

Regulatory Impact Statement

Civil Aviation Rule Part 125 Update

Agency Disclosure Statement

This Regulatory Impact Statement (RIS) has been prepared by the Ministry of Transport (the Ministry), with assistance from the Civil Aviation Authority (CAA).

It provides an analysis of options to address the safety risk associated with commercial passenger operations in medium sized aeroplanes (10-29 passenger seats), which are currently subject to less stringent operating requirements than larger aeroplanes (30 or more passenger seats), and to achieve compliance with International Civil Aviation Organization (ICAO) standards and recommended practices. The preferred option is to raise the operating standards for medium sized aeroplanes by amending Civil Aviation Rule Part 125, which governs commercial air transport in medium sized aeroplanes.

It is reasonable to assume that higher operating standards will improve the level of safety afforded to passengers on medium sized aeroplanes. However, due to the minor and technical nature of the amendments, and a lack of relevant safety data for medium and large sized aeroplanes, the underlying risks and expected safety benefits are difficult to quantify.

The proposed Rule amendment would impose compliance costs on operators of medium aeroplanes. Operators wishing to conduct extended over water operations¹ will be required to train staff in aircraft ditching procedures, estimated at an initial cost of \$7,500 per two person flight crew, with annual refresher training estimated at approximately \$600 per crew member. Other compliance costs will arise where operators are required (if necessary) to amend their expositions² (\$400-\$800 per operator), or amend their operations specifications (approximately \$1,000 for each of the two operators affected).

To ensure that the policy objectives of the Rule amendment are met, the CAA will conduct a formal post-implementation review of the effectiveness of the amendment commencing not later than 2 years after the in-force date.

The proposal will not impair private property rights, or the incentives for businesses to innovate and invest, or override any of the fundamental common law principles (as referenced in chapter 3 of the Legislation Advisory Committee's Guidelines on Process and Content of Legislation). The Rules are consistent with the government's August 2009 statement *Better Regulation, Less Regulation*.

Richard Cross, Adviser

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¹ More than 50 nautical miles from shore

² An operator's exposition is the document or set of documents that is required by the certification Rules for the operator to describe their organisation and to document the systems and procedures that the operator and all the operator's staff will follow to ensure compliance with the applicable Civil Aviation Rule requirements.

Status quo and problem definition

1. The Civil Aviation Rules contain three operating Rules that govern air transport operations in New Zealand: Civil Aviation Rule Part 121 *Air Operations – Large Aeroplanes*³ (Part 121), Part 125 *Air Operations – Medium Aeroplanes*⁴ (Part 125) and Part 135 *Air Operations – Helicopters and Small Aeroplanes*⁵ (Part 135).
2. Currently, the operating standards required for Part 125 aircraft are less stringent than those required for Part 121 aircraft. While some of the differences in the Rules between Part 125 and Part 121 are essential due to fundamental differences in aircraft design, others are unnecessary and represent a potential threat to flight safety.
3. While it can be assumed that aligning operating standards in Part 125 aircraft with Part 121 aircraft will improve safety, the safety benefits are difficult to quantify due to the technical nature of the amendments and a lack of relevant accident and incident data for medium and large aeroplanes. However, it is reasonable to assume that the less stringent operating standards required on a Part 125 aeroplane would impact on the level of safety afforded to passengers. As an example, a passenger who travels from Auckland to Hokitika on Air New Zealand will travel two sectors; the first on an Airbus A320 or Boeing 737 aircraft (operated under Part 121); and the second on a Beech 1900D aircraft (operated under part 125). The passenger could reasonably assume that the operating standards and thus the level of safety in aircraft operated by the same airline will be consistent, but this is not the case.
4. Part 125 is also inconsistent with international best practice and International Civil Aviation Organization (ICAO) standards and recommended practices.
5. Under section 33 of the Civil Aviation Act 1990, Rules made by the Minister of Transport are required to be consistent with ICAO standards (to the extent adopted by New Zealand), and with New Zealand's international obligations relating to aviation safety and security. Additionally, article 37 of the Chicago Convention on International Civil Aviation 1944 (the Convention), of which New Zealand is a party, obliges States to “collaborate in securing the highest practical degree of uniformity with regulations, standards, procedures and organisation”.
6. Article 38 of the Convention provides three situations for Contracting States to depart from standards and recommended practices: impracticality to conform in all respects; impracticality to bring its regulations or procedures into full accord (after amendment to a standard); and when a State deems it necessary to adopt practices differing in any particular respect from international standards. None of these situations apply with regard to Part 125. New Zealand is therefore obliged to conform to the ICAO standards⁶ for Part 125 aircraft insofar as they relate to international aviation. While the standards do not apply to domestic aviation, it would not be practical or desirable to have a separate set of Rules for domestic and international operations in Part 125 aeroplanes.

³ Aeroplanes with 30 or more passenger seats

⁴ Aeroplanes with 10-29 passenger seats

⁵ Aeroplanes with 9 passenger seats or less

⁶ ICAO defines recommended practices as “any specification, the observance of which is generally practicable and highly desirable ... to which Contracting States will endeavour to conform in accordance with the Convention”. Therefore, while States are not obliged to conform to recommended practices, they are strongly encouraged to do so.

Objectives

7. The policy objectives of the Rule amendment are:
 - To improve the level of safety afforded to fare-paying passengers on Part 125 aeroplanes
 - To achieve compliance with international best practice and ICAO standards and recommended practices.

Regulatory impact analysis

8. In light of the lower operating standards currently afforded to passengers on medium aeroplanes, the low financial impact of the preferred solutions, and New Zealand's obligation to achieve compliance (where practicable) with ICAO standards for international general aviation, the option of retaining the status quo has been rejected.
9. The CAA considered merging Part 121 and Part 125. However, this was rejected because many of the differences between Part 121 and Part 125 are necessary due to fundamental differences in aircraft design.
10. Non-regulatory alternatives, such as an industry code of practice, were also rejected, as the CAA believes that enforceability is required.
11. The CAA's preferred option is to amend Part 125. Under the current Rule structure, the operating standards applied under Part 121 are not being provided in operations performed under Part 125. The Rule amendment would remove some of the anomalies existing between the current operating Rules, and will lift operating standards to a level adopted by other national aviation authorities and recommended by the ICAO.
12. The proposed Part 125 Rule amendment would:
 - require operators to carry relevant search and rescue information on board the aircraft
 - require operators to observe human factors principles⁷ in the design of flight deck check lists
 - limit operations conducted under visual flight rules (VFR) to 50 nautical miles from shore
 - require operators wishing to conduct extended over-water flights to undertake an assessment on the risks to survival in the event of a ditching incident, and to require operators to train crews in ditching procedures
 - prevent operators from conducting flights at night under VFR, unless an exemption has been granted by the Director of Civil Aviation
 - require operators to forward plan to their intended destination when weather conditions are marginal, and divert to an alternate destination en-route if required (rather than the current practice of planning to an alternate

⁷ "Human factors principles discovers and applies information about human behaviour, abilities, limitations, and other characteristics to the design of tools, machines, systems, tasks, jobs, and environments for productive, safe, comfortable, and effective human use" (Alphonse Chapanis, 1996). In the context of amending Part 125, it may be considered as designing checklists that have a logical order, thus minimising the opportunity for human error or omission.

destination and “diverting” to the actual intended destination if weather conditions improve).

13. The sector of the aviation industry that operates under Part 125 consists of 15 organisations utilising 48 aeroplanes⁸. While the number of aeroplanes is small in terms of the New Zealand aviation community, the proposed Rule amendment would affect a significant part of the commercial aviation sector. Part 125 operators utilise 57 percent of the aircraft engaged in scheduled passenger services, fly 35 percent of the total flight hours and operate on most of the scheduled domestic passenger sectors in New Zealand⁹.
14. Analyses of the proposed amendments to Part 125 are summarised below:

Search and rescue information

15. Introducing a requirement to have search and rescue information carried on board will bring Part 125 operations into line with both Part 121 and ICAO standards for international general aviation. In the event of an in-flight occurrence where an emergency landing needs to be planned, the search and rescue resources available in New Zealand will have a bearing on the flight crew’s decision in selecting an appropriate diversion point. The new requirement can be satisfied by having access to relevant search and rescue information on board the aircraft, such as the NZ Aeronautical Information Publication (AIP). In practice, this information is already in the possession of air operators and in some cases already being carried on board; therefore the cost incurred by the industry will be negligible. However, the Rule would ensure that best practice is applied consistently across operators, and would allow the CAA to enforce the requirement. The CAA did not receive any submissions on this issue.

Flight check systems

16. The Rule amendment proposes complete alignment with Part 121 and will require operators to establish a system that will ensure safe management of the flight deck and compliance with the aeroplane flight manual in addition to observing human factors principles. This will reduce the likelihood of the flight crew failing to identify critical safety issues prior to take-off.
17. The current Rule could be amended to simply add a requirement to ensure checklists are designed observing human factors principles. However, the proposed requirements contained in Part 121 are more comprehensive in that they deal with the organisational system that supports flight deck management. The CAA believes that a systemic approach is required to ensure that operators fully integrate best practices into their flight check systems, rather than merely following a checklist. Amending Part 125 without including similar requirements would retain a disparity with Part 121, and was considered an ineffective step to improving safety.
18. It is expected that compliance costs will be incurred by the operator at an organisational level by way of an exposition amendment to document procedures and practices (if the exposition does not already address this). The maximum cost is estimated at \$1,250 per aircraft type operated; this represents a total one-off cost to the industry of approximately

⁸ The number of aeroplanes operating under Part 125 represents a little over half of the total number of New Zealand registered aircraft in the 10-30 seat category. This is due to a number of aircraft that are out of service but still on the aircraft register, and others that are only flown privately. Private aircraft are not subject to Part 125.

⁹ Source: Civil Aviation Authority safety summary report

\$15,000¹⁰. While the safety benefits are difficult to quantify, the CAA did not receive any submissions on this issue, and the costs are considered reasonable in order to ensure that operators are following established best practice and standards.

Flights over water

19. Under Visual Flight Rules (VFR), flights over water more than 50 nautical miles (nm) from shore can be hazardous, because there are no topographical features for navigational purposes. Consistency with Part 121 reduces the threshold for VFR flights over water from 100 nm to 50 nm from shore. It does not affect operations conducted under Instrument Flight Rules (IFR). This will not change the way flights are planned or conducted since there are no destinations in New Zealand that require flights over water more than 50 nm but less than 100 nm from shore – but the Rule amendment would set a minimum standard which is consistent with best practice. There is not expected to be any financial or administrative impact on the industry as a result of this Rule.

Ditching

20. The proposed Rule amendment would require those operators wishing to conduct extended over water operations (more than 50nm from shore) to conduct an assessment of the risks to survival in the event of a ditching according to the aircraft type. Depending on the outcome of the risk assessment, the operator may need to reconsider its emergency provisions. The amendment would also require operators to address crew training in ditching procedures.
21. The current Rule requirements in Part 125 for ditching are based on Part 91 *General Operating and Flight Rules* with regard to the carriage of life preservers and life rafts, but these requirements do not reflect best practice in terms of safety management. The current requirements also fail to meet a recent ICAO standard for international general aviation, which came into force in November 2010, which requires the provision of emergency equipment according to an operator's risk assessment.
22. No ditching incidents have been recorded for Part 125 aircraft in New Zealand, and the likelihood of an incident is considered to be low (a UK study found the risk to be in the order of one ditching event every 100,000 to 1,000,000 flight hours¹¹). CAA analysis conducted in 2005 indicates that the risk of fatalities in a ditching is approximately four times greater than a crash on land.
23. Three recent ditching incidents in other aircraft or in other jurisdictions are relevant to the proposed Rule amendment:
 - In 1998, a ditching incident involving a Cessna 402C aeroplane (operated under Part 135) in Foveaux Strait, resulted in the deaths of four passengers and the flight crew member. Five passengers survived. While that aircraft was not required to carry life rafts due to its operation being within 50nm from shore, a number of life jackets were carried on board. However, three of the four passengers who died exited the aircraft without lifejackets. The accident report noted that some of the life jackets were not readily available to the passengers or the pilot.

¹⁰ There are currently 12 aircraft types used by Part 125 operators

¹¹ International General Aviation and Corporate Aviation Risk Assessment (IGA-CARA) Project, 2005, prepared for Air Safety Support International (ASSI) by the Department of Air Transport, Cranfield University

- In January 2009, a US Airways Airbus A320 (operated under a Federal Aviation Administration Part 121 certificate) ditched in the Hudson river after bird strikes destroyed both engines just after take-off. This aeroplane floated for a considerable time, allowing complete evacuation and rescue. This accident is considered to be a model example of a well executed ditching.
 - In November 2009, an Israel Aircraft Industries Westwind 1124A (a Part 125 aircraft) ditched off the coast of Norfolk Island (an external territory of Australia). The cause of the incident was fuel exhaustion, as the aircraft was unable to land in the bad weather that was occurring at the time. The crew noted that previous ditching training was useful in helping them and the passengers escape the sinking aircraft. The co-pilot was the last to exit the aircraft, just as it was sinking.
24. The Airbus accident illustrates the best case scenario — with crew well trained in ditching procedures and an aircraft designed to promote survivability in a ditching event. It is not representative of a typical ditching incident, particularly in an aircraft designed for Part 125 operations. The Westwind accident illustrates that even basic training vastly improves the chances of survival. The Cessna accident illustrates the outcome when so little attention is paid to ditching that life jackets, although carried, were not readily available to each passenger. Further, this accident illustrates that ditching is a possibility in New Zealand waters, and more importantly, that preparedness is vital to survival.
25. The CAA advises that three Part 125 operators, operating a total of six aircraft, would currently be affected by the proposed ditching requirements (Air Chathams, Vincent Aviation, and Pacific Wings). However, any Part 125 operator wishing to conduct extended over water operations in the future would also be subject to the new requirements.
26. The costs for operators will be incurred primarily in:
- performing the initial risk assessment
 - establishing the organisational processes including training
 - acquiring new emergency equipment (for example, food rations, life jackets, or first aid supplies) if it eventuates that new equipment needs to be purchased. The CAA has determined that the affected operators' liferafts are satisfactory. Consequentially, any equipment purchases that are required are likely to be relatively minor.
27. While not all costs can be reliably estimated, each of the three affected operators will need to amend their exposition (\$400-\$800), and for each new two person flight crew, an initial training cost of approximately \$7,500 could be expected with refresher training each year of approximately \$600 per crew member. The cost of any equipment that may be required cannot be estimated until each operator has completed a risk assessment, but this is likely to be minimal.
28. In practice, the Air Chathams and Vincent Aviation crews are already trained in ditching. All Air Chathams and Vincent Aviation pilots operate both Part 121 and Part 125 aircraft, so they are already trained by virtue of the Part 121 requirement. The third operator, Pacific Jets, has already completed the training aspect of the proposed requirement in anticipation of the Rule, and is satisfied that the equipment level is satisfactory.
29. Consequentially, actual compliance costs for the industry will be limited to the exposition amendments and formalising the risk assessment components of the proposed Rules. This will amount to an industry cost of approximately \$5,000 to \$10,000, of which

approximately \$2,000 will be a direct measurable cost (the remainder being an approximate cost, based on the value of the operators' time). New operators wishing to conduct extended over-water operations under Part 125 will, however, bear the full cost detailed above.

Night operations

30. This amendment would require all flights operated at night to be conducted under IFR. This will ensure that the current industry practice is adopted as a mandatory Rule requirement, and is consistent with Part 121.
31. The CAA considered drafting prescriptive requirements for operations at night under VFR. While such requirements exist as certification guidelines with regard to other Rule Parts, there are two factors that detract from this option: first, this industry sector generally does not perform operations at night under VFR; and second, it is the CAA's view that air transport operations performed at night under VFR present an unacceptable safety risk because of the visibility limitations inherent in night flying and New Zealand's mountainous terrain.
32. This Rule would have no effect on current industry practice, but would ensure that best practices are maintained and enforceable. The only operations that are currently conducted at night under VFR are a small number of scenic night operations¹². All other operations at night are conducted under IFR. In response to industry submissions, night scenic operations will be exempted from the Rules by the Director of Civil Aviation provided that the operators meet a specific set of criteria, and the operations are included on the certificate holder's operations specification.
33. The only financial or administrative impact to the industry will be to those operators wishing to apply for an exemption to conduct night scenic operations. That impact will take the form of amending the operations specifications and is estimated to be less than \$1,000 as a one-off cost for each of the two operators affected.

Meteorological conditions for instrument flight rules

34. Currently, Part 125 has an inflexible Rule regarding minimum weather conditions at a destination aerodrome under VFR, in which operators are not permitted to plan a flight when the weather at the destination aerodrome is marginal. This has resulted in an industry "work-around", in which operators will plan a flight to a different (alternate) aerodrome, and if the weather is acceptable when they are en-route, they 'divert' to the original destination. This practice, while legally acceptable, defeats the intent of the Rule.
35. Under the Rule amendment, the operator will plan to the intended destination, even if the weather is marginal, and will be required to have alternate destinations listed on the flight plan in case they should be required. This will align Part 125 with current Part 121 requirements.
36. While the safety benefit is likely to be small, there is some risk under the current Rules that an operator will fail to accurately estimate fuel requirements when planning a flight to a destination that is not their actual intended destination.
37. The financial impact of the proposed Rule amendment is difficult to estimate due to the complexity of airline route structures and the variability of charter operations. However, the impact is likely to be small (and could even be positive, in certain scenarios).

¹² In theory, night scenic flights could be conducted under IFR. However, this is generally considered undesirable to passengers, as flights under IFR are required to follow particular flight paths.

Feedback from operators on the project working group was that the impact will be acceptable.

Consultation

38. The Rule issue was first identified as a result of a petition from the New Zealand Air Line Pilot's Association (NZALPA). The CAA has consulted with NZALPA and other key stakeholders during the development of the Rule.
39. The publication of Notice of Proposed Rule Making (NPRM) 09-04 was notified in the New Zealand Gazette on 17 December 2009 and advertised in the daily newspapers in the five main provincial centres. The NPRM was also published on the CAA's web site and mailed to identified stakeholders including representative organisations who were considered likely to have an interest in the proposal.
40. The NPRM was sent to the Environmental Risk Management Authority NZ, NZALPA, the Aviation Industry Association, the Guild of Air Pilots and Air Navigators (NZ), and affected Part 125 operators¹³.
41. Development of the proposal included informal discussions, meetings and emails with Air National, Air New Zealand, Air Safaris, Pacific Jets, and ICAO. Prior to the publication of the NPRM, the Rule amendment project for Part 125 was undertaken in consultation with a project working group that consisted of representatives from the aviation industry.
42. Feedback was received in two areas:
 - Operations conducted at night under VFR: The submissions sought provision in the Rules to perform scenic flights at night under VFR. The CAA agreed that the risks associated with scenic flights at night under VFR flight could be satisfactorily mitigated and drafted the appropriate requirements into the amendment.
 - Specialised operations (target towing for the Navy, oceanographic survey, and coast watch operations) should be provided for in the areas of night flight under VFR and extended over-water operations under VFR. The CAA considered that, given the complexity and rarity of these operations, they would be more appropriately addressed by application for an exemption under Section 37 of the Civil Aviation Act 1990.
43. Notwithstanding the matters raised above, operators were generally supportive of the proposed Rule amendment.

Conclusions and recommendations

44. The options adopted in the Rule amendment represent alignment with international best practice (and ICAO standards and recommended practices where applicable), and consistency with existing airline operating standards. The outcome will be an improvement in the operating standards on medium aeroplanes, and alignment of standards between large and medium sized aeroplane operations. This can be accomplished without unreasonable burden, either financial or administrative, to Part 125 operators.

¹³ Air2there, Air Chathams, Air Milford, Air National, Air Safaris, Airwork, Eagle Airways (a subsidiary of Air New Zealand), Flight 2000, Great Barrier Airlines, Pacific Jets, Salt Air, Sounds Air, Southern DC3, Vincent Aviation, Volcanic Air Safaris.

Implementation

45. The rulemaking proposal will be given effect by implementing new Rules and amending existing Rules under Part 125, and through consequential amendments to Schedule 1 of the Civil Aviation (Offences) Regulations 2006.
46. Once signed, the Rules will be published on the CAA website and affected parties will be notified of what they need to do to comply with the Rules through an updated Advisory Circular to Part 125 which supports the Rule by providing guidance material and information on acceptable means of compliance.
47. The amendment does not present significant implementation risks. Enforcement of the amended requirements will occur through the routine audit by the CAA of operators certificated under Part 125.

Monitoring, evaluation and review

48. The Rule changes will be subject to a formal post-implementation review by the CAA commencing not later than 2 years after the in-force date, and the outcome of the review will be published on the CAA's website. Part 125 will be routinely monitored against the objectives by the operational group responsible for the proposals within the CAA.