AIRAC	Aeronautical Information Circulars	Effective 28 MAR 19

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This issue entirely replaces previous issues.

CONTENTS

4/15 **AIC**

GNSS (GPS) Sole Means
Effective: 12 NOV 15

During Airways' navigation aid facilities replacement programme, and other occasions when the ground-based conventional approach navigation aid is not available, it is important that all operators are familiar with CAR 19.209 and General Exemption 11/EXE/7 requirements.

CAR 19.209 does not allow for IFR operations within the New Zealand Flight Information Region using a GNSS system as a sole means of navigation. General Exemption 11/EXE/7 was granted to allow specific GPS sole means operations provided a set of conditions are met. One of these conditions is that, for air transport operations, approaches requiring GNSS may only be conducted by aircraft with at least two operable GPS receivers. This reflects the requirements in the relevant 'Air Operations' CAR Parts which specify that the failure of any independent system required for navigation does not result in the inability to navigate safely as required for the route being flown.

GNSS operations must meet the requirements of CAR Part 19, Subpart D, except that GNSS operations may be conducted in accordance with General Exemption 11/EXE/7 provided all the conditions of that Exemption are met.

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Published ATC Speed and Altitude Constraints Annotated on AIP Charts
Effective: 26 MAY 16

Introduction

Instrument Flight Procedures (IFPs) often include speed and altitude constraints at waypoints; these are published on the procedure and are included in the procedure coding for aircraft. Speed or altitude constraints for air traffic management may also be incorporated into the instrument flight procedure (IFP). Historically the AIPNZ charts did not differentiate between the design constraints of the instrument flight procedure and air traffic management.

These ATC restrictions provide segregated arrival and departure flight paths and an efficient flow of traffic. They are not an intrinsic part of an IFP and do not reflect, for example, obstacle clearance or airspace containment.

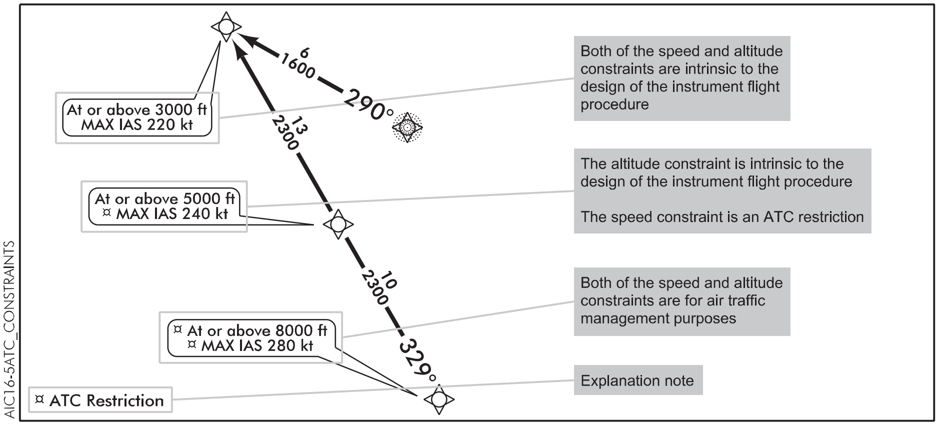
These ATC restrictions may be amended or cancelled by ATC in accordance with their procedures. Aircraft shall comply with speed and altitude constraints depicted, unless specifically authorised by ATC to do otherwise.

ATC restrictions incorporated into instrument flight procedures and annotated on the AIP chart

Any speed and altitude constraints for air traffic management that have been incorporated into instrument flight procedures, that are not intrinsic to the design, will be annotated on AIP charts with the symbol '¤', and an explanation note " '¤' ATC Restriction" on the page. ATC may amend or cancel these restrictions.

Each element will be annotated separately. If a waypoint includes both a speed and altitude constraint that are ATC restrictions, or two altitude constraints that are ATC restrictions, both will be preceded by the symbol '¤'. Where both a speed and altitude constraint are listed for a waypoint, or two altitude constraints are listed for a waypoint, and only one constraint is an ATC restriction, that one constraint will be preceded by the symbol '¤'.

The sample, demonstrating ATC speed or altitude constraints as depicted on charts in AIPNZ, is provided for information only and is not to be used for navigation.



Publishing action

The annotated ATC restrictions can be seen on those applicable instrument procedure charts that have been reissued, or new charts issued, from 26 MAY 16.

Airways is to undertake a phased programme to convert all applicable charts to the new format.

Due to the large number of pages involved it will be necessary to spread the completion of the charts over a period of time.

Non-Precision Instrument Approach Procedures — Constant Angle Descent Profile
Effective: 14 SEP 17

Introduction

Controlled flight into terrain (CFIT) initiatives proposed by the international aviation industry and supported by ICAO are intended to address some of the critical aspects of non-precision approach procedures.

A study of world-wide CFIT accidents reveals that a large percentage of CFIT accidents occur in the final approach phase of flight, with a majority occurring on non-precision approach procedures.

It is widely accepted that, in addition to other operational benefits, the performance of a constant rate of descent during an approach to landing is helpful in reducing the potential for a CFIT accident.

Non-precision approaches with distance reference

Non-precision approaches (NPAs) are instrument approach procedures that utilise lateral guidance but do not utilise vertical guidance.

NPAs that utilise a distance reference have traditionally been designed as a series of descending steps to a MNM Descent Altitude (MDA). NPAs are designed to provide obstacle clearance beneath the flight path and a fix is located at the point at which critical obstacles have been passed by the margin required, and it is safe to continue descent.

In following the series of descending steps, it may be necessary to maintain an intermediate level until the next step is passed. This technique is colloquially referred to as the "dive and drive" method.

Unfortunately, many CFIT accidents have been attributed to this technique, due to human errors such as descending before the step is reached, or failing to arrest descent. In addition, the aircraft's descent profile is more difficult to manage with changes in airspace, rate of descent, and configuration required.

The use of a constant angle of descent technique is widely used as a method of reducing the potential of an accident during a non-precision approach (with distance reference) in that a vertical flight path, above segment minimum safe altitudes, is provided.

Terms

Procedure Altitude: Procedure altitudes are recommended altitudes established to accommodate a stabilised descent profile on a prescribed descent angle in the final approach segment; they may also be applied in the intermediate segment. Procedure altitudes will never be less than the segment obstacle clearance altitude.

Segment Obstacle Clearance Altitude (Segment OCA): Segment obstacle clearance altitude provides required obstacle clearance for a given segment of the approach. It is a minimum altitude established by the procedure designer and meant to be a **"do not descend below altitude"**.

Segment obstacle clearance altitudes will be published as bold underlined altitudes located midway between fixes and just below the top of the grey shaded areas; these altitudes must not be violated.

The obstacle clearance altitude for the last segment prior to the missed approach point will be annotated **MDA** to take into account different values that may apply.

Note: Procedure altitudes are developed to provide guidance to the pilot for the appropriate altitudes to fly, with emphasis on a stabilised constant angle descent. The availability of the Segment OCAs is to enable the pilot to descend to these lower altitudes, should the need arise, such as in icing conditions.

Advisory Altitude Table: Based on the given approach path angle, the table provides altitude information for the specified DME distances or GNSS "DISTANCE to WPT" distances. The table allows for a constant angle descent to be flown; it is aligned to the direction of the approach in the profile view.

Chart depictions

- The Advisory Altitude Table for ILS, ILS/LOC combined, and RNAV (RNP) with VNAV profile approaches is based on a 3° (318 ft/NM) profile rounded to the nearest 10 ft.
- The Advisory Altitude Table for procedures using VOR or NDB is based on a 5% (300 ft/NM) profile rounded to the nearest 50 ft.
- The Advisory Altitude Table for CAT H (Helicopter) procedures is based on a 6.5% (400 ft/NM) profile rounded to the nearest 50 ft.
- Where required due to obstacles, a steeper descent profile may be shown.
- Instrument approach segments with upper limits equivalent to obstacle clearance altitudes are shown as grey shaded areas between fixes on final approach.
- The segment OCA (obstacle clearance altitude) is shown as a bold underlined altitude located midway between fixes and just below the top of the grey area.
- Procedure altitudes (the same as the applicable altitude in advisory altitude table) will be shown beside the approach track against each fix.
- The shaded area ends at the missed approach point.
- ILS, combined ILS/LOC, and RNAV (RNP) with VNAV profile charts do not show the grey shaded areas.
- Those approaches with circling only minima do not show constant angle descent profile or the grey shaded areas.

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Approach Naming Convention
Effective: 14 SEP 17

The following ICAO Doc 8168 — PANS-OPS naming convention principles are currently being considered:

a) CIRCLING ONLY APPROACHES

For annotation of the circling-only approach procedures (i.e. not aligned with a specific RWY for straight-in landing).

Example: VOR A

If more than one circling approach exists at the aerodrome, or at adjacent aerodromes managed by the same approach unit, each will have a different suffix assigned to it, starting with letter A. (e.g. VOR A, VOR B, NDB C). This convention is applied in New Zealand.

b) TWO SAME-TYPE APPROACHES

To differentiate between two separate approaches of the same type (e.g. VOR, NDB or RNAV), to the same RWY, suffixes are assigned starting from the letter Z. The subsequent suffixes follow the inverse alphabetic order.

Example: RNAV (GNSS) Z RWY 16
RNAV (RNP) Y RWY 16

(Note: Since the part in the brackets is not spoken in the RT transmissions, in the absence of a suffix the above two examples would sound exactly the same in the ATC clearance. They are considered same-type approach for the purpose of naming convention.)

This has been implemented for RNAV procedures and implementation to conventional procedures will be considered in the future.

c) HELICOPTER APPROACHES

A helicopter approach to a point in space or a helipad shall include the final approach track in the approach name.

Example: RNAV (GNSS) 027 or VOR 027

This convention is applied in New Zealand.

d) ADDITIONAL NAVIGATION AIDS

If additional navigation aids that are not identified in the procedure name are required, they shall be specified on the plan view of the chart. This is currently not applied and will be considered in the future.

The current AIP charting convention is to show navigation aids required for an approach with a shaded NAV/COM box.

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4/18 **AIC**

Satellite-Based Augmentation System (SBAS) Trial
Effective: 1 MAR 18

The Australasian SBAS test-bed is a collaboration between the New Zealand and Australian governments to evaluate SBAS technology over the region, which commenced in JUN 2017, through to JAN 2019.

As part of developing the New Zealand Government's National Positioning Infrastructure (NPI) capability, LINZ on behalf of the New Zealand government, is cooperating with Geoscience Australia to deliver an Australasian SBAS test project. The New Zealand part of the project is funded through LINZ, New Zealand Transport Agency, Ministry of Business, Innovation and Employment and Ministry of Transport.

As well as testing current-generation SBAS, the two-year project will test two new satellite positioning technologies including next generation SBAS and Precise Point Positioning, which will provide positioning accuracies of several decimetres and five centimetres respectively.

In April 2017, CRC-SI on behalf of LINZ and Geoscience Australia called for organisations from across the aviation, road, rail, maritime, spatial, construction, mining, utilities and agriculture sectors to participate in the test-bed. Expressions of interest are being evaluated.

CRC-SI is the Australia and New Zealand Cooperative Research Centre for Spatial Information. It is a collaborative research centre that partners with government, academia and industry to conduct user-driven research related to spatial information. The SBAS initiative resides within the Positioning programme of the CRC-SI.

The Australia New Zealand joint SBAS trial test-bed signal will be broadcast through to the end of February 2019. New Zealand is dependent on GNSS (GPS) signals for aviation navigation and surveillance. The SBAS test-bed downlink signal is not aviation approved, however, provides test correction signals for the L1 signal provided by GPS, the same signal used by aviation approved Technical Standard Order (TSO) equipment.

The test signal will be broadcast with bit "0" set, this should ensure aviation TSO equipment ignores the test signal test correction values.

New Zealand utilises GNSS aviation equipment for navigation that is designed to RTCA DO-229 standards and approved under Federal Aviation Administration (FAA) TSOC145 or TSO-C146 standards (and EASA equivalents). The CAA has verified that these TSO certified navigation systems have a function that will ignore SBAS signals transmitted with bit "0" set and no aviation navigation issues are expected during the SBAS trial broadcasts.

Note that GPS receivers designed to meet the requirements of RTCA DO-208 (TSOC129) will not be affected by the SBAS test signal as they have no SBAS functionality.

Hence, for aviation approved (TSO) GNSS IFR navigation aircraft systems no abnormal behaviour is expected. If any navigation anomalies occur, or are suspected, report the situation promptly under Part 12 as a non-standard navigation situation and mention "SBAS issue" in the description.

The SBAS trial test bed will also broadcast an L5 signal. There is no certified aviation equipment using the L5 signal (or corrections) currently in NZ.

Further information is available from the CAA website:
http://www.caa.govt.nz/nss/satellite-based-augmentation-system-sbas-development/

7/18 **AIC**

Naming Convention for Omni-Directional Departures
Effective: 26 APR 18

Omni-directional departures are currently not named and there is ambiguity in the application of omni-departures at controlled aerodromes. To remove this ambiguity, omni-departures at controlled aerodromes will be named as below and adopt the ICAO standard departure chart layout and format used in the AIPNZ.

NEW PLYMOUTH ONE (NP1) DEPARTURE

OHAKEA ONE ROMEO (OH1R) DEPARTURE

OHAKEA ONE SIERRA (OH1S) DEPARTURE

8/18 **AIC**

CPDLC Uplink Message Latency Monitor Function (NZZO)
Effective: 21 JUN 18

1. Introduction

1.1 Reduced lateral and longitudinal separation minima predicated on Performance Based Communication and Surveillance (PBCS) specifications RCP 240 and RSP 180 are in use in the Auckland Oceanic FIR. One of the safety requirements in RCP 240 allocated to the aircraft system requires the aircraft system to provide an appropriate indication to the pilot on receipt of an expired message.

1.2 To support this requirement, Auckland Oceanic Area Control will uplink the CPDLC delayed message "SET MAX UPLINK DELAY VALUE TO [*delayed message parameter*] SECONDS" to prompt the pilot to enter the specified expiry time into the aircraft avionics (refer to the Global Operational Data Link Manual (GOLD) ICAO Doc 10037 Appendix A table A.4.13).

1.3 This AIC provides guidance to Aircraft Operators and pilots on how to react when receiving the uplink delayed message.

2. Discussion

2.1 The intention of the message latency monitor function is to prevent pilots from acting on a CPDLC uplink message that has been delayed in the network. The most serious of such cases would be the pilot executing a clearance that was no longer valid.

2.2 There are variations between aircraft types in implementation of the message latency monitor function:

a) The Airbus implementation and some general aviation aircraft implementations function in such a way that the aircraft automatically rejects a delayed uplink message by sending an error message to ATC and does not show the message to the pilot. The message sent to ATC is normally this:

ERROR INVALID DATA. UPLINK DELAYED IN NETWORK AND REJECTED RESEND OR CONTACT BY VOICE.

b) The Boeing implementation and some general aviation aircraft implementations function in such a way that the delayed message is displayed to the pilot with an indication that the message has been delayed. It is then the pilot's responsibility to act as appropriate, refer to section 3 below.

c) Some aircraft have an implementation that has not been designed in accordance to industry standards.

d) Some CPDLC equipped aircraft do not have the message latency monitor function implemented at all.

2.3 Because aircraft implementations are varied, it is impossible for ATC to tailor the uplink delayed message to different aircraft types. ATC will uplink this message to all CPDLC connected aircraft with CPDLC current data authority (CDA) status for NZZO confirmed immediately after they enter NZZO.

3. Pilot Procedures

3.1 Pilots should be familiar with aircraft functionality that concerns the CPDLC uplink message latency monitor.

3.2 When the pilot receives the uplink delayed message he/she shall:

a) Send a positive response to ATC as prompted by the avionics (ACCEPT [ROGER]) regardless of whether the aircraft supports the latency monitor.

Note 1: It is important that pilots respond to the uplink delayed message to avoid having open unanswered CPDLC messages in the system. This also applies to aircraft that have deficient message latency monitor functionality or no such functionality at all.

Note 2: The GOLD Manual specifies that the pilot should append the response downlink with the free text message TIMER NOT AVAILABLE when the message latency monitor function is not available in the aircraft (refer to GOLD Table 4-1).

b) If the aircraft is equipped with a correctly functioning message latency monitor, enter the specified uplink delay into the avionics in accordance with the aircraft procedures. Some avionics will automatically set the delay value in accordance with the uplink message and do not allow for a manual input.

3.3 When a pilot receives a CPDLC uplink message with an indication that the message has been delayed the pilot shall:

a) Revert to voice communications to notify the ATS unit of the delayed message received and to request clarification of the intent of the CPDLC message; and

b) Respond appropriately to close the message as per the instructions of the controller.

c) The pilot must not act on the delayed uplink message until clarification has been received from the controller.

4. Implementation and Further Information

4.1 Implementation of the uplink delayed message will start on or after 21 June 2018.

4.2 For the initial implementation in NZZO the delayed message parameter value will set at 300 seconds.

4.3 For further information please contact Paul Radford at paul.radford@airways.co.nz

9/18 Cancels 5/18 AIC

PBN Implementation in New Zealand
Effective: 11 OCT 18

Introduction

Airways is implementing performance based navigation (PBN) procedures in line with ICAO resolution A37-11: *Performance-based navigation global goals,* with CAA's *PBN Implementation Plan — New Zealand*, and with the New Southern Sky *National Airspace and Air Navigation Plan*. Refer to AIPNZ Vol 1 ENR 1.5 – 3 for further detail.

Schedule

PBN implementation is planned at the following locations:

Location/Procedures	PBN Nav-spec	Target Implementation Date
Marlborough Enroute PBN revisions	**RNAV 2**	**8 NOV 18**
Nelson SIDs and STARs	RNP 1	8 NOV 18
Nelson approaches	RNP APCH *labelled RNAV GNSS*	8 NOV 18
Whenuapai Enroute PBN revisions	**RNAV 2**	**23 MAY 19**
Whenuapai SIDs and STARs	RNP 1 / RNAV 1	23 MAY 19
Whenuapai approaches	RNP APCH *labelled RNAV GNSS*	23 MAY 19
Hawkes Bay Enroute PBN revisions	**RNAV 2**	**7 NOV 19**
Napier SIDs and STARs	RNP 1	7 NOV 19
Napier approaches	RNP APCH *labelled RNAV GNSS*	7 NOV 19
Gisborne SIDs and STARs	RNP 1	7 NOV 19
Gisborne approaches	RNP APCH *labelled RNAV GNSS*	7 NOV 19

Significant changes will be notified via AIC revision, AIP Supp or NOTAM as appropriate.

Navigation Specification

Enroute — PBN ATS routes (Q, Y, Z and T) within NZZC are designated **RNAV 2**. Some RNAV 2 routes are available to non-GNSS aircraft (DME/DME/IRU required) subject to conditions specified in the table AIPNZ Vol. 2 ENR 3.2 – 201/202.

Terminal — **RNAV 1** SIDs and STARs are provided at locations with 24/7 surveillance ATC service (Auckland, Wellington and Christchurch). Elsewhere **RNP 1** SIDs and STARs are provided. **RNP AR DP** (departure procedures) may be provided for operational advantage.

Approach — **RNP APCH** approaches [currently identified as "RNAV (GNSS)"] are provided at all ATC controlled locations. **RNP AR** approaches may be provided for operational advantage.

Airspace

Airspace containment is provided for PBN instrument flight procedures at controlled aerodromes, unless specifically stated otherwise on the chart.

CAA have aligned their airspace review programme with Airways PBN Implementation in order to minimise the number of airspace changes required.

Impact on IFR operations

Non-PBN procedures will be rationalised to accommodate conventional navigation. Withdrawal or retention of non-PBN procedures is subject to Aerodrome Operator agreement and industry consultation. Operators should assess the impact of PBN implementation on their operations.

Note: Where PBN has been implemented, priority may be given to PBN operations (refer AIP NZ ENR 1.1 10.3.1 (f)).

Operator approvals

CAA Advisory Circular AC 91-21 details the requirements for operators to obtain an operational approval to conduct PBN operations. Refer online: https://www.caa.govt.nz/rules/ACs.htm

Contact

For further information on aircraft operator approvals, contact CAA NZ (www.caa.govt.nz).
For further information on planned PBN implementation and associated ATM or airspace changes, contact:

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AIC cancelled

2018
1/18

AIRWAYS
NEW ZEALAND