



Advisory Circular

Subject: Special Authorization for Take-off Operations below RVR 600 down to and including RVR 300

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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 AC is to inform the aviation industry that air operators and private operators may now obtain a Canadian authorization by Special Authorization (SA) for take-off minima – with reported visibility below Runway Visual Range (RVR) 600 down to as low as RVR 300. This authorization will enable Canadian air operators and private operators to plan and execute taxi, take-off and return-to-gate operations with visibility as low as RVR 300 at approved airports, subject to the applicable requirements of the SA. The final step in the operational approval is the issuance of the SA to the air operator or private operator. This SA will also form the basis upon which a foreign National Aviation Authority (NAA) may authorize, within their jurisdiction, a Canadian air operator or private operator to conduct taxi and take-off operations in RVR 300 visibility conditions. It is important to note that authorization to conduct RVR 300 take-off operations automatically brings into effect credit for RVR 600 and RVR 1200 take-off authorization.

1.2 Applicability

- (1) This AC applies to Canadian air operators holding an Air Operator Certificate (AOC) issued under Part VII of the *Canadian Aviation Regulations* (CARs) and to private operators holding a Private Operator Registration Document (PORD) issued under Subpart 604 of the CARs, that wish to operate in as low as RVR 300 visibility conditions at approved airports. These will be commonly referred to as “operator” in this AC.
- (2) This document is also applicable to all Transport Canada Civil Aviation (TCCA) inspectors with surveillance duties, and to individuals and organizations that exercise privileges granted to them under an External Ministerial Delegation of Authority. This information is also provided to the aviation industry at large for educational purposes.

1.3 Description of Changes

- (1) Not applicable.

2.0 REFERENCES AND REQUIREMENTS

2.1 Reference Documents

- (1) It is intended that the following reference materials (latest edition) be used in conjunction with this document:
 - (a) *Aeronautics Act* (R.S., 1985, C.A-2);
 - (b) Part V of the *Canadian Aviation Regulations* (CARs) — *Airworthiness*;
 - (c) Part VI, Subpart IV of the CARs — *Private Operator*;
 - (d) Part VII, Subpart II of the CARs — *Aerial Work*;
 - (e) Part VII, Subpart III of the CARs — *Air Taxi Operations*;

- (f) Part VII, Subpart IV of the CARs — *Commuter Operations*;
- (g) Part VII, Subpart V of the CARs — *Airline Operations*;
- (h) Standard 722 of the *Commercial Air Services Standard (CASS)* — *Aerial Work*;
- (i) Standard 723 of the CASS — *Air Taxi*;
- (j) Standard 724 of the CASS — *Commuter Operations*;
- (k) Standard 725 of the CASS — *Airline Operations*;
- (l) Operations Specification *Take-Off Minima* — *Reported Visibility RVR 600*;
- (m) Operations Specification *Category III* — *Instrument Approaches*;
- (n) Transport Canada Publication (TP) 1490, 4th Edition, 2011-06-01 — *Manual of All Weather Operations (Categories II and III)*;
- (o) TP 312, 5th Edition, 2015-09-15 — *Aerodrome Standards and Recommended Practices - Land Aerodromes*;
- (p) TP 6533, 9th Edition, 2007-11-01 — *Approved Check Pilot Manual*;
- (q) (TP 14727, 1st Edition, 2007-11-01 — *Pilot Proficiency Check and Aircraft Type Rating (Aeroplanes)*;
- (r) TP 13750, 1st Edition, 2000-10-01 — *Commercial and Business Aviation Inspection and Audit (Checklists) Manual*;
- (s) Advisory Circular (AC) 302-001, Issue 01, 2008-03-07 — *Publication of the Level of Service with Respect to Departure Below RVR 2600 (1/2 Statute Mile)*;
- (t) AC 302-004, Issue 01, 2009-09-18 — *Use of a Follow-me Vehicle Service to Support Reduced/Low Visibility Operations*;
- (u) AC 302-006, Issue 02, 2009-12-17 — *Publication of Special Reduced/Low Visibility Procedures in the appropriate Aeronautical Information Publication(s)*;
- (v) AC 602-002, Issue 02, 2011-06-30 — *Aerodrome Operating Visibility*;
- (w) AC 700-007, Issue 02, 2009-10-06 — *Airport Taxi-in/Taxi-out Requirements in Reduced/Low Visibility*;
- (x) Commercial and Business Aviation Advisory Circular (CBAAC) 0256, Issue 01, 2006-07-31 — *Low Visibility Take-off Airport Requirements*;
- (y) Federal Aviation Administration Advisory Circular (FAA AC) 120-28D, *Criteria for Approval of Category III Weather Minima for Take-off, Landing and Rollout*;
- (z) International Civil Aviation Organization (ICAO) DOC 9365 — *Manual of All-Weather Operations*;
- (aa) ICAO DOC 9830 — *Advanced Surface Movement Guidance and Control System (A-SMGCS) Manual*;
- (bb) ICAO DOC 9476 — *Manual of Surface Movement Guidance and Control Systems*.

2.2 Cancelled Documents

- (1) Not Applicable

2.3 Definitions and Abbreviations

- (1) The following **definitions** are used for the purposes of this document:
- (a) **Runway Visual Range:** The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.
 - (b) **Special Authorization:** The authorizations, conditions and limitations associated with the air operator certificate (AOC) and subject to the conditions in the operations manual.
 - (c) **V₁:** The maximum speed in the takeoff at which the pilot must take the first action (e.g., apply brakes, reduce thrust, deploy speed brakes) to stop the airplane within the accelerate-stop distance.
- (2) The following **abbreviations** are used in this document:
- (a) **AC:** Advisory Circular;
 - (b) **AFM:** Aircraft Flight Manual;
 - (c) **AGN:** Aircraft Group Number;
 - (d) **AOC:** Air Operator Certificate;
 - (e) **A-SMGCS:** Advanced Surface Movement Guidance and Control System;
 - (f) **CAP:** Canada Air Pilot (NAV CANADA Publication);
 - (g) **CARs:** Canadian Aviation Regulations;
 - (h) **CASS:** Commercial Air Services Standard;
 - (i) **CAT:** Category;
 - (j) **CBAAC:** Commercial and Business Aviation Advisory Circular;
 - (k) **COM:** Company Operations Manual;
 - (l) **EASA:** European Aviation Safety Agency;
 - (m) **EROPS:** Extended Range Operations (any number of engines);
 - (n) **ETOPS:** Extended Range Operations with Two-Engine Airplanes;
 - (o) **FAA:** Federal Aviation Administration;
 - (p) **HSI:** Horizontal Situation Indicator;
 - (q) **ICAO:** International Civil Aviation Organization;
 - (r) **ILS:** Instrument Landing System;
 - (s) **LOFT:** Line Oriented Flight Training;
 - (t) **LVO:** Low Visibility Operations;
 - (u) **LVOP:** Low Visibility Operations Plan;
 - (v) **MLS:** Microwave Landing System;
 - (w) **NAA:** National Aviation Authority;
 - (x) **NASA:** National Aeronautics and Space Administration;
 - (y) **NAVAID:** Ground based Navigational Aid;
 - (z) **Ops Spec:** Operations Specification;

- (aa) **PORD:** Private Operator Registration Document;
- (bb) **RVR:** Runway Visual Range;
- (cc) **SA:** Special Authorization;
- (dd) **SMGCS:** Surface Movement and Guidance Control System;
- (ee) **SOP:** Standard Operating Procedures;
- (ff) **STC:** Supplemental Type Certificate;
- (gg) **TC:** Type Certificate;
- (hh) **TCCA:** Transport Canada Civil Aviation;
- (ii) **VOLPE:** The National Transportation Systems Center, United States Department of Transportation.

3.0 BACKGROUND

- (1) The Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) have authorized ground movements and take-off operations in visibilities of less than 600 ft (175 m) Runway Visual Range (RVR 600) down to RVR 300 (75 m) at approved airports for qualified crews with certified aircraft since the late 1990's. Transport Canada Publication (TP) 312, 5th Edition — *Aerodrome Standards and Recommended Practices – Land Aerodromes* contains certification information for an airport Low Visibility Operations Plan (LVOP) to as low as RVR 300. For the purposes of this Advisory Circular (AC), RVR 600 ft is considered equivalent to 175m; and RVR 300 ft is considered equivalent to 75m.
- (2) The FAA, the National Transportation Systems Center, United States Department of Transportation (VOLPE) and the National Aeronautics and Space Administration (NASA) conducted a low visibility operations study for operations below RVR 1200. This study was used to support an International Civil Aviation Organization (ICAO) OPS PANEL for harmonized low visibility operations. The ICAO OPS PANEL determined that pilots can operate visually to as low as RVR 500. Below RVR 500 Low Visibility/Surface Movement and Guidance Control System (SMGCS) plans are required for the safe movement of aircraft around an airport. The FAA/ICAO has identified two levels of Low Visibility Operations (LVO)/SMGCS: Level 1 RVR less than 1200 down to and including RVR 500 and Level 2 RVR less than 500 down to and including RVR 300. In order to conduct a take-off below RVR 500, a take-off guidance system is required.
- (3) Canadian airports that are approved for taxi and take-off operations in visibilities as low as RVR 300 have invested in lighting and other visual aids to meet the RVR 300 requirements of Transport Canada Publications (TP) 312, 5th Edition - *Aerodrome Standards and Recommended Practices*. Many Canadian air operators have invested in aircraft technology and crew training to enable LVO in conditions less than RVR 600.

4.0 LOW-VISIBILITY OPERATIONS – AERODROME LIMITS AND TAKE-OFF MINIMA

4.1 General

- (1) RVR 300 operational authorization is required for taxi and take-off operations when the reported RVR is lower than RVR 600 and the airport LVO plan authorizes lower than RVR 600 taxi and take-off operations. Operational authorization for visibility as low as RVR 300 includes gate to runway and runway to gate aircraft taxi operations.

- (2) The Aerodrome Operating Visibility minima for LVO are usually classified by RVR and other factors (e.g., aircraft characteristics) while aerodrome limits are published in the *Canada Flight Supplement* using either RVR or visibility in statute miles, depending on the runway operation.
- (3) Take-off minima are published for aerodromes in the Canada Air Pilot (CAP). Where standard take-off minima are published, lower take-off limits as allowed by Special Authorizations (SA) may be available. This AC addresses criteria for take-off in low visibility conditions where additional requirements (operator and aircraft) must be met in order to ensure safe operations when using minima below the values acceptable for exclusive use of visual references.
- (4) Authorization for take-off minima below the level supported by use of visual reference alone (RVR 600) requires the use of a guidance system which has been demonstrated to provide an acceptable level of performance and satisfactory workload for the minima approved, with or without reference to visual cues. The performance and workload assessment of such a system needs to consider any compensation that may be introduced by the pilot for particular guidance system characteristics (e.g., coping with a slight localizer signal offset during initial runway alignment) or concurrent pilot use of the guidance system with limited or patchy visual references.
- (5) **IMPORTANT:** Taxi and takeoff operations at reported visibilities below RVR 600 down to and including RVR 300 may only be conducted at airports certified in accordance with TP 312 (5th Edition or later) or a foreign equivalent. The level of service information permitting RVR 300 operations must be published in the *Canadian Flight Supplement* under runway data or in NOTAM(s). SA for take-off operations below RVR 600 down to and including RVR 300 also requires that the operator and aircraft be certified as per the criteria and conditions listed in the applicable SA, which is being presented in this document's appendix.

4.2 Conditions for Special Authorization

- (1) Appendix A provides the specific condition to be entered into the special authorization for these low visibility operations. The intent is to transcribe these conditions into the operator's AOC or Private Operator Registration Document (PORD). Section 4.3 provides guidance which is applicable to the specific conditions in Appendix A. Appendix B contains a compliance checklist that is intended to be used as a tool for both operators and the inspectors.

4.3 Specific Guidance

- (1) The following table contains specific guidance concerning the requirements for a special authorization for take-off operations in below RVR 600 conditions down to and including RVR 300. The guidance material listed below refers directly to the conditions provided in Appendix A.

Appendix A Condition	Guidance
1.0 (2) (a) (ii)	The moving map display should be used during taxi operations if the aircraft is so equipped.
1.0 (2) (b)	Non-normal and emergency procedures should cover engine failure before or after V1, electrical failure, and low visibility take-off guidance alerts, warnings and failures. Non-normal and emergency procedures should also address possible scenarios during taxi operations.
1.0 (2) (c)	Similar to RVR 600 operations.
1.0 (2) (d) (ii)	This should include any special procedures in use at the airport such as one aircraft operating on the manoeuvring area at a time or the use of a "follow me" vehicle.
1.0 (5)	If aircraft variants are applicable, training programs must take this into account in order to ensure that pilots are aware of any differences which exist and that they appropriately understand the consequences of those

	differences.
1.0 (6)	Operationally relevant characteristics of the navigations systems which are to be used must be addressed in the operator's training program in order to promote safe operations. In the case of an Instrument Landing System (ILS), examples of information to cover would include beam bends, over flight disturbances, beam switchover to secondary transmitters or main and back-up power sources.
1.0 (6) (ii)	A rejected take-off from a point prior to V1 shall include an engine failure.
1.0 (6) (c) (ii) (E)	Although both pilots must be trained and qualified in order to conduct a take-off in conditions less than RVR 600 down to and including RVR 300, first officers may not be authorized to conduct the take-off (in control of the aircraft) due to company policy or limitations in equipment in the right seat.
1.0 (8)	Normal and rejected take-offs shall be conducted in wind and runway surface conditions that become limiting during winter operations. There is no requirement to conduct a take-off and rejected take-off with a failure of the flight guidance device at a critical point if the flight guidance devices that are used demonstrate failure characteristics which are extremely improbable.
1.0 (8) (a) (i)	The operator may elect to use airports that frequently experience low visibility conditions, complex airports on the operator's route system, airports with particular low visibility ground movement difficulties, or rarely used but significant contingency airports (e.g., Extended Range Operations with Two-Engine Airplanes (ETOPS) or Extended Range Operations (EROPS) diversion airports), as determined appropriate by the operator considering that operator's route system, aircraft types, training cycle, Line Oriented Flight Training (LOFT) scenarios used, and typical line issues being experienced.
1.0 (7)	Training and checking in accordance with RVR 300 take-off authorization criteria automatically brings into effect credit for RVR 600 and RVR 1200 training and checking.
1.0 (10)	Recency of experience requirements provides an assurance of the necessary level of proficiency for low visibility take-off operations.
1.0 (10) (c)	Credit for a previous low visibility qualification in a different aircraft type or variant, or previous qualification in the same type or variant at an earlier time may be considered in determining the operator's type of program, length of program, required manoeuvres or repetition of manoeuvres for re-qualification for low visibility taxi and take-off operations.
1.0 (10) (d)	A pilot that is authorized to operate in RVR 300 conditions that transitions to a similar aircraft type may be authorized these limits on the new aircraft upon completion of the required line indoctrination (providing he or she was qualified at these limits for at least 90 days prior to conversion). Similar aircraft shall be considered as turbo-propeller to turbo-propeller or turbo-jet to turbo-jet and in the same aircraft group number (AGN).
2.0 (2)	Where non-magnetic source heading references are used (i.e. Inertial Reference Units), the source heading reference will utilize the current magnetic variation tables for the intended area of operation.
2.0 (4)	With respect to maintenance of the take-off guidance system, emphasis is placed on maintaining and ensuring total system performance, accuracy, availability, reliability, and integrity for operations down to RVR 300.

2.0 (6) (a)	Examples of resources that can be utilized in order to ensure program effectiveness include: manufacturer's recommended maintenance program information; and, reference information cited in this AC. Provision for low visibility operations may be addressed as a specific program or may be integrated with the general maintenance program.
2.0 (6) (a) (iii)	Contractor or sub-contractor organizations and their personnel who are involved in the maintenance program must also be identified and recorded.
2.0 (6) (a) (iv)	Examples of documents which specify relevant criteria include: valid type certificate (TC), appropriate supplemental type certificate (STC), records of compliance, assessment of status of any engineering orders, airworthiness directives, and service bulletins.
2.0 (6) (a) (vii)	If any unique defect reporting procedures are applicable, such procedures shall be described in the operator's maintenance and operations documents.
2.0 (6) (a) (xiii)	Appropriate systems ground and flight checks may need to be performed following heavy maintenance prior to return to service.
3.0 (1)	The <i>Canada Flight Supplement</i> will list the aerodrome operating limits for each runway and taxiway. The level of service information permitting RVR 300 operations must be published in the <i>Canadian Flight Supplement</i> under runway data or in NOTAM(s).

5.0 INFORMATION MANAGEMENT

(1) Not applicable.

6.0 DOCUMENT HISTORY

(1) Not applicable.

7.0 CONTACT OFFICE

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Suggestions for amendment to this document are invited, and should be submitted via the same e-mail as above.

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APPENDIX A - CONDITIONS REQUIRED FOR INCLUSION IN SPECIAL AUTHORIZATION FOR TAKE-OFF OPERATIONS BELOW RVR 600 DOWN TO AND INCLUDING RVR 300

1.0 OPERATOR REQUIREMENTS

- (1) Only those operators with a certified CAT III operation and maintenance program are eligible to receive special authorization for take-off operations in Runway Visual Range (RVR) less than 600 down to and including RVR 300.
- (2) Operators must ensure that the following requirements are met for take-off operations in RVR less than 600 down to and including RVR 300:
 - (a) Operating procedures for the aircraft and the low visibility take-off guidance system to be used must be documented in the Company Operations Manual (COM) and aircraft Standard Operating Procedures (SOP) and will include;
 - i) Setup, test and initialization of the low visibility take-off guidance systems and navigations aids as applicable;
 - ii) Use of the moving map display;
 - iii) Suitable alignment with and tracking of taxiway and runway centrelines; and
 - iv) Transfer of control between pilots for failures or incapacitation as applicable.
 - (b) Non-normal and emergency procedures. The COM shall contain detailed guidance on how to determine the one engine inoperative climb gradient and obstacle clearance for departure;
 - (c) Crew coordination and assigned responsibilities must be established for pushback, ramp and taxi operations in order to ensure compliance with the airport operator's low visibility operations plan;
 - (d) A low visibility operational briefing is to be conducted prior to taxiing in low visibility conditions and must include:
 - i) Roles and responsibilities of the pilot flying and the pilot monitoring;
 - ii) Ramp procedures for push back and/or initial taxi from the ramp/start box to the low visibility taxi route;
 - iii) Transponder requirements for surveillance;
 - iv) Planned low visibility taxi route;
 - v) Location of hold position makers;
 - vi) Location of stop bars; and
 - vii) Any modification of the planned route once the taxi clearance has been received.
- (3) The Pilot-in-Command must ensure that the following requirements are met for take-off operations from certified aerodromes in RVR less than 600 down to and including RVR 300:
 - (a) A suitable take-off alternate aerodrome must be specified in the operational flight plan and that aerodrome must be:
 - i) in the case of a two-engine aircraft, within the distance that can be flown in 60 minutes at the one-engine-inoperative cruise speed; or
 - ii) in the case of a three or four-engine aircraft or where an air operator is authorized in its air operator certificate to conduct Extended Range Operations with Two-Engine Aircraft (ETOPS) with the type of aircraft operated and an ETOPS service

check has been completed on the aircraft, within the distance that can be flown in 120 minutes at the one-engine-inoperative cruise speed (similar to RVR 600 operations).

- (b) The take-off alternate aerodrome weather minima shall meet the alternate requirements set out in the Canada Air Pilot (CAP);
 - (c) The pilot-in-command ensures that at least the required RVR 300 feet visibility exists for the runway to be used before commencing take-off;
 - (d) The approved low visibility take-off guidance system is serviceable and used; and
 - (e) The pilots must have the appropriate low visibility taxi procedure charts in electronic or paper form.
- (4) The flight crew members must be trained in accordance with their approved training program to meet the requirements for this special authorization.
- (5) Training programs must take into account differences between aircraft variants.
- (6) The operator's training program must address the operational characteristics, capabilities and limitations of each of the following:
- (a) Ground Training - Initial
 - i) Take-off alternate requirements, pilot-in-command experience, pilot-in-command responsibility for visibility and obstacle clearance requirements, minimum aircraft and runway equipment requirements, and procedures to ensure compliance with performance limitations.
 - ii) Operationally relevant characteristics about the navigation systems to be used.
 - iii) Visual aid training shall include information about:
 - (A) Touchdown zone lighting;
 - (B) Threshold and displaced threshold lighting;
 - (C) Centerline lighting;
 - (D) Runway edge lighting;
 - (E) Taxiway centreline and edge lighting; and
 - (F) Stop ways and stop bars.
 - (b) Ground Training - Recurrent
 - i) Recurrent ground training must provide a review of all initial training topics with added emphasis placed on areas identified as problem areas through the operator's quality assurance program to ensure continued familiarity with those topics. Emphasis shall be placed on:
 - (A) Program modifications;
 - (B) Changes to aircraft equipment or procedures;
 - (C) Pertinent occurrences or incidents;
 - (D) Mode annunciations including failure conditions or other information which the pilot may not routinely observe during normal line operations.
 - (c) Synthetic Training Device Training - Initial
 - i) Initial Flight training shall be completed in a simulator with a certified visual scene for low visibility operations down to RVR 300.

- ii) Flight training for the low visibility take-off guidance system shall address the following manoeuvres and procedures:
 - (A) Taxi to and from a representative gate using the low visibility taxi route to and from a Category III runway;
 - (B) Normal take-off;
 - (C) Rejected take-off from a point prior to V1;
 - (D) Continued take-off following failures including engine failure, and any critical failures for the aircraft type which could lead to lateral asymmetry during the take-off; and
 - (E) Rejected take-off involving transfer of control from the first officer to the captain if first officers are authorized to conduct a take-off under the specified low visibility conditions.
- (d) Synthetic Training Device Training - Recurrent
 - i) Recurrent flight training shall be completed in a simulator with a certified visual scene for low visibility operations down to RVR 300.
 - ii) Recurrent flight training manoeuvres may be accomplished individually or may be integrated with other manoeuvres required during proficiency training or during proficiency checking.
- (7) The operator's flight checking program must include the flight check requirements of this document and shall appropriately address the operational characteristics, capabilities and limitations of each of the following:
 - (a) Flight Checking - Initial
 - i) Initial Flight checking shall be completed in a simulator with a certified visual scene for low visibility operations down to RVR 300.
 - ii) Flight checking for the low visibility take-off guidance system must ensure competency for the following manoeuvres and procedures:
 - (A) Taxi to and from a representative gate using the low visibility taxi route to and from a Category III runway;
 - (B) Normal take-off;
 - (C) Rejected take-off from a point prior to V1 (including an engine failure);
 - (D) Continued take-off following engine failure; and
 - (E) Rejected take-off involving transfer of control from the first officer to the captain, if first officers are authorized to conduct a take-off under the specified low visibility conditions.
 - (b) Flight Checking - Recurrent
 - i) The pilot-in-command and the first officer shall be checked during their recurrent training or qualification or as specified in an approved advanced qualification program, in an approved synthetic training device by an approved check pilot or a TCCA Inspector and shall be certified in their pilot training files as competent to conduct a take-off below RVR 600 to as low as RVR 300.
 - ii) Recurrent flight checking shall be completed in a simulator with a certified visual scene for low visibility operations down to RVR 300. Flight checking for the low visibility take-off guidance system shall ensure competency for the following manoeuvres and procedures:

- (A) Rejected take-off from a point prior to V1 (including an engine failure);
 - (B) Continued take-off following engine failure; and
 - (C) Rejected take-off involving transfer of control from the first officer to the captain, if first officers are authorized to conduct a take-off under the specified low visibility conditions.
- (8) Checking and Training Under Representative Conditions.
- (a) The conditions under which these normal and rejected take-offs are to be checked include appropriate limiting cross winds and shall be carried out at weights or on runways that represent a critical field length. A rejected take-off shall be conducted with a failure of the flight guidance device prior to V1 and a take-off shall be conducted with a failure of the flight guidance device after V1.
 - i) Training for low visibility taxi and ground operations (e.g., during simulator training, Line Oriented Flight Training (LOFT) or other scenarios) shall be conducted at airports with CAT III runways capable of RVR 300 operations within the operators normal route structure. Training and checking conducted at the lowest approved RVR take-off minima will satisfy the requirements of higher take-off minima.
- (9) Line Checks.
- (a) Operators shall include assessments of low visibility taxi and take-off procedures and practices as necessary during line checks when operations are conducted at facilities appropriate for low visibility operations.
- (10) Recency of Experience and Requalification.
- (a) Pilots shall be exposed to low visibility procedures during training or checking in a simulator during their recurrent training.
 - (b) A re-qualification program must ensure that pilots have the necessary knowledge of the topics specified in initial ground and flight training and that they are able to perform their assigned duties.
 - (c) Operators must ensure that programs which credit previous RVR 300 qualification in a different aircraft type or variant, suitably address differences in the transition program.
 - (d) The pilot-in-command shall have at least 100 hours of pilot-in-command experience on the aircraft type. A pilot-in-command converting onto an aircraft type similar to that on which he or she had been maintaining pilot-in-command qualifications at these limits for at least 90 days prior to conversion may be authorized these limits by the air operator on completion of required line indoctrination.
- (11) The chief pilot, or his or her designate, shall certify in the pilot's training file when the pilot is competent to conduct take-off operations below RVR 600 down to and including RVR 300.
- (12) Foreign Airports Low Visibility Take-off.
- (a) Operators authorized to conduct low visibility take-offs below RVR 600 to as low as RVR 300 at foreign airports, with procedures that differ from Canadian procedures, must ensure that flight crew members are familiar with these differences.

2.0 AIRCRAFT REQUIREMENTS

- (1) The aircraft take-off guidance system shall be approved for operations below RVR 600 to as low as RVR 300 as per Federal Aviation Administration Advisory Circular (FAA AC) 120-28D 5.1.3 *Take-off Guidance Systems*. The lowest operational RVR value should be stated in the limitations of the take-off guidance system or derived from FAA AC 120-28D, Appendix 2, AIRWORTHINESS APPROVAL OF AIRBORNE SYSTEMS USED DURING A TAKEOFF IN LOW VISIBILITY WEATHER CONDITIONS.
- (2) The aircraft must be operated with an accurate heading reference.
- (3) The pilot-in-command and first officer's attitude instruments (artificial horizons) on the aircraft shall:
 - (a) Incorporate pitch attitude index lines in appropriate increments above and below the zero pitch reference line to at least 15°;
 - (b) Be capable of ensuring ready depiction of total aircraft attitude;
 - (c) Feature an approved failure warning system, which will immediately detect essential instrument and equipment failures or malfunctions (for the purpose of low visibility takeoffs, essential instruments are defined as attitude indicators, directional gyros and Horizontal Situation Indicator (HSI's)).
- (4) The take-off guidance system shall be maintained in accordance with the take-off guidance system manufacturer's recommendations as accepted by TCCA. Emphasis is placed on maintaining and ensuring total system performance, accuracy, availability, reliability, and integrity for operations down to RVR 300.
- (5) The operator's minimum equipment list shall identify the components of the take-off guidance system required for less than RVR 600 take-off and taxi.
- (6) Maintenance Program Provisions.
 - (a) The maintenance program shall be compatible with an operator's organization and it must have the ability to implement and supervise the program. Maintenance personnel must be familiar with the operators approved program including their individual responsibilities in the delivery of that program. The organization must be able to readily identify any available resources within or outside of the maintenance organization that may be necessary to ensure program effectiveness. The maintenance program must address the following as a minimum:
 - i) Maintenance procedures necessary to ensure continued airworthiness relative to low visibility operations;
 - ii) A procedure to revise and update the maintenance program;
 - iii) A method to identify, record or designate personnel currently assigned responsibility in managing the program, delivering the program, maintaining the program, or performing quality assurance for the program. This includes identification of any contractor or sub-contractor organizations and their personnel;
 - iv) The systems required for the low visibility take-off and the configuration status for each aircraft in the lower minimum program must be verified. Unless otherwise approved by TCCA, each aircraft must meet the relevant criteria specified by the applicable aircraft manufacturer or avionics manufacturer for associated systems and equipment;
 - v) Identification of any modifications, additions, and changes made to qualify aircraft systems for the intended operation or minima, if other than as specified

- in the Aircraft Flight Manual (AFM), Type Certificate (TC) or Supplemental Type Certificate (STC);
- vi) Identification of additional maintenance requirements and log entries necessary to change minima status;
 - vii) Aircraft defect reporting procedures that are unique to the low visibility program;
 - viii) Procedures which identify, monitor and report lower minimum system and component discrepancies for the purpose of quality control and analysis;
 - ix) Procedures which define, monitor and report chronic and repetitive discrepancies;
 - x) Procedures which ensure aircraft remain out of lower minimum status until successful corrective action has been verified for chronic and repetitive discrepancies;
 - xi) Procedures which ensure the aircraft system status is placarded properly and clearly documented in the aircraft log book, in coordination with maintenance control, engineering, flight operations, and dispatch, or equivalent;
 - xii) Procedures to ensure the downgrade of an aircraft low visibility capability status, if applicable, when maintenance has been performed by persons other than those trained, qualified, or authorized to use or approve procedures related to low visibility operations; and
 - xiii) Procedures for systems ground and flight checks following periodic maintenance.

3.0 AIRPORT REQUIREMENTS

- (1) Take-off operations at reported visibilities below RVR 600, down to and including RVR 300 may only be conducted at airports certified for such operations in accordance with Transport Canada Publications (TP) 312 (5th Edition or later), or a foreign equivalent.

APPENDIX B - CHECKLIST FOR SPECIAL AUTHORIZATION FOR TAKE-OFF OPERATIONS BELOW RVR 600 DOWN TO AND INCLUDING RVR 300

CHECKLIST FOR SPECIAL AUTHORIZATION FOR TAKE-OFF OPERATIONS BELOW RVR 600 DOWN TO AND INCLUDING RVR 300

Notes:

1. This checklist is intended to be a guide; refer to AC 700-035 for specifics about conditions including information intended for guidance and clarification.
2. If printing this checklist, the landscape layout is recommended.

Item	Specifics	Date Completed (yyyy-mm-dd)	Remarks
1.0 Operator Requirements			
CAT III operation and maintenance program	<ul style="list-style-type: none"> ○ Operator possesses a certified CAT III operator and maintenance program 		
COM and SOP content	<ul style="list-style-type: none"> ○ COM and SOP include procedures for: <ul style="list-style-type: none"> ○ Setup, test and initialization of low visibility take-off guidance systems and navigations aids ○ Use of the moving map display ○ Suitable alignment with and tracking of taxiway and runway centrelines ○ Transfer of control between pilots for failures or incapacitation 		
	<ul style="list-style-type: none"> ○ Non-normal and emergency procedures including one-engine inoperative climb gradient and obstacle clearance for departure 		
	<ul style="list-style-type: none"> ○ Crew responsibilities for low visibility pushback, ramp and taxi operations 		
Low visibility operational briefing	<ul style="list-style-type: none"> ○ Conducted prior to taxiing in low visibility conditions and must include: <ul style="list-style-type: none"> ○ Roles and responsibilities of the pilot flying and the pilot monitoring ○ Ramp procedures for push back and/or initial taxi from the ramp/start box to the low visibility taxi route ○ Transponder requirements for surveillance ○ Planned low visibility taxi route ○ Location of hold position makers ○ Location of stop bars ○ Any modification of the planned route once 		

	the taxi clearance has been received		
Pilot-in-Command responsibilities	<ul style="list-style-type: none"> ○ Confirm aerodrome certified for RVR 300 Operations. ○ Take-off alternate specified in the operational flight plan and that aerodrome must be: <ul style="list-style-type: none"> ○ Within 60 minutes at the one-engine-inoperative cruise speed for a two-engine aircraft ○ In the case of a three or four-engine aircraft or where an air operator is authorized to conduct ETOPS, within 120 minutes at the one-engine-inoperative cruise speed 		
	<ul style="list-style-type: none"> ○ Take-off alternate weather meets the alternate requirements set out in the Canada Air Pilot (CAP) 		
	<ul style="list-style-type: none"> ○ Confirmation that RVR 300 feet visibility exists for the runway to be used before commencing take-off 		
	<ul style="list-style-type: none"> ○ Approved low visibility take-off guidance system is serviceable and used 		
	<ul style="list-style-type: none"> ○ Pilots have appropriate low visibility taxi procedure charts in electronic or paper form 		
Operator's training program	<ul style="list-style-type: none"> ○ Flight crew members trained in accordance with their approved training program to meet the requirements for this special authorization 		
	<ul style="list-style-type: none"> ○ Training programs account for differences between aircraft variants 		
	<ul style="list-style-type: none"> ○ Training program addresses the operational characteristics, capabilities and limitations of each of the following: Ground Training - Initial <ul style="list-style-type: none"> ○ Take-off alternate requirements ○ Pilot-in-command experience ○ Pilot-in-command responsibility for visibility and obstacle clearance requirements ○ Minimum aircraft and runway equipment requirements 		

	<ul style="list-style-type: none"> ○ Procedures for compliance with performance limitations ○ Operationally characteristics of the navigation systems to be used ○ Touchdown zone lighting ○ Threshold and displaced threshold lighting ○ Centerline lighting ○ Runway edge lighting ○ Taxiway centreline and edge lighting ○ Stop ways and stop bars 		
<p>Operator's training program (cont'd)</p>	<p>Ground Training - Recurrent</p> <ul style="list-style-type: none"> ○ All initial training topics reviewed with emphasis on areas identified as problem areas through the operator's quality assurance program. Emphasis placed on: <ul style="list-style-type: none"> ○ Program modifications ○ Changes to aircraft equipment or procedures ○ Pertinent occurrences or incidents ○ Mode annunciators including failure conditions or other information which the pilot may not routinely observe during normal line operations 		
	<p>Synthetic Training Device Training - Initial</p> <ul style="list-style-type: none"> ○ Training completed in sim with certified visual for low vis ops down to RVR 300 ○ Training for low vis take-off guidance system covers: <ul style="list-style-type: none"> ○ Taxi to and from a representative gate using the low vis taxi route to and from a CAT III runway ○ Normal take-off ○ Rejected take-off from a point prior to V1 ○ Continued take-off following failures including engine failure, and any critical failures for the aircraft type which could lead to lateral asymmetry 		

	<ul style="list-style-type: none"> ○ Rejected take-off involving transfer of control 		
	<p>Synthetic Training Device Training - Recurrent</p> <ul style="list-style-type: none"> ○ Training completed in sim with certified visual for low visibility operations down to RVR 300 ○ Training manoeuvres accomplished individually or were integrated with other manoeuvres required during proficiency training or during proficiency checking 		
Operator's flight check program	<p>Flight check program includes the flight check requirements of AC 700-035 and appropriately addresses the operational characteristics, capabilities and limitations of each of the following:</p> <ul style="list-style-type: none"> ○ Flight Checking - Initial <ul style="list-style-type: none"> ○ Initial Flight check completed in sim with certified visual for low vis ops down to RVR 300 ○ Flight check for the low vis take-off guidance system ensures competency for the following manoeuvres and procedures: <ul style="list-style-type: none"> ○ Taxi to and from a representative gate using the low visibility taxi route to and from a CAT III runway ○ Normal take-off ○ Rejected take-off from a point prior to V1 (including an engine failure) ○ Continued take-off following engine failure ○ Rejected take-off involving transfer of control 		
	<ul style="list-style-type: none"> ○ Flight Checking - Recurrent <ul style="list-style-type: none"> ○ The pilot-in-command and first officer are certified to conduct take-off operations below RVR 600 to as low as RVR 300 and this is recorded in their pilot training file ○ Recurrent flight checking completed in a sim with certified visual scene for low vis ops down to RVR 300 ○ Flight checking ensures competency for the following manoeuvres and procedures: <ul style="list-style-type: none"> ○ Rejected take-off from a point prior to V1 (including an engine failure) ○ Continued take-off following engine 		

	<p>failure</p> <ul style="list-style-type: none"> ○ Rejected take-off involving transfer of control 		
Representative conditions for checking and training	<ul style="list-style-type: none"> ○ Conditions for these normal and rejected take-offs include: <ul style="list-style-type: none"> ○ Appropriate limiting cross winds ○ Carried out at weights or on runways that represent a critical field length ○ Rejected take-off with a failure of the flight guidance device prior to V_1 ○ Take-off conducted with a failure of the flight guidance device after V_1 ○ Sim training for low visibility taxi and ground operations conducted at airports with CAT III runways capable of RVR 300 operations within the operator's normal route structure 		
Line Checks	<ul style="list-style-type: none"> ○ Operators include assessments of low visibility taxi and take-off procedures and practices during line checks when appropriate 		
Recency of Experience and Requalification	<ul style="list-style-type: none"> ○ Pilots are exposed to low visibility procedures during training or checking in a simulator during their recurrent training 		
	<ul style="list-style-type: none"> ○ Re-qualification program ensures that pilots have the necessary knowledge of the topics specified in initial ground and flight training and that they are able to perform their assigned duties 		
	<ul style="list-style-type: none"> ○ Programs which credit previous RVR 300 qualification in a different aircraft type or variant suitably address differences in the transition program 		
	<ul style="list-style-type: none"> ○ Pilot-in-command has at least 100 hours of pilot-in-command experience on the aircraft type. A pilot-in-command converting onto an aircraft type similar to that on which he or she had been maintaining pilot-in-command qualifications at these limits for at least 90 days prior to conversion may be authorized these limits by the air operator on completion of required line indoctrination 		
Pilot Training File	<ul style="list-style-type: none"> ○ Chief pilot has recorded in the pilot's training file that the pilot is competent and certified to conduct take-off operations below RVR 600 down to and including RVR 300 		

<p>Foreign Airport Low Visibility Take-off</p>	<ul style="list-style-type: none"> Operators authorized to conduct low visibility take-offs below RVR 600 to as low as RVR 300 at foreign airports are familiar with differences from Canadian procedures 		
<p>2.0 Aircraft Requirements</p>			
<p>Aircraft Take-off Guidance System</p>	<ul style="list-style-type: none"> Approved for operations below RVR 600 to as low as RVR 300 as per FAA AC 120-28D 5.1.3 Take-off Guidance Systems 		
	<ul style="list-style-type: none"> Lowest operational RVR value is stated in the limitations of the take-off guidance system or derived from FAA AC 120-28D, Appendix 2, AIRWORTHINESS APPROVAL OF AIRBORNE SYSTEMS USED DURING A TAKEOFF IN LOW VISIBILITY WEATHER CONDITIONS 		
	<ul style="list-style-type: none"> Operated with an accurate heading reference 		
	<ul style="list-style-type: none"> Maintained in accordance with the take-off guidance system manufacturer's recommendations as accepted by TCCA 		
	<ul style="list-style-type: none"> Emphasis is placed on maintaining and ensuring total system performance, accuracy, availability, reliability, and integrity for operations down to RVR 300 		
<p>Pilot-in-command and first officer's attitude instruments (artificial horizons)</p>	<ul style="list-style-type: none"> Incorporates pitch attitude index lines in appropriate increments above and below the zero pitch reference line to at least 15° 		
	<ul style="list-style-type: none"> Depicts total aircraft attitude 		
	<ul style="list-style-type: none"> Features an approved failure warning system 		
<p>MEL</p>	<ul style="list-style-type: none"> Identifies the components of the take-off guidance system required for less than RVR 600 take-off and taxi 		
<p>Maintenance Program Provisions</p>	<ul style="list-style-type: none"> Maintenance program compatible the operator's organization and is able to implement and supervise the program 		
	<ul style="list-style-type: none"> Maintenance personnel familiar with operator's approved program including individual responsibilities 		
	<ul style="list-style-type: none"> Organization is able to identify available internal and external resources to ensure program effectiveness 		

<p>Maintenance Program Provisions (cont'd)</p>	<ul style="list-style-type: none"> ○ Maintenance program addresses the following: <ul style="list-style-type: none"> ○ Procedure to ensure continued airworthiness relative to low visibility operations ○ Procedure to revise and update the maintenance program ○ Method to identify, record or designate personnel assigned responsibility in managing the program, delivering the program, maintaining the program, or performing quality assurance for the program ○ Systems required for the low visibility take-off and the configuration status for each aircraft in the lower minimum program are verified ○ Aircraft meet the criteria specified by the applicable aircraft manufacturer or avionics manufacturer for associated systems and equipment ○ Modifications, additions, and changes made to qualify aircraft systems for the intended operation or minima, if other than as specified in the AFM, TC or STC are identified ○ Additional maintenance requirements and log entries necessary to change minima status are identified ○ Aircraft defect reporting procedures that are unique to the low visibility program ○ Procedures which identify, monitor and report lower minimum system and component discrepancies for the purpose of quality control and analysis ○ Procedures which define, monitor and report chronic and repetitive discrepancies ○ Procedures which ensure aircraft remain out of lower minimum status until successful corrective action has been verified for chronic and repetitive discrepancies ○ Procedures which ensure the aircraft system status is placarded properly and clearly documented in the aircraft log book, in coordination with maintenance control, engineering, flight operations, and dispatch, or equivalent 		
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<p>Maintenance Program Provisions (cont'd)</p>	<ul style="list-style-type: none"> ○ Procedures to ensure the downgrade of aircraft low visibility capability status when maintenance has been performed by persons other than those trained, qualified, or authorized to use or approve procedures related to low visibility operations ○ Procedures for systems ground and flight checks following periodic maintenance 		
<p>3.0 AERODROME REQUIREMENTS</p>			
<p>Taxi & Take-off Operations <RVR600 to > RVR 300</p>	<ul style="list-style-type: none"> ○ Conducted at airports certified in accordance with TP 312 (5th Edition of later) or a foreign equivalent ○ If operating in Canada, the level of service information permitting RVR 300 operations is published in the <i>Canadian Flight Supplement</i> under runway data or in NOTAM(s) 		