.

Summary of Submissions

The main areas of concern to submitters related to proposed changes to:

- Persons who can perform maintenance.
- Maintenance required under Part 145.
- Duplicate inspections of control systems.
- Certifying the annual review of airworthiness.
- "On-condition" maintenance.
- Use of manufacturer's maintenance schedule.
- Maintenance tests and inspections.
- Inspection planning latitude.
- Part 145 authorisation procedures.

Several submissions simply stated that the changes were opposed without giving any details as to which specific changes, why they were opposed and what could be done to address the submitter's concerns.

Several submissions were received on maintenance rules that were not proposed to be changed in the NPRM. The remaining submissions were on a variety of proposed changes of a more minor nature.

Main areas of concern

The submissions on the main areas of concern to submitters and the changes CAA has made in the final rule to address the submissions are described below:

Persons who can perform maintenance (43.51)

NPRM 05-04 proposed several changes to the Part 43 Appendix A provisions for maintenance that can be performed by pilots. The changes proposed resulted from a review and update of the maintenance tasks that can be undertaken by pilots and from extending the "pilot maintenance" provisions to licensed but non-rated aircraft maintenance engineers ("non-LAME").

Twelve submissions were received on these non-LAME maintenance proposals, only one of which fully supported the changes. Most submitters were opposed to the changes on the basis that they considered only a LAME with appropriate ratings should perform certain tasks, in particular:

- Disturb filters
- Inspect filters for contamination
- Perform work on tyres, brakes and spark plugs
- Change engine oil due to the possibility of the wrong grade of oil being used, certification of oil additives, the need to interfere with cowl bolts, the need to torque sump plugs and oil inspection requirements
- Replace an ELT battery with soldered connections

Also of concern to several submitters was the calibration of tools used such as torque wrenches, the subsequent release-to-service of the aircraft by a LAME following non- LAME maintenance, the auditing of non-LAME maintenance standards and the deferral of inoperative equipment by non-LAME.

One submitter thought there should be no difference between the scope of non-LAME maintenance permitted on a private aircraft to that permitted on an air-transport aircraft.

Conversely some submitters thought the proposals did not go far enough. One submitter believed that re-painting of an aircraft by non-LAME should be permitted. Another considered that non-LAME should be able to replace tyres, replenish hydraulic fluid, remove and

replace igniters, remove and replace spark plugs and replace fuel filters on the basis that these tasks are straightforward. This submitter also wanted to remove the restriction relating to special tooling as he considered it too broad and could exclude some maintenance tasks the aircraft manufacturer may intend non-LAME to be able to do.

A Part 145 certificated maintenance organisation submitted that Appendix A.1 should have an additional item that would permit transit level maintenance up to and including daily checks and correction of minor defects to be performed by a person authorised under rule 145.60. The submitter also sought a corresponding change to 145.60(b) that would permit a LAME who does not hold an appropriate type rating to be authorised by the Part 145 organisation to perform maintenance to this level on the basis of successfully completing a course of training and examination acceptable to the Director. Currently this authorisation requires the person to be issued a certificate of maintenance approval under Part 66 by the CAA which the submitter considered to be administratively clumsy in situations where a number of individual authorisations are required. This submitter also sought relief from the existing "double approval" (aircraft owner and Part 145 organisation approval) required for pilot maintenance on aircraft maintained by a Part 145 certificated organisation.

CAA response

The CAA does not generally support further extension of the NPRM proposals on the scope of maintenance that may be performed by a non-LAME, either on air transport or non air transport aircraft as it believes the proposals were soundly developed by the TSG and represented the consensus on what could be permitted while maintaining appropriate safety standards. The CAA believes most of the concerns expressed by submitters can be addressed by ensuring the training of non-LAME is sufficiently comprehensive. Acceptable training requirements for non-LAME will be detailed in AC43-1B. However in light of the submissions the CAA has decided to make some changes in the final rule.

To address concerns over interference with filters, Appendix A.2 (applicable to aircraft not performing air operations) is changed to delete the cleaning of filters. This will restrict filter changes by non-LAME to disposable cartridge filters only. AC43-1B will cover training

on the inspection of filters for contamination. The training requirements will also address the calibration of tools such as torque wrenches.

The concern over changing engine oil expressed by one submitter will also be addressed in the training requirements.

With regard to deferral of defects the CAA agrees that non-LAME should only be able to defer "O" items and consequently Appendix A.1 has been changed to only permit deferral in accordance with 91.537. This will ensure that non-LAME only defer "O" items as 91.537(a)(3) requires an aircraft to be operated in accordance with all applicable conditions and limitations in its minimum equipment list (MEL), which includes the MEL's explanation of "M" and "O" items and who is able to perform each.

The CAA does not agree that Appendix A.1 should be extended to cover transit level maintenance performed by licensed but non- rated LAME. Appendix A.1 is intended to cover only a very basic level of maintenance and subsequent release-to-service. Instead this submission has been addressed by allowing a limited Part 145 authorisation to be issued under 145.60(b)(6) to a licensed but non-rated LAME enabling these persons to perform transit level maintenance in accordance with 43.51(a)(3) rather than under the provisions of 43.51(b). The subsequent release-to-service is performed under 43.101(a)(3) on the basis of the limited authorisation issued under 145.60(b)(6). The scope of the 145.60(b)(6) authorisation and the training required for issue of the authorisation must be acceptable to the Director.

The "double approval" requirement for pilot maintenance under 43.51(b)(1) of an aircraft maintained by a Part 145 certificated organisation has been removed by deleting the requirement for operator approval of pilots performing the maintenance. Any pilots performing maintenance on an aircraft maintained under a Part 145 certificate will need to be issued an appropriate authorisation by the Part 145 certificate holder.

Maintenance required under Part 145 (43.54)

Five submitters commented that maintenance on all aircraft performing air operations should be performed by a Part 145 certificated

maintenance organisation, irrespective of aircraft maximum certificated takeoff weight or seating capacity.

CAA response

The NPRM did not propose any change to the existing rule permitting aircraft with MCTOW 5,700 kg or less or a maximum certificated seating capacity (excluding any required crew member seat) of less than 10 that are performing air operations to be maintained by persons performing the maintenance under their Part 66 aircraft maintenance engineer licences.

The 1997 CAA investigations into maintenance and airworthiness requirements considered this issue as, due to concerns over maintenance standards on aircraft under 5,700kg MCTOW, consideration was being given at the time to requiring individuals or organisations performing maintenance under Part 66 licences to become certificated under a general aviation certificate equivalent to Part 145. Alternatively, to avoid the need to introduce a new level of maintenance organisation certification, consideration was given to requiring all aircraft performing air operations, irrespective of size of aircraft, to be maintained by a Part 145 certificated organisation.

The CAA considered these options at the time but decided that a better approach was to introduce changes that lifted the standard of "Part 66" maintenance by a combination of:

- *Improvements to annual review of airworthiness (ARA) procedures that would better ensure defects found during ARA's are promptly rectified.*
- *Addressing deficiencies in on-condition maintenance.*
- *Updating and improving maintenance requirements for aircraft not maintained under a programme approved under Part 119 or approved under Part 91.*
- *Reviewing maintenance able to be performed by persons who are not licensed engineers with appropriate ratings.*

- *Introducing duty time limits for engineers performing maintenance under Part 43 similar to those required under Part 145.*

The CAA believes this is an appropriate approach and that the additional level of regulation sought by the submitters cannot be justified at this time.

Duplicate inspections (43.113)

Thirty nine submissions were received in relation to the proposed changes to 43.113 duplicate safety inspections of control systems. The majority of these submissions were opposed to the change that would have required the person performing the first part of the duplicate inspection to be the person who intends to certify the aircraft or component for release-to-service. These submitters pointed out that this would be impractical, especially in a large maintenance organisation, as the person who intends to certify the release-to-service of the aircraft or component will not necessarily be qualified or available to perform the first part of the duplicate inspection of the control system.

A number of submitters were also opposed to the proposed change that would require the person doing the second part of the duplicate inspection to be the holder of an appropriate CAA document. These submitters commented that the existing situation which permits a suitably experienced aircraft tradesman who is not a CAA document holder to perform the second part of a duplicate inspection is much more preferable than allowing, for example, a type rated pilot to perform the inspection simply because he/she is a CAA document holder. Several comments were also received to the effect that the proposed requirement would be very difficult for small maintenance organisations that have only one CAA document holder on their staff.

One submitter commented that it should not be necessary for a pilot to have a type rating on the aircraft he/she is performing the second part of the duplicate inspection on.

Another submitter considered that permitting persons other than skilled, experienced and qualified engineers to perform the second part of the duplicate inspection was going too far and is beyond the original intention of the existing rule which the submitter believes was only to

allow aircraft on remote operations to return to base in the event of unplanned maintenance being required at the remote location.

One submitter considered that traceability of the person doing the second part of the duplicate inspection could be achieved by having them sign the inspection under the authority of the person doing the first part of the inspection.

Two submitters were concerned about the first person nominating the second person for the duplicate inspection – one considered the second inspection could not be regarded as independent if the person doing it was nominated by the first person. The other submitter was opposed to any change that would take away the ability of the first person to nominate the second person.

Another submitter considered that the wording of the inspection requirement at 43.113(a)(2) should be extended to include ensuring that the control systems not only functions correctly but also functions in the correct sense.

Another submitter considered that it should not be necessary to inspect the whole control system if only part of it had been worked on. Another considered that the certification statement at 43.113(c)(3) was too wide and should be reworded to limit it to the area of the work being done which may only involve part of the control system.

Several submitters commented that the details of the duplicate inspection and the certification statement required under 43.113(c) should not have to be entered in each of the maintenance logbook, technical log and worksheets. These submitters considered it should be sufficient to enter the details in one of these places. Another submitter commented that the requirement at 43.113(d) to enter name, signature approval, licence or authorisation number and date literally beside the certification statement may not be possible.

A large Part 145 certificated organisation submitted that its computer generated duplicate inspection certification statement would need to be modified to include the name of the person performing the duplicate inspection. The organisation submitted that compliance with the records requirement of rule 145.63 should provide sufficient traceability for a Part 145 certificated organisation.

CAA response

The CAA agrees that it may be impractical to require the person intending to perform the release-to-service on an aircraft or component to sign the first part of the duplicate inspection. To address this the final rule 43.113(b)(1) is changed to require the first part of the duplicate inspection to be conducted by a person who is ***qualified*** *under Rule 43.101 to certify the release-to-service of the control system, rather than necessarily being the person who* ***actually does*** *the release-to-service.*

With regard to the requirement that the person performing the second part of the duplicate inspection be a CAA document holder, the CAA remains of the view that it is essential to be able to trace the second person's identity in the event an investigation is required. The CAA agrees that experienced aircraft engineers, even if unlicensed, are the ideal persons for performing the inspection. However the CAA also considers that it is straightforward for these persons to obtain a Part 66 Certificate of Maintenance Approval to enable them to perform this inspection if they do not already meet the requirements listed under 43.113(b)(2). For this reason the CAA does not agree that this change will present problems to smaller maintenance organisations. The CAA will simplify the process of obtaining a Part 66 Certificate of Maintenance Approval to cover the second part of duplicate inspections as much as possible and anticipates making the syllabus freely available with the examination administered by a LAME.

The CAA does not agree that a pilot who does not have a type rating on the aircraft on which a duplicate inspection is being performed is suitably qualified to perform the second part of a duplicate inspection. For example it is not appropriate that a fixed wing rated pilot performs a duplicate inspection on a helicopter control system.

The CAA also does not agree that only trained, experienced and qualified engineers should be able to do the second part of the duplicate inspection. The CAA has no particular concern about the standard of the second part of the inspection generally but it does have concerns about the ability to trace the person doing the second part of the inspection should that be necessary. The changes made to the rule are intended to address this concern only.

The final rule makes no change to the ability of the person performing the first part of a duplicate inspection to nominate the person performing the second part. The CAA believes that, while this arrangement may not appear to be truly independent, it reflects the practical situation where the person performing the first part must have confidence in the ability of the person performing the second part of the inspection.

The CAA does not agree that it is sufficient to rely on being able to identify the person doing the second part of a duplicate inspection through the licence or authorisation details of the person performing the first part. The person performing the second part is signing to the effect that he/she has performed the inspection independently of the first person and the CAA believes that this would be negated by relying on the first person to identify the second person should the need arise.

The CAA agrees that it is not necessary to inspect the whole control system if only a part of it has been worked on provided the area of the control system worked on is checked for correct assembly and locking and the whole control system is checked for correct functioning.

*For this reason the release-to-service statement must remain sufficiently broad to ensure the **functioning** of the whole control system is checked while only requiring certification of the duplicate inspection in relation to the work actually performed. Changes have been made in the final rule to reflect the need to check the area worked on for correct assembly and locking and the whole system for correct functioning.*

The CAA agrees that it is not necessary to record details of the maintenance carried each of the maintenance log book, technical log and the worksheets. Accordingly the final rule has been changed to require recording in the maintenance log book and, where applicable, the worksheets used for the job.

The CAA also agrees that it may not be possible to place the details required under 43.113(d) literally beside the certification statement. The final rule changes this to "adjacent to" rather than "beside" the certification statement.

The requirement for the signature of the person performing the duplicate inspection on the certification statement has been deleted for

aircraft that have maintenance logbook or worksheets in an electronic format. This should simplify compliance for Part 145 organisations supporting large air transport aircraft.

Certifying the Annual Review of Airworthiness (43.155)

NPRM 05-04 proposed a major change to annual reviews of airworthiness (ARA) that would make the ARA similar to a car warrant of fitness in that the ARA would not be certified as completed by the inspection authorisation holder (IA) until the ARA requirements were met and defects on the aircraft, other than those permitted under the inoperative equipment provisions of 91.537 or very minor defects, had been rectified. The proposed change would also require the IA to forward the uncompleted ARA report to the Director if the ARA is not completed and certified within 60 days from the date of commencement of the review. Eighteen submissions were received on this proposed change.

One submitter commented that, in relation to 43.155(a)(2), it may not be possible to enter the required details literally beside the ARA certification statement. Two submitters questioned the required form of the report of the completed review specified under 43.155(a)(3) and (4). Two submitters considered that it was an unnecessary waste of time to send a report on the completed ARA to CAA, as required under 43.155(a)(4), unless the ARA reveals something amiss with the aircraft. One submitter considered that the ARA report is the property of the aircraft owner and the CAA should be required to request and pay for a copy.

Three submitters commented against the proposed 43.155(a)(5) that would require a report on an ARA that remains uncompleted after 60 days from the date of commencement of the review be sent to the CAA. Five submitters were opposed to the proposed change at 43.155(b) that would only allow an ARA to be certified as complete when any defects found had been rectified and the aircraft released-to-service. These submitters expressed concern that these changes would:

- Require the IA to chase up the aircraft owner to complete the ARA, a burden that the IA would not be compensated for.

- Move the ARA away from being a "snapshot" of the airworthiness status of the aircraft to being an ongoing process, possibly spread over several months, with implications for the responsibility of the IA to discover any new defects that may have occurred between the commencement of the ARA review and the final completion date.

- Increase the cost of performing ARA's on an aircraft away from its base if the aircraft has to be returned for a subsequent re-inspection.

- Prevent the aircraft owner from taking the aircraft to another maintenance organisation for rectification of any defects found during the ARA as that organisation would have to do the complete ARA again.

- Result in the CAA not learning about defects arising out of an ARA until up to 60 days after the review was commenced.

- Result in operators not paying for ARAs until certified as complete thereby imposing a financial burden on the IA.

CAA response

The CAA agrees that it may not be practical to enter the required certification details literally beside the ARA certification statement. Consequently the final rule has been changed to require the details to be placed "adjacent to" the statement.

The form of the report required under 43.155(a)(4) is simply the ARA form itself. There is no requirement for the IA to generate any other report.

As explained in the preamble to the NPRM, the CAA requires a copy of the ARA report for each ARA performed as this will provide the CAA with a complete history of ARAs conducted on an aircraft. The CAA does not agree that this report is the sole property of the aircraft owner any more than the report of a motor vehicle's warrant of fitness is the sole property of the vehicle owner. Having access to a complete history of ARA reports across all the affected aircraft on the register provides a very valuable source of data to the CAA on aircraft condition and

compliance with airworthiness standards. For these reasons there is no change in the final rule from the NPRM in relation to the requirement for the IA to send details of ARAs completed to the CAA.

The CAA does not agree that the requirement for defects to be cleared before the ARA is certified as completed will place a burden on the IA. Motor vehicle testing authorities do not chase vehicle owners to correct any defects found during a warrant of fitness inspection, nor do they re-inspect the complete vehicle for any new defects when it is presented for rechecking of previously found defects provided the re-inspection is performed within 28 days of the original inspection. CAA's purpose in making this change is to ensure aircraft owners take responsibility for getting defects rectified, not the IA.

The CAA anticipates that some defects found during an ARA will be able to be cleared without the IA necessarily having to re-inspect the defective item, for example by the LAME correcting a defect faxing a copy of the technical log or logbook entry to the IA. This will mean the aircraft owner is not necessarily restricted to having the IA repair any defects found.

The CAA also believes that the objective of the ARA is more than just presenting a "snapshot" of an aircraft's airworthiness status at a point in time. The objective is to ensure that aircraft are maintained in an airworthy conditions with defects rectified as quickly as possible. CAA has seen cases of aircraft presented at ARA's year after year with the same defects with little effort on the owner's part to actually improve the airworthiness of the aircraft. The changes will ensure that this practice ceases.

The CAA notes the concern expressed by some submitters in relation to new defects that may occur between the initial ARA inspection and the completion of the ARA. The CAA will not hold the IA's responsible for finding any new defects and only requires any ARA inspection subsequent to the initial inspection to involve confirming defects found at the initial inspection are cleared. However to mitigate any concerns IA's may have in this regard the final rule has reduced the "grace period" within which defects must be rectified from 60 days of the initial inspection to 30 days. After 30 days the ARA must be performed again in full. This is again analogous to a car warrant of fitness. This

change has been made in the final rule by adding the 30-day requirement into 43.153(a).

The CAA has decided to delete the proposed requirement under NPRM 43.155(a)(3) that would have required a report of the completed review to be sent to the holder of the aircraft's certificate of registration as this is an administrative matter between the registration certificate holder and the IA.

The CAA agrees that the delay time in obtaining information of "failed" ARA's due to the 60 day period (NPRM 43.155(a)(5)) prior to reports on uncompleted ARA's being forwarded to the CAA is too long. Accordingly the 60 day period is reduced to the 30 days period provided under 43.153(a) to complete the ARA plus a seven day period in 43.155(a)(4)(ii) to forward a" failed" report to the Director.

The concern that some submitters had on operators not paying for ARA's until completed is a matter which IA's need to address through their payment arrangements with their clients. It does not seem unreasonable to require payment of a standard ARA inspection fee in advance, again consistent with a warrant of fitness inspection.

NRPM 05-04 at 91.615(c) proposed permitting ARAs to be completed up to 30 days early to provide planning flexibility. To be consistent with the10% inspection planning latitude rule change in 91.611, this has been changed in the final rule to permit an aircraft to be operated for up to 36 days beyond the due date of the ARA provided this is recorded in the aircraft's technical log.

The final rule has also been changed to remove the proposed limit of 30 days past the ARA due date for an aircraft to be operated for the sole purpose of obtaining an ARA. This rule, relocated to 91.615(c)(2) has no time limit.

On-condition maintenance (91.603)

General comments

A total of 48 submissions were received on these changes, primarily relating to the changes in rule 91.603 (d) to (g). The great majority of submissions expressed opposition to what has been perceived as an "across the board" proposal in the NPRM to withdraw the existing *on-*

condition maintenance arrangements for piston engines, propellers and components. For aircraft conducting air operations these arrangements currently regulate the operation of engines, propellers and components beyond the manufacturers' recommended time between overhaul (TBO) by way of TBO escalation procedures that must be contained in a maintenance programme that is approved under Part 119. However for private or "hire and reward" aircraft operated under the generic maintenance provisions of Part 91 there are no specific *on-condition* maintenance requirements although TBO escalation procedures acceptable to the Director are contained in AC43-04 and AC43-05A.

In particular a number of private operators (operators of aircraft not used for hire or reward) expressed concern that under the proposed change they would not be able to operate their aircrafts' piston engines *on-condition* with a resulting increase in operating costs.

CAA response

The NPRM did not propose an "across the board" withdrawal of on-condition maintenance arrangements and in particular did not propose to withdraw on-condition arrangements for piston engines fitted to private aircraft.

In relation to private operations of aircraft, the NPRM proposed a specific requirement for engines maintained on-condition to comply with TBO escalation procedures that are acceptable to the Director. The purpose of this proposal was to ensure that engines operated on-condition were adequately monitored and not operated on a "fit and forget" basis. A TBO escalation programme that is acceptable to the Director is defined in AC43-5A, issued in March 1999. As part of this rule package this AC has been revised and reissued as AC43-5B.

The NPRM also did not propose withdrawing the ability for operators of aircraft used for hire and reward to maintain their piston engines on-condition. However it did propose that those operators will be required to have the TBO escalation programme for the engine approved under (new) rule 91.607. Having a programme approved under 91.607 enables the CAA to ensure that adequate procedures for inspection, testing and rebuild are in place to give confidence that TBO escalation can safely be achieved. A number of "hire and reward" operators such as the larger flying schools have already developed programmes that

represent the level of good practice the CAA requires for this type of operation. The significant change is the requirement for TBO escalation to be detailed in a maintenance programme approved under 91.607. This means "hire and reward" operators wishing to maintain engines or components fitted to their aircraft on-condition will have to have the maintenance programme for the whole aircraft approved under 91.607. This can be a simple process that incorporates the generic maintenance programme (to be permitted under the final rule), or the manufacturer's maintenance schedule, and appropriate TBO escalation procedures into a 91.607 maintenance programme. Alternatively an operator can submit a complete customised maintenance programme for the aircraft, including TBO escalation procedures for approval under 91.607.

In relation to propellers the NPRM proposed to allow escalation of manufacturer's recommended calendar TBO on-condition, but not beyond the manufacturer's operating hours TBO, provided the propeller is inspected at 5 yearly intervals in accordance with procedures that are acceptable to the Director. This proposal applied to both private and hire and reward operations. The acceptable procedures for inspection, which have been in AC43-5A since 1999, have been revised and re-issued in AC43-5B. These revised procedures should not present any difficulties to operators that have been following the procedures contained in AC43-5A.

Specific comments

Specific comments received by the CAA on the *on-conditions* changes include:

No evidence of any need for change

A number of submitters queried the need for any change to *on-condition* requirements, citing a lack of evidence of any safety issue arising from the current rule requirements.

CAA response

As described above there is no change to on-condition requirements for piston engines and propellers fitted to aircraft used for private operations, or to propellers fitted to aircraft used for hire and reward operations, other than to follow TBO escalation procedures that have been in place since 1999. The CAA considers there is considerable

evidence of the "fit and forget" philosophy some operators apply to on-condition operation. Some of this was apparent in the submissions received, several submitters appearing to believe as long as an engine continued to operate then it must be in an acceptable condition. The proposed changes will ensure an acceptable standard is applied to on-condition operation without penalising operators who have followed the existing AC requirements.

Out of line with other authorities

Several submitters maintained that the proposed changes to *on-condition* operation are out of line with other authorities, especially Transport Canada.

CAA response

The Transport Canada requirements for on-condition operation and maintenance schedules for small aircraft are quite similar to those proposed in NPRM 05-04. Canadian Aviation Regulations at 605.86 require aircraft used for flight training or "aerial work" to have their maintenance schedules approved. Transport Canada Airworthiness Notice B041 dated 31 March 2005, which deals at length with piston engine on-condition maintenance, requires aircraft used on air operations and for flight training to conform to specific on-condition maintenance programme requirements that must be contained in an amendment to their approved maintenance schedules.

Currently the Australian requirements for on-condition maintenance of piston engines are contained in Civil Aviation Safety Authority of Australia (CASA) Airworthiness Directive AD/ENG/4 amendment 9 dated January 2004. This AD permits on-condition maintenance, in accordance with procedures specified in the AD, of piston engines fitted to aircraft performing private and aerial work operations. It does not permit on-condition maintenance for piston engines fitted to aircraft performing charter operations.

CASA is currently revising its rules in relation to aircraft maintenance. Proposed rule change (NPRM0407) at rule 91.1985 would require aeroplane engines operated beyond manufacturers TBO to be maintained in accordance with an engine on-condition performance

checking programme as described in CASA airworthiness directives AD/ENG/4 and AD/ENG/5.

Under proposed CASA rules, helicopters will have to be maintained in accordance with the manufacturer's approved maintenance programme, or an alternative CASA approved programme. This effectively requires adherence to manufacturer's recommended TBO on components such as transmissions unless a suitable TBO escalation programme is in place. The proposed New Zealand rule permits operation of components beyond manufacturer's recommended TBO provided appropriate procedures are contained in the maintenance programme approved under Part 119 or approved under (new) rule 91.607, which is consistent with the CASA proposal.

After reviewing these Canadian and Australian requirements CAA remains of the view that there is no substantial difference between them and the proposed New Zealand piston engine on-condition maintenance requirements.

Differences for hire or reward

One submitter commented that there should not be any difference for engine *on-condition* maintenance requirements between aircraft used for hire or reward and those used for private operations. Another submitter considered that there should be a limit to the amount of TBO escalation permitted for aircraft used for hire or reward.

CAA response

The CAA has taken the position consistent with that of Transport Canada that, because of the greater level of public risk involved, hire or reward operations require a greater level of control of on-condition maintenance than is possible using the generic TBO escalation procedures contained in AC45-5 revision 2. This will be achieved by requiring an aircraft used for hire or reward operations that has its engines maintained on-condition to be maintained in accordance with a maintenance programme approved under Part 119 or approved under rule 91.607. In neither case is on-condition maintenance precluded.

AC91-xx, which replaces AC90-1, contains a template for developing a maintenance programme for approval under 91.607. The corresponding TBO escalation procedures are contained in AC43-5B.

Publication of advisory circular

Several submitters commented that the AC containing *on-condition* procedures acceptable to the Director (AC43-5) should have been issued before the NPRM.

CAA response

Acceptable procedures for on-condition maintenance have been available in AC's 43-4 and 43-5A since March 1997. These AC's have been revised, updated and merged into one document.

Compliance with manufacturer's recommendations

One submitter commented that manufacturer's recommendations should apply to all maintenance. Another submitter considered that manufacturer's recommendations, at least in the USA, were driven by product liability risk rather than engineering analysis and service experience.

CAA response

The CAA considers that some controlled variation from manufacturer's maintenance recommendations is possible where the level of public risk is low, such as in private aircraft operations. However any extension of manufacturer's recommended TBO must be based on an appropriate monitoring programme designed to detect early signs of failure. For piston engines the signs of failure are well known and understood and appropriate parameters can be monitored. This is not necessarily true of other components such as helicopter transmissions. For this reason, and consistent with other major authorities, the CAA has taken a flexible approach to conformance with manufacturer's recommendations by ensuring any TBO escalation permitted is adequately controlled.

Operation of propellers beyond manufacturer's TBO

One private aircraft operator submitted that he did not agree with the removal of the ability of propellers to be operated beyond the manufacturer's calendar TBO. Another submitter questioned if the 5-yearly propeller inspections specified in NPRM 91.603(e) applied to variable pitch propellers. This submitter proposed that all fixed pitch propellers be required to have a 12 year maximum TBO as he contended there were propellers that had been in service for 20 years without ever having been overhauled or checked for dimensional accuracy. The submitter also commented that the existing AC lacked specific return to service data.

CAA response

The NPRM did not propose to remove the ability to operate propellers fitted to aircraft conducting private operations to operate beyond the manufacturer's calendar TBO. NPRM Rule 91.603(e) (91.603(f) in the final rule) specifically allows this for private and also for hire and reward operations provided the propeller is inspected every 5 years in accordance with methods that are acceptable to the Director. Methods acceptable to the Director are published in AC43-5A, have been revised and reissued in AC43-5B.

The requirement to inspect propellers at least every 5 years applies to fixed and variable pitch propellers. The revised AC43-5B contains appropriate return to service procedures.

Effect on general aviation

A number of submitters stated the view that the proposed changes to on-condition maintenance would add an unsustainable cost burden to general aviation and even result in the closing down of a number of GA operations throughout the country.

CAA response

The CAA does not accept this as there is no intention to remove the ability to maintain engines, propellers or components on-condition so long as there is an appropriate basis for TBO escalation. What will be required for "hire or reward" operators under the final rule (consistent

with the NPRM) is proper documentation of and adherence to engine and component TBO escalation procedures contained in a maintenance programme approved under 91.607. TBO escalation of propellers fitted to "hire and reward" aircraft will be permitted in accordance with the acceptable procedures specified in AC43-5B.

Several hire or reward operators already have established TBO escalation programmes and the CAA expects to be able to approve these with little or no change. Private operators that have been adhering to AC43-4 and 43-5A TBO escalation procedures will not be significantly affected by the changes. The CAA agrees that there may be a cost burden on those operators who have been following the "fit and forget" practices AC43-4 specifically warns against but remains of the view that on-condition maintenance must be supported by adequate TBO escalation procedures.

Lack of consultation

Several submitters maintained that there had been a lack of consultation on the proposed changes to on-condition requirements. One submitter questioned why the Stobba report had not been made public.

CAA response

The draft NPRM was circulated to key industry players for review in December 2003. As indicated the changes for private operators who have been following good on-condition practices (as specified in AC43-5A) are relatively minor.

The Stobba report is part of the public docket for NPRM 05-4 and has been available on the docket for public perusal since the NPRM was issued in May 2005.

Lack of safety or risk analysis

Several submitters commented that the proposed changes to on-condition maintenance requirements should have been based on a safety and/or risk analysis made available for industry review.

CAA response

The changes are primarily to ensure that operators utilising on-condition maintenance have appropriate TBO escalation procedures in place and to prevent on-condition maintenance being used in situations where there is no effective way of monitoring component health. As the changes are consistent with those of major overseas authorities such as Canada and Australia the CAA does not believe a risk or safety analysis is needed.

On condition *maintenance – final rule*

For the reasons explained in the CAA responses above, the CAA has not made any significant changes to the NPRM *on condition* maintenance proposals in the final rule.

Use of manufacturer's maintenance schedule (91.605)

The CAA proposed in NPRM05-04 to introduce a new rule 91.605(a) that would replace the generic Part 43 Appendix C 100 hour/annual maintenance inspection system, applicable to most light aircraft, with maintenance inspections performed in accordance with the aircraft manufacturer's maintenance schedule. A total of 34 submissions were received on 91.605(a) and the proposed removal of Part 43 Appendix C, all against the proposals. The followings reasons for opposing the proposed changes were given by submitters:

- Lack of consultation.
- The change will result in increased maintenance cost with no corresponding safety benefit.
- The change takes discretion away from the LAME maintaining an aircraft by requiring mandatory replacement of items such as seat belts and control cables at manufacturer's recommended intervals.
- Manufacturers are not generally the best judges of the maintenance requirements of their products. Usually maintenance providers are more attuned to the maintenance requirements.

One submitter commented that the CAA should reinstate the four yearly inspection requirement to remove and inspect all flight control cables and calibrate all flight and engine instruments due to the increasing age of the New Zealand aircraft fleet.

CAA response

The rule change would not actually remove the ability to maintain an aircraft on the generic 100hr/annual check system contained in Part 43 Appendix C. Under the proposal use of the Appendix C programme would still be permitted but it would have to be approved for an individual aircraft under 91.607. However in light of submissions received the CAA has decided to retain the option of maintaining piston powered aircraft of MCTOW 2730 kg or less, other than excluded under 91.605(b) and (c), in accordance with a maintenance programme that is acceptable to the Director i.e. a generic programme. This programme is contained in the newly released AC43-15 for light aircraft and AC43-16 for helicopters, rather than as an appendix to Part 43.

AC43-15 and AC43-16 are based on the corresponding UK CAA requirements which are valid for aircraft of 2730 kg MCTOW or less.

This change to the final rule will provide four different maintenance options for an aircraft i.e.: maintenance in accordance with:

- *A maintenance programme approved under Part 119; or (other than for aircraft conducting air operations under Part 119)*
- *A maintenance programme approved under 91.607; or*
- *The aircraft manufacturer's maintenance schedule; or*
- *A generic programme acceptable to the Director such as that contained in AC43-15 or AC43-16.*

The CAA believes that this gives maximum flexibility to aircraft operators to utilise a programme that best suits their requirements while ensuring adequate maintenance standards are in place.

With regard to the submitter's suggestion of 4 yearly checks on control cables and instruments and calibration of all flight and engine

instruments, the CAA does not believe it is appropriate to include such a requirement in the final rule. This change was not proposed in NPRM 05-04 and would require further consultation.

Maintenance tests and inspections (91.605(e))

A number of submissions were received in relation to proposed changes at 91.605(e) to periodic tests and inspections required on aircraft that are not operating under a maintenance programme approved under Part 119 or approved under 91.607.

These changes relate to tests and inspection on radio stations, automatic pressure altitude reporting systems, first aid kits and other emergency equipment. In addition changes were proposed that would require periodic compass calibration and aircraft reweighing and introduce a requirement for carbon monoxide detecting systems. The submissions received on specific areas of 91.605(e) and the CAA responses are given below.

Radio station tests and inspections (91.605(e)(1))

The change proposed in NPRM05-04 at 91.605(e)(1) would require all aircraft radios that are required to be fitted under Part 91 Subpart F (specifically 91.513) to be tested and inspected every 24 months, irrespective of whether the aircraft concerned operates under IFR or VFR only. Currently this requirement only applies to IFR aircraft.

Four submissions were received on this proposal, three opposed to the proposed change and one in support but only if the change applies to all aircraft. One submitter commented that a radio is tested every time the pilot uses it and further tests are not necessary. Two commented that the proposal was unreasonable as radio station tests and inspections are not applicable to microlight aircraft and, if the tests and inspections are to be extended to VFR aircraft, then microlights should also be included. One also commented that modern radios conform to US FAA Technical Standard Order (TSO) requirements and are very reliable. This submitter also commented that it can be very difficult to locate a radio engineer to perform the tests and inspections and suggested that a radio antennae test and inspection, similar to that required for emergency locator transmitters (ELT) should suffice.

The submitter in partial support commented that **any** radio required to be fitted should have to be periodically tested and inspected but the proposal did not achieve this as microlight aircraft are excluded.

CAA response

The CAA did not include microlight aircraft from the requirement for periodic testing and inspection of any radios required to be fitted under Part 91 Subpart F in order to minimise the regulatory compliance burden on microlight aircraft operators.

The CAA does now accept that microlight aircraft using the types of controlled airspace that require radio equipment for communication with ATS (as prescribed in 91.513) should be required to comply with the same communications standards as other VFR aircraft. However as NPRM05-04 did not include microlights in the proposed radio test requirement, changing the rule now to include microlights would not meet the consultation requirements for rule making under the Civil Aviation Act. For this reason the CAA has deleted the proposed requirement for radios fitted to VFR aircraft to be tested and inspected from the final rule until corresponding changes can be made for microlight aircraft.

Altimeter and automatic pressure altitude reporting system tests and inspections (91.605(e)(2))

NPRM 05-04 proposed a rewording of 91.601(b) clarifying that microlight aircraft that are required under Part 91 Subpart F to have a transponder fitted must have that transponder and its associated altimeter and automatic pressure altitude reporting system tested and inspected in accordance with 91.605(e)(2).

One detailed submission was received in support of this clarification but also commenting that the altimeter pressure altitude reporting system test and inspection requirements, as prescribed in Part 43 Appendix D, are only appropriate for sensitive altimeters that are required to be fitted to aircraft operating under IFR. The submitter suggested that 91.605(e)(2) be rewritten such that the altimeter test only applied to sensitive altimeters and the automatic pressure altitude reporting system test and inspection requirement, currently in 91.605(e)(2) be moved to 91.605(e)(3) which deals with SSR transponder tests and inspections.

The submitter is of the view that the altimeter test calibration standard prescribed in Part 43 Appendix D was derived from the US FAR 91.411 requirement, which is only applicable to sensitive altimeters fitted to IFR aircraft or VFR aircraft operating in controlled airspace, but was mistakenly applied in New Zealand rules to all altimeters required to be fitted under Part 91 subpart F.

CAA response

In light of the submissions received the CAA has done further research which supports the view that the altimeter tests specified in Part 43 Appendix D are intended to be applicable to sensitive altimeters only. That said, the CAA has been unable at this time to determine an appropriate calibration standard for testing non-sensitive altimeters, including the very basic units fitted to some microlight aircraft. The issue is complicated by the lack of a rule requirement for altimeters fitted to microlight aircraft to be periodically tested and calibrated, even if the microlight is used in controlled airspace or mandatory broadcast zones where other aircraft are reliant on the accuracy of altitude reporting of all aircraft using the airspace.

The CAA considers that this issue requires more research and therefore does not propose introducing in this final rule another altimeter calibration standard applicable to non-precision altimeters. The CAA understands relatively few light aircraft issued with an airworthiness certificate remain with non-sensitive altimeters fitted and those that do, and have a difficulty meeting the calibration standard of Part 43 appendix D, are best handled by way of exemption from this standard.

The existing altimeter test and inspection procedure detailed in Part 43 Appendix D will therefore remain applicable to aircraft issued with an airworthiness certificate and maintained on a manufacturer's schedule or a generic maintenance programme accepted by the Director irrespective of the type of altimeter fitted. As microlight aircraft are not type certificated and therefore do not require an altimeter to be fitted under Part 91 Subpart F they will, except as noted below in relation to transponders, remain at this time free from the requirement for periodic altimeter tests and inspections.

The NPRM proposal that ***all aircraft*** *that are equipped with a transponder under Part 91 subpart F (in order to operate in*

transponder mandatory airspace) will be required to comply with the static system, altimeter and automatic pressure altitude reporting system requirements of 91.605(e)(2) and Part 43 Appendix D will remain. This includes any microlight aircraft that are required to be fitted with transponders in order to operate in transponder mandatory airspace. The CAA considers this requirement to be essential to retain the safety benefit obtained from automatic altitude reporting in transponder mandatory airspace.

Periodic reweighing (91.605(e)(10))

The NPRM proposed a change that would require all aircraft with a certificated seating capacity of four or more seats being maintained on a manufacturer's maintenance schedule to be reweighed at least every 5 years. Five submissions in opposition were received on this proposal and none in support. The submitters did not see any benefit in the proposal. One also stated that it would make it difficult to get a 100 hour inspection done in a day. Another considered that the IA performing an ARA is best placed to determine if a reweigh should be done. One submitter suggested that the weighing period requirement currently in AC43-2 should be made into a rule.

CAA response

The CAA does not believe it is appropriate for light aircraft maintained on a manufacturer's schedule or on a generic maintenance programme to be able to be operated indefinitely without any need for periodic re-weighing as this is inconsistent with ICAO standards and recommended practices. The CAA has already mitigated the requirement by proposing that it only applied to aircraft with four or more seats. The CAA does not consider the requirement to be as onerous as submitters suggest. The proposal of several submitters that the existing AC43-2 be included in the rule does not address the ICAO compliance issue as AC43-2 itself does not contain any requirement for periodic re-weighing. Similarly the suggestion that the requirement for re-weighing be left to the discretion of the IA performing an ARA does not necessarily ensure an aircraft will be re-weighed periodically during its life.

For these reasons the final rule retains the requirement for periodic re-weigh of aircraft with four or more seats. However to further lessen the

impact on aircraft operators the periodic re-weighing interval has been increased from 5 years to 10 years. The requirement to account for weight and balance changes between periodic re-weighings due, for example, to modifications embodied on the aircraft remains under 91.605(e)(9).

Inspection planning latitudes (91.611)

NPRM 05-04 at 91.611 proposed to permit inspection intervals to be extended by up to 10% to provide latitude in maintenance planning. Six submissions were received on this proposal. Two submitters commented that an inspection should be able to be done early without losing the unused period. One submitter questioned whether it was intended that the 10% latitude be applied to any inspection interval or only to a 100 hour inspection. Another submitter considered that the proposed wording of 91.611(b)(1) needs to be changed to make it clear that the new extended date for the inspection applies to inspection hours as well as to fixed dates. One submitter questioned whether the use of the words "interval" and "period" meant different things and one expressed concern that the proposal might create a "carte blanche" situation where inspection intervals are cumulatively extended by 10%. This submitter also considered that the proposed planning latitude should be used in exceptional circumstances only, that the provisions should exclude hard-time and finite live component inspection intervals and that the maintenance programme should contain appropriate extension procedures.

CAA response

The CAA is concerned that, if an inspection is performed early on one occasion and a credit is permitted for the unused period, then the extension provisions could subsequently be used to extend the next inspection, resulting in a period between inspections of up to 20% more than the nominal maximum period. The CAA does not believe this is appropriate and for that reason no change has been made to the final rule to provide credit for checks performed early.

The 10% latitude is intended to apply to all check periods, for example 5 hours on a 50 hour inspection interval and 10 hours on a 100 hour interval. This is reflected in the NPRM wording and no change has been made in the final rule in this regard.

The CAA agrees that the wording of 91.611(b)(1) needs to cover periods in hours or cycles as well as dates and the final rule has been reworded accordingly.

The CAA also agrees that the mix of terms "interval" and "period" may cause confusion and the final rule is changed to refer to "interval".

The CAA does not agree that the planning latitude should only be used in exceptional circumstances or that a "carte blanche" situation where the use of the latitude is abused will occur. Similar planning latitude provisions apply to many air transport operator maintenance programmes approved under Part 119 and these operate satisfactorily. Also the CAA believes the wording of 91.611 will prevent the cumulative application of the 10% latitude so that, in a sequence of inspections, any inspection will occur no later than 10% beyond when it would have been due without the latitude provision.

Part 145

Part 145 authorisation procedures (145.60)

Submissions were received from two large Part 145 certificated maintenance organisations regarding authorisation procedures. These submissions primarily related to providing alternative qualifications for persons authorised to perform release-to-service and the existing requirement for a person performing the release-to-service of a component involving welding or non-destructive testing to have qualifications in those specialist areas. The specific comments and CAA responses are detailed below.

Alternative qualification for issue of authorisation for release-to-service

NPRM 05-04 proposed a change to 145.60(b) that would allow a Certificate of Maintenance Approval (CMA), issued by the CAA under Part 66, as an alternative qualification for the issue of a release-to-service authorisation by a Part 145 certificated organisation. This change was proposed to facilitate the introduction of new aircraft by an airline where the maintenance personnel are experienced LAME but

with insufficient experience on the new aircraft type to be issued a rating.

One submitter, a Part 145 organisation supporting international airline operations, requested a further change that would permit the issue of an authorisation based on an alternative qualification to a Part 66 CMA for LAME that do not have appropriate ratings but who have completed a training course acceptable to the Director, equivalent to the Part 66 CMA standard. The submitter envisaged this would be a less clumsy arrangement than the issue of CMA to facilitate the introduction of new aircraft types where a large number of individual CMA may be required.

The submitter also proposed that this arrangement would cover the release-to-service after line maintenance of aircraft at outstations, including overseas, where contract engineering staff are used that may not have the appropriate ratings. This would be an ongoing situation needing to accommodate staff turnover. The CMA process was also seen as being a clumsy way of meeting this requirement.

The submitter proposed that qualification standards would be maintained through the requirement that the training course be acceptable to the Director and of an equivalent standard to that required for the issue of a Part 66 CMA. The submitter also proposed that the training course would be appropriate to the scope of the limited authorisation to be issued.

CAA response

The CAA accepts the submitter's comment that a Part 145 certificated organisation ought to be able to issue limited authorisations based on acceptable standards rather than having to apply to the CAA for a CMA for each person it wishes to authorise to perform release-to-service. To achieve this rule 145.60(b) has been extended to permit a Part 145 certificated organisation to issue a limited authorisation for release-to-service to a person who holds a current and appropriate Part 66 licence, but without an appropriate rating, provided that person has training and experience acceptable to the Director. This authorisation will be for limited maintenance activities only and must be acceptable to the Director. The option of a certificate of maintenance approval under Part 66 as a basis for issue of an authorisation to perform release-to-service as proposed in the NPRM is retained.

Release-to-services of components where welding and non-destructive testing are involved

The submitter, a large engine repair organisation, expressed concern at the existing requirements at 145.60(c)(4) and (5) that a person certifying release-to-service of a component where non-destructive test (NDT) or welding was performed must have specialist qualifications in those areas. The submitter considered that this approach reflected a dated "inspection philosophy" rather than the more modern approach, as adopted by the European Aviation Safety Authority (EASA), of focusing on the qualifications and competencies of personnel performing the process. The submitter also pointed out that its production involves a number of specialist processes of which welding and NDT are only two, yet persons performing release-to-service of components do not require qualifications in these other specialist areas.

The submitter also pointed out that the CBIP examination specified in 145.60(c)(4) is no longer appropriate as CBIP does not monitor or provide continuity assessment of NDT personnel and for this reason the submitter's organisation certificates its NDT personnel to what it considers to be an appropriate international standard. The submitter commented that the development of a suitable New Zealand competency standard for NDT personnel is currently under way with the assistance of the aviation industry and this should be reflected in the final rule.

CAA response

The CAA agrees that it is not practical to require persons performing release-to-service of a component or product to have all the individual qualifications and skills required for all processes involved in maintenance and that it is inappropriate to have a rule that singles out two specialist skills necessary to performance release-to-service where particular processes are involved. CAA also acknowledges the work underway to develop competency standards for persons performing specialist processes such as NDT.

Accordingly the CAA has decided to remove the existing requirements at 145.60(c)(4) and (5) for specialist qualifications in NDT and welding for issuing authorisations to perform release-to-service where those processes are involved.

Other areas of concern

Many submissions were received on aspects of the proposed rules that were of a more specific nature. These submissions and the CAA responses are detailed below by rule part number.

Part 1

Submissions were received on the following:

- A definition for hire or reward should be included.
- The definition of component should be changed to exclude complete aircraft and engines.
- The definitions of an ICAO Contracting State and the State of Design should be extended to include the European Aviation Safety Authority (EASA)
- A definition of technical log should be included.
- The definition of airworthy condition should be extended to include products and components.
- There should not be a requirement to use the CAA logbook. There should be the option of using alternative logbooks.

CAA response

The concept of "hire or reward" is well established in transport industry case law and for this reason the CAA does not consider it necessary to include a definition in Part 1.

The CAA agrees that changing the definition of component to exclude products may be logical. However the definition of component was not proposed to be changed in NPRM05-04 and the implications of the change on other CAA rules may be greater than it appears, requiring wider consultation. For this reason the CAA has not changed the definition of component in the final rule.

The CAA agrees the definition of ICAO Contracting State needs to be extended to cover EASA which is now assuming the role of a single

aviation authority for European Union states. The definition has been changed to include an organisation established by a group of States that are signatories to the Convention to issue aviation related documents and authorisations on behalf of those States.

The CAA agrees with the submission that State of Design be extended to include the EU states as a single entity. This is necessary in relation to changes to Part 39-Airworthiness Directives (NPRM 05-05) where the EU now issues airworthiness directives on behalf of EU members states. To accommodate the EU/EASA situation, and possible future similar arrangements affecting other states, the definition of State of Design in the final rule has been extended to include groups of states.

Part 43

Submissions were received on the following:

- The comment period was too short. One submitter considered that the comment period should be extended until after AC43-5B is available. Another considered the period should be extended by another 56 days.

- Holders of Australian aircraft maintenance engineer licences should be required to pass an examination in New Zealand air law before being able to register in New Zealand under the Trans-Tasman Mutual Recognition Act (TTMRA).

- Several submissions were received on proposed changes to rule 43.53, performance of maintenance. One submitter considered that 43.53(3)(i) could be improved by adding the word "current" to instructions for continued air worthiness, to ensure only the most up-to-date methods, techniques and practices are used when performing maintenance. Another submitter was opposed to the deletion of the reference in 43.53(3)(i) to the current manufacturer's maintenance manual and consequent reliance on the methods, techniques and practices prescribed in the instructions for continued airworthiness. Another submitter questioned whether there was a difference between "test equipment" and "test apparatus" in rules 43.53(5) and (6).

- Several submissions were received on the proposed changes to 43.69 maintenance records. Two submissions were supportive of the changes on the basis that the changes should lead to an improvement in standards of recording maintenance performed. Two submissions questioned whether it was intended that all maintenance performed and the results of scheduled inspections be recorded in the technical log. The submitters commented that there was insufficient room on the technical log to record all maintenance there. One submitter commented that the proposed requirement in 43.69(c)(3) to forward written details of maintenance to a place where the logbooks are held, other than by carriage on the aircraft on which the maintenance was performed, is an over-reaction to one incident where records were lost along with the aircraft. The submitter further commented that this requirement would impose considerable inconvenience for some types of operation e.g. operation at remote bases.

- The proposed requirement at 43.103(a)(4)(i) and (c) to record operational flight checks in the aircraft log book. One submitter on this proposed rule considered that entry in the technical log should be sufficient.

- The proposed wording of the release-to-service statement in 43.105(a)(1) in relation to the work being carried out in accordance with the requirements of Part 43. One submitter considered this wording was inappropriate when performing work for overseas clients under the jurisdiction of another civil aviation authority. Another submitter considered that the holder of a Part 145 release-to-service authorisation should only have to be familiar with the applicable Part 145 procedures and not necessarily be familiar with Part 43 requirements.

- The option at 43.105(b)(ii) to use a New Zealand CAA Form 2 for releasing a component to service for use in New Zealand. The submitter considered that an equivalent non-CAA Form 2 label should be able to be used.

- The proposed change at 43.107 to require inoperative equipment to be listed in the appropriate maintenance logbook.

- The proposed changes to engine performance checks (43.115). One submitter considered that the reference RPM should be re-established after a propeller change. Another submitter considered that the person performing the release-to-service after an engine performance check should only have to ensure the details of the check are recorded. As written the submitter considered the NPRM required the person performing the release-to-service to record the details of the check him/herself, which may be impractical. Another submitter considered the recording of the check details should only be required in the logbook, worksheets or technical log, not all three as proposed in the NPRM. Two submitters considered that 43.115(c) should be deleted because it excludes aircraft on a maintenance programme approved under 91.607 or approved under Part 119 from the 43.115 engine performance check requirements.

- One submitter commented on the ARA requirements at 43.153(a)(3)(i) to the effect that it should not be necessary for the person performing the ARA to record the time-in-service (TIS) recorder reading in the aircraft logbook and instead it should be recorded on the ARA inspection sheet. Another submitter considered the ARA should include a check that the aircraft logbook and technical log clearly state the suitability of the aircraft for day or night VFR or IFR operations.

- One submitter commented that the qualifications for persons able to certify conformity following a major modification or repair to an aircraft under 43.203(a) should be extended to include persons authorised by any repair station certificated by an ICAO contracting state.

CAA response

The CAA considers that the comment period for the NPRM was adequate, especially considering the amount of informal consultation that occurred during the development of the NPRM.

In relation to the requirements for holders of Australian aircraft maintenance engineer licences (AMEL) to register in New Zealand under the TTMRA, the CAA agrees that there is a disparity between the CASA requirement for the holder of a New Zealand AMEL to pass an Australian aviation law examination to register in Australia and the lack of a corresponding requirement in New Zealand for Australian AMEL holders. This is an historical situation arising out of legal advice provided to the CAA in relation to interpretation of the TTMRA. It may be possible to introduce this requirement in New Zealand without a rule change, but this requires further study and consultation by CAA, beyond the scope of this Part 43 rule change.

The CAA does not consider it is necessary to change rule 43.53(3)(i) to specifically state that the instructions for continued airworthiness must be current as Part 1 already defines the instructions for continued airworthiness to be the current airworthiness data. Similarly the CAA considers the change to rule 43.53(3)(i) to delete reference to the current manufacturer's maintenance manual is appropriate as the definition of instructions for continued airworthiness includes manufacturer's maintenance manuals. The CAA agrees mixing of the terms "test equipment" and "test apparatus" in 43.53(5) and (6) could be confusing when the terms are intended to have the same meaning. Accordingly the reference to test apparatus in 43.53(5) is changed to test equipment.

The CAA confirms that it is not intended under rule 43.69 that details of ***all*** *maintenance be recorded in the technical log. The primary requirement is to record details of maintenance in a product's logbook or in associated worksheets. Where specific details are required to be recorded in the technical log, such as operational flight checks and defect rectification, this is stated in the applicable rule. To clarify this 43.69(a) is changed in the final rule to delete reference to the technical log.*

With regard to forwarding written details of maintenance to the place where the logbooks are held by carriage on the aircraft on which the maintenance has been performed, a fundamental part of any aircraft accident investigation is a review of maintenance performed on the aircraft. If the records of the most recent maintenance have been lost in an accident because they were carried on the aircraft then the cause of the accident may not be able to be determined. However the CAA

appreciates the difficulty the proposed rule 43.69(c)(3) requiring carriage of maintenance records other than on the aircraft concerned may have for remote operations. Accordingly the CAA has changed the final rule to require carriage by means other than the aircraft concerned where practicable. This change places an onus on operators to find and use other means of forwarding but enables the aircraft to be used if there is no other means.

With regard to the recording of operational flight checks, the CAA does not agree that it should not be necessary to enter the completion of an operational flight check in the aircraft's log book. The maintenance log book is the master record of maintenance performed on an aircraft and must contain a summary of all maintenance performed. Updating of the logbook need not be done immediately. Under 43.103(a)(4)(i) the completion of an operational flight check must be recorded in the technical log and the aircraft's log book can be updated from this (by a person other than the pilot performing the operational flight check), or by loose leaf entry of the worksheet page. The CAA considers it essential that a release-to-service for the purpose of an operational flight check must be identified and closed off in the technical log ***and*** *the logbook (or worksheets) and changes have been made to the final rule at 43.103(a)(4)(i) and (c)to cover this.*

The CAA considers that it is appropriate to include reference to Part 43 in the wording of the release-to-service statement (43.105(a)(4)) as this certification statement is intended to cover maintenance performed under Part 43 only. Release-to-service for work performed by New Zealand maintenance organisations for overseas clients must be covered in a manner acceptable to the appropriate overseas authority. For example under some bilateral Technical Arrangements, such as that in place between the CAA and Transport Canada, use of the NZCAA Form 1 is permitted when releasing products or components for overseas clients. The Form 1 at block 15 makes provision for release-to-service under the jurisdiction of other authorities and CAA confirms that there is no plan to change the Form 1 to remove this option.

The CAA considers that the holder of a Part 145 release-to-service authorisation must be familiar with the requirements of Part 43 as these rules are applicable to all maintenance performed, whether by a Part 145 organisation or under a Part 66 AMEL.

With regard to the Form 2 New Zealand domestic part label referred to in 43.105(b)(2), there is no actual CAA Form 2 printed. Maintenance organisations are free to develop their own Form 2's consistent with the content requirement specified in AC43-3.

After further consideration, the CAA agrees that it should not be a requirement to enter details of inoperative instruments and equipment in an aircraft's maintenance logbook. Accordingly rule 43.107(1) is changed to only require details of inoperative instruments and equipment to be entered in the technical log.

The CAA agrees that an engine performance check should be carried out following a propeller change and this requirement has been added to the final rule 43.115. However the CAA does not agree that this requirement needs to specifically state that the purpose of the check is to re-establish the reference RPM as this will be covered in the manufacturer's instructions. The CAA agrees that the person performing an engine performance check should only have to ensure the details are recorded, not necessarily record them him/herself. The final rule is changed to reflect this. With regard to recording the details of engine performance checks the CAA agrees it is sufficient to record these details in the maintenance logbook or associated worksheets and the final rule has been changed accordingly.

Aircraft maintained on a programme approved under Part 119 or approved under rule 91.607 are not excluded from a requirement for engine performance checks. However their engine performance checks are required and performed in accordance with the accepted or approved programme. The requirements of these checks may differ from the generic requirements of rule 43.115 and for this reason aircraft on a Part 119 or 91.607 maintenance programme are excluded from rule 43.115.

The CAA considers it essential that the time-in-service (TIS) reading be recorded in the aircraft's logbook when the ARA is conducted as this will provide an independent check of the TIS and ensure it is recorded in the master record of the aircraft's maintenance history. Recording the TIS on the ARA inspection sheet would not provide the same permanency or ease of reference. No change is made to the final rule in this area.

While there may be merit in specifying in the aircraft logbook and technical log the suitability of the aircraft for a particular type of operation such as night or IFR flight, or whether the aircraft is accepted for Air Operations under Part 11, this goes beyond the scope of NRPM 05-04 and would require further consultation. Accordingly no change is made to the final rule.

With regard to qualifications required for persons to certify conformity, the CAA does not agree that rule 43.203(a) should be changed to extend certification of conformity privileges to persons authorised by any repair station certificated by an ICAO contracting state. The CAA believes that this coverage would be far too wide and would result in the CAA not having control over conformity inspection activity in such cases which may be critical to the process of design change.

Part 91

Submissions were received on the following:

- The prohibition at 91.101(c)(5) on carrying any person who does not perform an essential function on a test flight should be written as persons (plural) rather than person (singular) as more than one person may be involved,

- One submitter considered that the proposed requirement at 91.509(b) for aircraft to be fitted with a TIS should be extended to include all aircraft with finite life components. The submitter considered that a Hobbs meter should be able to be used to meet this requirement.

- One submitter suggested that the carbon monoxide detection devices proposed to be required under 91.509(a)(15) only last 90 days not 18 months as stated in the NPRM preamble.

- One submitter questioned the requirement in Table 8 of 91.523 to locate a fire extinguisher in a galley not in a passenger or crew compartment.

- One submission was received on the emergency locator transmitter rule (91.529(f)) seeking an alternative method to advise the Search and Rescue organisation of the beacons under the control of the submitter's organisation.

- One submitter questioned the proposed wording of 91.535(c)(3) which appears to require an **additional** 45 minutes of therapeutic oxygen for flights above 25,000 ft AMSL up to 30,000 ft AMSL over the therapeutic oxygen requirements for flights above 10,000 ft AMSL up to 25,000 ft AMSL.

- One submitter considered the proposed requirement at 91.601(b) would mean that all microlight aircraft have to have their altimeters tested and inspected under 91.602(e)(2) and (3) irrespective of whether the aircraft is fitted with a transponder. The submitter considered this was at odds with the stated intention in the NPRM preamble that the requirement would only apply to microlight aircraft required to have a transponder fitted under Part 91 subpart F.

- One submitter questioned why 'escalation programme' is referred to in the proposed 91.607(b)(7) but not in rule 119.111.

- One submitter considered the proposed requirement at 91.613(a)(3) that the results of an operational flight check be recorded in the aircraft's technical log to be onerous and unnecessary paperwork. The submitter believes there may be relatively insignificant matters that do not need to be recorded and that only the final result needs to be recorded.

- One submitter considered that the proposed 91.617(c) should be extended to require the descriptive details of the circumstances and resultant damage to an aircraft involved in an accident to be recorded in the appropriate maintenance log book. The submitter stated that in his experience such detail was often excluded to preserve the resale value of the aircraft.

- Two submissions were received in relation to the retention of records proposals in 91.623. One submitter considered that all documentation should be required to be retained for the same period, whereas the proposed 91.623 specified 12 months from withdrawal of the product or component from service and (for example) 145.65 requires records to be retained for 5 years. The other submitter considered that the requirements of 91.623

would be impractical due to the sheer volume of records, possibly amounting to 40 or more years for one aircraft.

- One submission was received on Part 91 Appendix A.1(b) that units of measure used on markings or placards should be the same as those used on related instruments **and** in the flight manual. The submitter considered the existing wording of A.1(b) permitted different units of measure to be used on instruments and the flight manual.

- One submitter considered that Part 91 Appendix A.9(c) should specify a quarter-wave antennae rather than half wave for gliders, amateur built aircraft and microlight aircraft using radios certificated to UK CAA CAP 208 Category (G)(a) or equivalent.

- One submitter considered that Part 91 Appendix A.14 should allow the alternative of a life raft survival kit that complies with JAR Ops 1 to avoid the need to apply to the CAA for an exemption from the survival kit contents requirements of A.14.

- One submitter considered that Part 91 Appendix A.15(b)(2)(ii) crash activation sensor orientation requirements should be written as a separate requirement for helicopters to better reflect the crash pulse orientation of survivable helicopter accidents. Another submitter commented that the UK CAA radio certification standards document CAP 208 has been withdrawn and the equivalent data is now held in a database on the UK CAA website.

CAA response

The CAA considers the requirement at 91.101(c)(5) regarding the carriage of non-essential personnel on a test flight is sufficiently clear as including more than one person and no change has been made to the final rule.

The TIS requirements proposed at 91.509 were the result of a prioritisation by the CAA of the types of aircraft and operations that presented safety concerns relating to recording of flight time for aircraft fitted with finite life components. The CAA does not at this time have

particular safety concerns about the use of finite life components outside the types of aircraft and operations listed in 91.509. The CAA does not consider Hobs meters are sufficiently tamper-proof to meet the TIS recording requirements to the level of integrity required for monitoring finite life components.

The CAA researched available carbon monoxide monitoring equipment and is satisfied that units are available with a manufacturer's stated life of 18 months for about $20.00. The CAA therefore considers its assessment of the costs of fitting carbon monoxide monitoring to be realistic and no change is made to the final rule requirement on the fitting of this equipment to aircraft. The compliance date for the final rule has been changed from 1 January 2006 to 1 January 2007.

Table 8 of rule 91.523 in relation to the location of hand held fire extinguishers was worded to cover the situation where a galley is located away from a passenger, crew or cargo compartment. In such cases the galley must have its own fire extinguisher.

Rule 91.529(f) was carefully worded to provide a practical means of ensuring the Search and Rescue organisation (SARO) is kept appraised of the details of 406MHz operators pending a more comprehensive NPRM relating to 406MHz ELT. The CAA believes the proposed rule provides flexibility for ELT under the control of a single operator to be swapped between aircraft without the need to inform the SARO. Accordingly no change has been made to the final rule.

The CAA agrees that the intention of the proposed change to 91.535(c)(3) is to ensure at least 45 minutes of therapeutic oxygen is available for 10% of the passengers of a pressurised aircraft operating above 25,000 ft AMSL up to 30,000 ft AMSL. This equates to an ***additional*** *15 minutes over the corresponding requirement for aircraft operating between 10,000 ft AMSL 25,000 ft AMSL and the final rule has been amended accordingly.*

The CAA confirms that its intention was to require only microlight aircraft fitted with transponders under Part 91 Subpart F (i.e. those microlight aircraft operating in transponder mandatory airspace) to have periodic tests and inspections of the transponder and associated automatic pressure altitude reporting system. Rule 91.601(b) at (1) and

(2) has been changed to reflect this. The format of this rule has also been redrafted to improve comprehension.

With regard to the reference to a TBO escalation programme in 91.607(b)(7) but not in the corresponding maintenance programme provisions of rule 119.111, the CAA believes that the requirements of 91.111(b)(5) and (7) together address TBO escalation requirements for aircraft operated under a general aviation air operator certificate.

The CAA has reviewed the proposed requirement at 91.613(3)(3) to record the results of an operational flight check, including any defects found, in the technical log and agrees that it is only necessary to record any defects found in the technical log, not all the results of the flight check. This is consistent with the general requirement under 91.619 to record defects found before, during or after flight in the technical log. The final rule at 91.613(a)(3) has been changed accordingly.

The CAA agrees with the submitter that the descriptive detail of an accident involving an aircraft and the descriptive detail of the resultant damage should be recorded in the aircraft's logbook rather than just the fact that it has been involved in an accident. The final rule at 91.617 (c) is changed accordingly.

With regard to the period for which maintenance records must be retained, the CAA agrees that the requirements of the proposed 91.623 are unduly onerous, particularly in relation to technical logs. Accordingly the final rule has been changed to only require the technical log to be retained for 12 months from date of last entry and details of the maintenance carried our, as specified in rule 43.49(a)(1), to be retained for a maximum of 5 years.

In relation to the units of measure on the markings and placards required by Part 91 Appendix A.1(b), the CAA agrees that there should be consistency in the units of measure between an aircraft's flight manual and the markings and placards on the aircraft to reduces the risk of a flight manual limitation being exceeded due to confusion over units of measure. However the CAA is aware that this may cause compliance problems with some older aircraft in service and considers further investigation is required before this change could be made.

The CAA agrees with the submission that Part 91 Appendix A.9(c) should specify a quarter-wave antennae rather than half wave for gliders and the final rule is changed accordingly.

With regard to the acceptance of alternative life raft survival kits contents from those specified in Part 91 appendix A.14(d), the CAA considers that rule 91.501(2)(iv) already provides sufficient scope for alternative kit contents to be approved. In addition, NPRM 05-04 did not propose any change to appendix A.14(d) and the CAA considers it is not appropriate to change this rule without allowing wider consultation on any proposed changes.

The CAA also agrees that the requirement in Part 91 Appendix A.15(b)(2)(ii) for crash activation sensor orientation may not be appropriate for helicopters. However there was no change proposed to this rule in the NPRM and the CAA considers more research is required to develop specific helicopter crash activation sensor location requirements. For this reason no change is made to A.15(b)(2)(ii) in the final rule.

Part 145

In addition to the submissions on proposed rule 145.60 described earlier in this summary of submissions, submissions were received on the following proposed changes to Part 145:

- One submitter commented that consistency of New Zealand CAA rules with the corresponding United States FAA rules was very desirable for the certification of New Zealand designed aircraft overseas. The submitter enquired whether the proposed changes are compatible with the FAA requirements.

- One submitter commented that the period aircraft and component maintenance records should be required to be kept under 145.63(b)(4)(iii) should be consistent with that required under rule 91.623.

- One submitter questioned the proposed change to 145.67(a)(13) that requires a Part 145 maintenance organisation's exposition to include procedures at least equal to those required by Part 141 for conducting training under the E1 rating. The submitter considered the proposed change is too obscure and questioned

which specific procedures in Part 141 the Part 145 procedures had to be at least equal to.

CAA response

The proposed changes to Part 145 relate to aircraft maintenance and do not affect the aircraft certification rules which are largely contained in Part 21.

The retention period for maintenance records proposed under 145.63(b)(4)(iii) is five years compared to two years in the existing rule. As described earlier in this summary of submissions, changes have been made to the proposed record retention requirements in 91.623. As a result, the five year retention period under 145.63(b)(4)(iii) is now more consistent with the requirements under final rule 91.623(b) to retain maintenance information for up to five years.

The CAA agrees that the proposed changes to rule 145.67(a)(13) in relation to training procedures should be more specific. The CAA's intention is that procedures for conducting aircraft maintenance engineer training under the Part 145 E1 rating be at least equivalent to those required for certification of a Restricted Training Organisation under Part 141 Subpart D. Part 141 Subpart D prescribes requirements for the certification, continued compliance and record keeping of restricted training organisations. The CAA also accepts that the use of the phrase "equal to" could be misconstrued as requiring a more stringent level of equivalency with Part 141 than intended. Accordingly the final rule is changed to specify that the Part 145 procedures for conducting training under the E1 rating should be at least equivalent to those required by subpart D of Part 141.

Comments on NPRM 05-05

Summary of submissions

Part 21

The CAA received two submissions on the proposed changes to Part 21.

One submitter, an aircraft design and manufacturing organisation, questioned whether the changes proposed were compatible with the

corresponding US FAA requirements. The submitter further commented that much clarification of the FAA rules was required prior to a recent certification of an aircraft designed and manufactured by the submitter's organisation.

The second submitter, an aircraft maintenance organisation certificated under Part 145, commented that the requirements for a replacement or modified material, part, or appliance to be installed into a type certificated product, as specified in 21.303, should be extended to specifically include materials, parts or appliances that have a US FAA or European equivalent to the New Zealand CAA Form One – authorised release certificate. The submitter considered that the provision of rule 21.303(7), which permits imported parts that are acceptable to the Director to be fitted, was not ideal for the submitter's requirements.

CAA response

The CAA confirms that harmonisation with the corresponding FAA requirements has been a consideration in developing the changes to Part 21. Most of the Part 21 changes in the final rule are of an administrative nature. The change that introduces provisional type certificates was included at the request of the submitter's organisation.

The CAA does not agree that it is necessary to specifically include the acceptability of US FAA and European EASA or JAA Form One equivalents into rule 21.303. CAA Form Ones are only required under 21.303(3) and (4) for work actually carried out in New Zealand. For imported parts rules 21.303(1) or (7) are applicable. Rule 21.303(1) is applicable to parts obtained from sources authorised by the type certificate holder (generally the original manufacturer of the product). The acceptability under rule 21.303(7) of parts obtained from other overseas sources is covered by CAA Advisory Circular AC 23-2 and specifically includes parts that have FAA or JAA Form One equivalents.

Part 26

The CAA received one submission on the proposed changes to Part 26 Appendix D.5 in relation to the proposed requirement to adopt the FAA fire safety standards for cargo and baggage compartments.

The submitter objected to the proposed change, which would affect one Boeing 737-200 aircraft operated by the submitter, on the grounds of

cost and loss of revenue while the aircraft was being modified. The submitter stated that the Minister under section 33 of the Civil Aviation Act 1990 is required to make rules that are consistent with the aviation safety and security standards of the International Civil Aviation Organisation (ICAO), not those of the FAA. The submitter further stated that the corresponding ICAO standards, contained in Annex 8, are only applicable to aircraft where the application for type certification was on or after 12 March 2000, a date well after that applicable to the submitter's Boeing 737 aircraft.

The submitter also stated that mitigation measures contained in the Airline Pilot's Association of New Zealand's original petition to CAA to adopt the FAA cargo compartment fire safety standards were adequate without the need to fit the fire suppression equipment required by the FAA.

The submitter further stated that the compliance period proposed in NPRM 05-05 for fitting the fire suppression equipment was too short.

CAA response

The CAA does not agree that ICAO standards only require aircraft for which the type certificate application was received after 12 March 2000 to be fitted with cargo compartment fire suppression equipment. In fact ICAO Annex 8 does not provide any specific cargo compartment fire suppression requirements for aircraft. However the ICAO Airworthiness Manual (Doc 9760) at chapter 4 recommends States adopt aircraft provisions relating to crash survival, including cargo compartment fire suppression, as contained in the world's leading airworthiness codes. The list of recommended codes provided in Doc 9760 includes the United States FARs.

For this reason the CAA believes the cargo compartment fire detection and suppression requirements proposed in NPRM 05-05 are consistent with this ICAO recommendation.

Not withstanding this, the CAA accepts that the financial burden on the submitter's organisation is significant. In addition, the submitter's aircraft is predominantly used for freight operations so the level of public risk exposure is low. For these reasons the CAA has changed the final rule requirement such that the submitter's aircraft is excluded from

compliance while it is operated under the authority of the submitter's Air Operator Certificate (AOC).

Should the aircraft be transferred to the AOC of another New Zealand operator it will have to become compliant with the cargo compartment fire suppression requirements of Part 26 Appendix D.5 before it can continue to be operated.

Part 39

One submission was received on the proposed changes to Part 39. This submission suggested that Part 39 be changed to reflect the changing situation in Europe with EASA now issuing Ads on behalf of EU member states that are States of Design for aeronautical products. The submitter proposed changing Part 39 to specifically cover the EASA situation.

CAA response

The CAA agrees that the situation with EASA issuing Ads needs to be covered in the final rule. However the way this has been done is to broaden the definition of State of Design in Part 1 to include an organisation established by a group of States, having jurisdiction over the organisation responsible for the type design. This is not specific to EASA and provides for other groups of States that may in the future set up organisations equivalent to EASA.

Part 146

No submissions were received on the proposed changes to Part 146

Part 148

No submissions were received on the proposed changes to Part 148.

Comments on NPRM 05-06

Summary of submissions

Part 103

Two submissions were received on rule 103.217(c)(3) relating to microlight transponder and altimeter tests and inspections. The first submission strongly supported the requirement for periodic tests and inspections of transponders and altimeters fitted to microlight aircraft.

The second submission suggested, as with the submission on rule 91.605(e)(2) that the altimeter calibration standards prescribed in Part 43 Appendix D, are only appropriate for sensitive altimeters.

CAA response

The final rule does require transponders and associated automatic pressure altitude reporting systems required to be fitted to microlight aircraft to be periodically tested and inspected, consistent with the first submission.

As discussed in the CAA response to submissions on rule 91.605(e)(2), the CAA has decided not to require the altimeters fitted to microlight aircraft be periodically tested and inspected, so the issue of appropriate altimeter calibration standards does not arise for microlight aircraft.

Part 104

No submissions were received on the proposed changes to Part 104.

Part 119

No submissions were received on the proposed changes to Part 119.

Part 121

No submissions were received on the proposed changes to Part 121.

Part 125

No submissions were received on the proposed changes to Part 125.

Part 135

No submissions were received on the proposed changes to Part 135.

Part 137

No submissions were received on the proposed changes to Part 137.