Transport Canada Transports Canada

Advisory Circular

Subject: **Procedure to be followed in order to support Instrument Approach Procedures (IAP) at a non-certified aerodrome**

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1.0 Introduction

(1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

1.1 Purpose

(1) The purpose of this Advisory Circular (AC) is to provide operators of non-certified aerodromes with a set of instructions that outlines the procedure to be followed in order to support Instrument Approach Procedures (IAP) at a non-certified aerodrome.

1.2 Applicability

(1) This document is applicable to operators of all non-certified aerodromes, registered aerodromes, TCCA headquarters and regional Aerodromes and Air Navigation divisional personnel, IP designers and sponsors, and is also available to the aviation industry for information purposes.

1.3 Description of changes

(1) Addition of “Critical aircraft” in the definitions and section 4.0 for additional guidance.

(2) Revision of section 3.0 Background

(3) Revision of section 4.0 Requirements

(4) Revision to specifications in Table 2.

2.0 References and requirements

2.1 Reference documents

(1) It is intended that the following reference materials be used in conjunction with this document:

(a) *Aeronautics Act* (R.S.C., 1985, c. A-2)

(b) Part VIII Subpart 3 of the *Canadian Aviation Regulations* (CARs) – Aeronautical Information Services;

(c) CAR 803.02 – Development and Publication of Instrument Procedures;

(d) AC 803-007 – Notification of changes to the Aerodrome Operator Attestation requirements;

(e) Transport Publication (TP) 308/GPH 209, dated 2018-01-01 - *Criteria for the Development of Instrument Procedures;* and

(f) TP 312 5th Edition — Aerodrome Standards and Recommended Practices

2.2 Cancelled documents

(1) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.3 Definitions and abbreviations

(1) The following **definition**s are used in this document:

(a) **Critical aircraft** means the aircraft identified as having the most demanding operational requirements with respect to the determination of the aerodrome physical characteristics.

(b) **Sponsor** means a person or organization that funds and supports the IPs that are submitted, maintained and reviewed.

(2) The following **abbreviations** are used in this document:

(a) **IAP** means Instrument Approach Procedure;

(b) **IP** means Instrument Procedure

Note: Refer to Aerodrome Physical Characteristics (Table 2) of this document for the description of terms used to complete the Aerodrome Operator Attestation (Appendix A).

3.0 Background

(1) Issue 02 of this AC outlined specifications that had to be attested to by aerodrome operators before December 31st 2020, for the continued publication of any public IAPs or any IAPs with minima's lower than 500 feet above airport elevation. Some aerodromes require physical works at the site to address obstacles infringing within these specifications before the aerodrome can be attested as obstacle free within the specified distances.

(2) However, the recent world-wide situation related to COVID-19 has led to a variety of governmental measures in Canada. Measures such as urging Canadians to minimize travel, mandatory isolation periods and limiting the number individuals in groups has made the execution of aerodrome physical works and travel to remote sites difficult.

(3) In considering the above measures related to COVID-19 prevention and how these directly affect the capability to execute physical works in a "normal" project timeline, TCCA has modified the date stated in Issue 02 to allow for an additional construction season for execution of any works required for adherence to the attestation specifications stated in this issue of the AC.

(4) Section 803.02 of the *Canadian Aviation Regulations* (CARs) regulates the development of civil instrument procedures in Canada through the standards manual entitled Criteria for the Development of Instrument Procedures, known as TP308. Paragraph 120(a) of this document requires that specific aerodrome standards be met prior to the publishing of any instrument procedure.

(5) The rationale for linking the aerodrome standards and TP308 is to ensure that a specific obstacle-free environment is provided in the vicinity of the non-certified aerodrome to support the visual segment of an IAP.

(6) TP312 5th Edition Aerodrome Standards and Recommended Practices document came into effect on September 15th 2015 and includes a number of changes relating to the physical characteristics needed to support an IAP at an airport. While TP312 5th is not in itself binding on aerodromes, it does establish the physical characteristics of the runway environment needed to support an IAP.

(7) This AC has been updated to provide the recognized level of safety of the 5th Edition. In some situations there is an increase to the minimum aerodrome physical characteristics.

(8) The attestation has been updated to use the Aircraft Approach Speed as the reference element linking to the aerodrome infrastructure requirements. This change is for consistency with the airspace design criteria document TP308, and facilitates publication of the minima's in the aeronautical publication.

(9) As stated in paragraph 213 of TP308 "When designing an instrument procedure, Category A, B, C and D normally will be considered…" In some cases, the lack of categories C and D minimums on IAPs results in the loss of access to some aerodromes by aircraft operators.

(10) The change to Aircraft Approach Speed category also provides the possibility of having a higher minima, in some situations, for the speed C and D categories where the obstacle environment may only be compatible with speed categories A and B for the lower non-precision minima's.

4.0 Requirement

(1) The aerodrome attestation form is required to support public IAPs at non-certified aerodromes. This attestation is also required to obtain minima lower than 500 ft for restricted IAPs at non-certified aerodromes.

(2) The aerodrome operator must complete the attestation using the procedure stated in this AC for new and existing IAPs.

(3) The attestation for existing IAPs, should be updated by the aerodrome operator and provided to the IP sponsor before 2021-09-30.

(4) The IP sponsor should submit the updated attestation and other applicable documentation associated with an existing IP, including required IAP NOTAMs, to NAV CANADA before 2021-12-31 for consideration of publication amendments in the next available AIRAC cycle.

(5) Where the aerodrome operator does not complete the updated attestation, or the IP sponsor does not submit the updated attestation form and other applicable documentation to NAV CANADA by 2021-12-31, including an indication if the landing surface is designed to no standard (no aerodrome status), Transport Canada will require NAV CANADA to NOTAM the affected IAPs 'not authorized' and initiate action to permanently remove the IAPs from the inventory. Reinstatement of these IAPs will require submission to NAV CANADA through the normal process for submission of new IAPs.

(6) Where an aerodrome operator has site issues that would render adherence to the specifications stated in this AC not practicable, the sponsor should be advised of the issues.

(7) In order to define the aerodrome physical characteristics needed to support an IAP, the aerodrome operator should consider the operating characteristics of the critical aircraft as some aircraft may be required, at times, to operate in a higher speed category. Ideally, IAPs are designed for all aircraft approach speeds.

(8) The aerodrome operator must work in cooperation with the IP sponsor of an instrument approach procedure to support access for the greatest number of users and aircraft approach categories.

(9) In considering a proposed procedure, the IP sponsor must respect an aerodrome's request not to publish a given line of minima if in doing so it would incur financial obligation or responsibility they are unable or unwilling to accept.

4.1 Procedure

(1) Table 1, attached, specifies the type of instrument procedure, the associated minima and application (public or restricted use) authorized for any combination of navigation aid (NAVAID capability versus the landing surface and applicable aerodrome design requirements) and approach system.

(2) The procedure that a non-certified aerodrome operator is to follow in order to support a public IAP, or a restricted IAP with minima lower than 500 ft is outlined in this section.

(a) The aerodrome operator is responsible to ensure an assessment of the "Aerodrome Physical Characteristics" is conducted and to maintain the aerodrome in the attested, or improved, condition. It is expected that a qualified person will conduct the assessment of the actual physical aerodrome characteristics. A qualified person in respect of this

assessment, is a person who, because of his knowledge, training and experience, is qualified to perform this assessment.

(b) The aerodrome operator must ensure an assessment is conducted for each runway end for which an IAP is published. The assessment is based on the minimum requirements for the Aircraft Approach Speed category specified in Table 2, "Aerodrome Physical Characteristics", attached. Figure 1 is provided to illustrate the obstacle limitation surface terminology used in Table 2.

(c) Should the actual aerodrome physical characteristics be compatible with more than one type of runway (non-precision and non-instrument), the Aerodrome Operator Attestation (Section C) should be reflecting this. For example, where the obstacle environment is compatible for a non-precision runway categories (CAT) A and B, the same runway could also be compatible for non-instrument CAT A, B, C & D. If values are verified and entered in the attestation for both types of runway, the IAP could provide non-precision minima's for CAT A & B and non-instrument minima's for CAT C & D (500' AGL or higher).

(d) The aerodrome operator is responsible for gathering all the required information to complete the Aerodrome Operator Attestation (Appendix A), and providing a signed copy of the attestation form along with the assessment results, to the IP sponsor. This information and the attestation provides the IP designer with the documentation to confirm compliance with the requirements set out in paragraph 120(a) of TP 308.

5.0 Information management

(1) Not applicable.

6.0 Document history

(1) AC 301-001 Issue 02, RDIMS 11230682 (E), 13198791 (F), dated 2018-10-15 – Procedure to be followed in order to support an IAP at a non-certified aerodrome.

(2) AC 301-001 Issue 01, RDIMS 4014811 (E), 4172160 (F), dated 2008-10-01 – Procedure to be followed in order to support an IAP at a non-certified aerodrome.

7.0 Contact us

For more information, please contact the appropriate Transport Canada Civil Aviation Regional Office - Aerodromes at the following address:
http://www.tc.gc.ca/eng/regions.htm

We invite suggestions for amendment to this document. Submit your comments to:
Civil Aviation Communications Centre
Telephone: 1-800-305-2059
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Appendix A — Aerodrome operator attestation

SECTION A

Attestation type – Check appropriate box

☐ INITIAL

☐ UPDATED

Note: Sections A, B and C must be fully completed for proper processing.

SECTION B

I attest that the information, specified in Section C below, on Aerodrome Physical Characteristics provided for _____ is accurate,

(Name of aerodrome)

and I further agree to maintain the physical characteristics of the aerodrome in the same, or improved, condition as they were on the date of the signing of this document. Failing this, I agree to immediately inform NAV CANADA of any change or modification of the aerodrome characteristics in order that an assessment of the continuing validity of these procedures be made.

_____

Print name of aerodrome operator)

_____ _____

Signature of Aerodrome Operator Date

SECTION C				
ACTUAL AERODROME PHYSICAL CHARACTERISTICS				
Runway end ID : _____	Threshold Elevation (feet) _____	RWY Orientation (degrees) _____(M or T)	Threshold Coordinates (1/100th sec) _____	
Type of Runway	**Non-Instrument runway**		**Non-Precision Runway**	
AIRCRAFT APPROACH SPEED CATEGORY	CAT A, B, C & D	CAT A, B (only)	CAT A, B, C & D	CAT A, B (only)
CHARACTERISITCS				
Runway Strip Specifications:				
Strip width (each side of centreline)	_____m (ft)	_____m (ft)	_____m (ft)	_____m (ft)
Strip length (Prior to threshold)	_____m (ft)	_____m (ft)	_____m (ft)	_____m (ft)
Approach Surface Specifications:				
Length of inner edge	_____m (ft)	_____m (ft)	_____m (ft)	_____m (ft)
Distance from threshold	_____m (ft)	_____m (ft)	_____m (ft)	_____m (ft)
Divergence (minimum each side)	_____%	_____%	_____%	_____%
Length (minimum)	_____ m (ft)	_____ m (ft)	_____ m (ft)	_____ m (ft)
Slope(maximum)	_____%	_____%	_____%	_____%
Slope offset (where applicable) • Offset degrees and orientation relative to extended runway centreline • Length of straight segment	_____degrees _____(N, S, E, W) _____ m (ft)			
Transition Surface Specifications				
Slope (maximum) Lower segment Upper segment(where required)	_____% _____%	_____% _____%	_____% _____%	_____% _____%

Notes:

(1) The values entered in this section have to meet or exceed the minimum requirements of TABLE 2 , and TABLE 3 where applicable

(2) A form is required for each runway end served by an instrument approach procedure.

(3) For slope offset, the visual procedures must be annotated on the IAP chart.

Table 1 - Instrument procedure and minima authorized versus aerodrome operator attestation

Non-Certified Aerodrome		TP 308		
NAVAID / Approach System Capability	**Type of Runway**	**Type of Procedure**	**Minima Authorized**	**Application**
Precision	Non-Precision	PA, NPA or APV	DH, MDA or DA not lower than 250 feet HAA/HAT	Public or Restricted
Precision	Non-Instrument	PA, NPA or APV	DH, MDA or DA not lower than 500 feet HAA/HAT	Public or Restricted
Non-Precision/ APV	Non-Precision	NPA or APV	MDA or DA not lower than 250 feet HAA/HAT	Public or Restricted
Non-Precision/ APV	Non-Instrument	NPA or APV	MDA or DA not lower than 500 feet HAA/HAT	Public or Restricted

APV: Approach Procedure with Vertical Guidance

DA: Decision Altitude

DH: Decision Height

HAA: Height Above Aerodrome

HAT: Height Above Touchdown Zone Elevation

MDA: Minimum Descent Altitude

NPA: Non-precision Approach

PA: Precision Approach

Level of precision of the information provided:

- Threshold elevation: elevation shall be given to the nearest foot.
- Threshold coordinates: the geographic coordinates of the runway threshold shall be given to the nearest 1/100th of a second.
- Runway Orientation: bearings shall be given to the nearest degree.

Table 2 - Aerodrome Physical Characteristics

Minimum Requirements

	TYPE OF RUNWAY			
	Non-Instrument Runway		Non-Precision Runway	
AIRCRAFT APPROACH SPEED	CAT A & B ONLY	CAT A, B, C & D	CAT A & B ONLY	CAT A, B, C & D
	CHARACTERISTICS			
Runway Strip specifications				
Strip width (each side of centre line)	40 m (131.5 ft)	75 m (246 ft)	70 m (230 ft)	122 m (400 ft)
Strip length (Prior to threshold and beyond departure end)	60 m (197 ft)	60 m (197 ft)	60 m (197 ft)	61 m (200 ft)
Approach surface specifications				
Length of the inner edge	80 m (262.5 ft)	150 m (492 ft)	140 m (460 ft)	244 m (800 ft)
Distance from threshold	60 m (197 ft)	60 m (197 ft)	60 m (197 ft)	61 m (200 ft)
Divergence (minimum each side)	10%	10%	10%	15%
Length (minimum)	2500 m (8202 ft)	3000 m (9843 ft)	2500 m (8202 ft)	5000 m (16405 ft)
Slope (maximum)	4% (1:25)	2.5%(1:40) to 720 m thereafter 2.9%(1:34) to 3000 m	3.33% (1:30)	2.5%(1:40) to 720 m thereafter 2.9%(1:34) to 5000 m
NOTE: Some aerodromes may require an offset in the approach surface to clear obstacles. Where applicable, the criteria in Table 3 and associated notes is to be utilized in addition to the above.				
Transition Surfaces Specifications Slope	20.0%(1:5) to 45 m above origin	14.3%(1:7) to 45 m above origin	25.0% to 23 m above origin thereafter 14.3%(1:7) to 45 m	25.0% to 23 m above origin, thereafter 14.3%(1:7) to 45 m

Table 2 - Definitions:

AIRCRAFT APPROACH SPEED CATEGORY. A grouping of aircraft based on a reference landing speed (V_{REF}), if specified, or if V_{REF} is not specified, 1.3 times stall speed (V_{SO}) at the maximum certificated landing weight. V_{REF}, V_{SO}, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry.

1) Category A: Speed less than 91 kt.
2) Category B: Speed 91 kt or more but less than 121 kt.
3) Category C: Speed 121 kt or more but less than 141 kt.
4) Category D: Speed 141 kt or more but less than 166 kt.

Note: FAA Airport Design Advisory Circular (AC) 150/5300-13A contains a partial aircraft listing of aircraft reference landing speeds. Further information may be obtained from the aircraft manufacturer.

OBSTACLE LIMITATION SURFACE (OLS). A surface that establishes the limit to which objects may project into airspace associated with an aerodrome so that aircraft operations at the aerodrome may be conducted safely. Obstacle limitation surfaces consist of the following:

(1) Approach Surface. An incline plane preceding the threshold of a runway. The origin of the plane comprises:

1) An inner edge of specified length (strip width), perpendicular to and evenly divided on each side of the extended centre line of the runway, and beginning at the end of the runway strip; and
2) Two sides originating at the ends of the inner edge, diverging uniformly at a specified rate in the direction of an approaching aircraft.

The elevation of the inner edge is equal to the elevation of the threshold.

(2) Transitional Surface. A complex surface sloping up at a specified rate from the side of the runway strip and from part of the approach surface.

The elevation of any point on the lower edge of the surface is:

(a) Along the side of the approach surface, equal to the elevation of the approach surface at that point;
(b) Along the runway strip, equal to the elevation of the centreline of the runway, perpendicular to that point; and

The elevation of any point of the upper edge is located at 45m above;

(a) the point of origin of the lower edge for non-precision runways, or
(b) the aerodrome elevation for non-instrument runways .

(3) Runway Strip. A defined area, which includes the runway and stopway where provided, intended to protect aircraft flying over it during take-off and landing operations. The elevation of the runway strip at any point is equal to the elevation of the centreline, or edge if higher, of the runway, perpendicular to that point.

Table 3 – Offset Approach Surface (Non-Instrument Runways)	
Straight segment for Offset Approach Surfaces	
Intercept angle (degrees)	**Minimum length**
< 5	0 m (0 ft)
5 < 10	458 m (1503 ft)
10 < 20	915 m (3002 ft)
20 < 30	1372 m (4502 ft)

NOTES:

(1) An approach surface offset from the extended runway centreline may be established for non-instrument runways provided that;

(a) there are geographical points and/or other visual aids available to reference the offset approach;

(b) the visual manoeuvring procedures relating to the offset approach are published;

(c) the divergence on the affected side of the approach surface is increased in the same direction and number of degrees as the off-set from the extended runway centreline;

(d) a final straight-in segment is established in accordance to the criteria above; and

(e) obstacle(s) in the area opposite to the offset, (identified as area “D”) in Figure 2, are assessed using the same slope as the approach surface, for the identification of obstacles that may require marking, lighting and publication.

(2) See Figure 2 for depiction of an offset approach surface.

Figure 1 – Overview Of Obstacle Limitation Surfaces

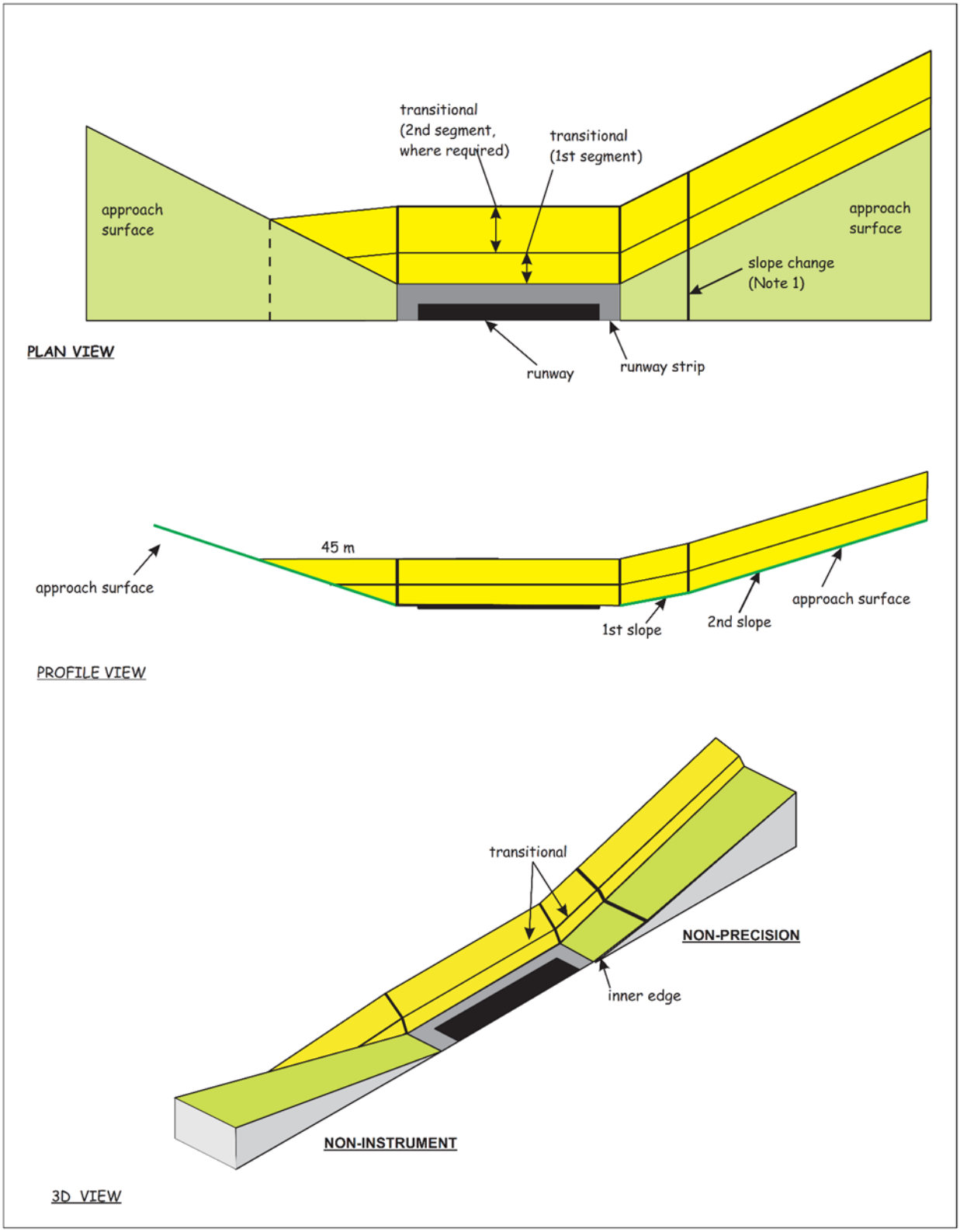

Figure 2 – Offset Approach Surface (Non-Instrument Runways)