



# TTCAA Advisory Circular

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**SUBJECT: ROTORCRAFT EXTERNAL-LOAD OPERATIONS UNDER TTCAR NO. 11: PART II  
TTCAA Advisory Circular TAC-XL001  
Date: 07/03/06**

## **PURPOSE**

1. The purpose of this TTCAA Advisory Circular (TAC) is to provide guidance to persons interested in applying for a Rotorcraft External-Load Operator Certificate.

## **BACKGROUND**

2. (1) TTCAR No.11 Part II prescribes the certification and airworthiness requirements for rotorcraft used in external load operations and the operating and certification requirements for the conduct of rotorcraft external load operations in Trinidad and Tobago.

(2) A person shall not conduct external load operations without a rotorcraft external load operator certificate or in violation of the terms of such certificate or equivalent authorization issued by the Authority.

## **EXCLUSIVE USE OF ROTORCRAFT**

3. Under TTCAR No.11:26, an applicant for a rotorcraft external load operator certificate shall have exclusive use of at least one rotorcraft that:

- (a) Was type certified under the appropriate airworthiness code (but not necessarily with external load attaching means installed) and meets the requirements for rotorcraft external load operations under the applicable parts of the TTCARs that prescribe the requirements for external load operations;
- (b) Complies with the certification provisions of TTCAR No.11: Part II applicable to rotorcraft load combinations for which a rotorcraft external load operator certificate is required; and
- (c) Has a valid airworthiness certificate.

## **APPLICATION FOR CERTIFICATION**

4. (1) The certification process is similar to that described in TAC-001 for an air operator and consists of five phases: Pre-application, Formal application, Document Evaluation, Demonstration and Inspection, and Certification. The complexity of the certification is a function of the applicant's proposed operation.

(2) Application for a Rotorcraft External-Load Operator Certificate must be submitted in duplicate to the TTCAA on Form TF-080 (see Appendix 1). The form must be signed by the applicant or his authorized representative. A formal application meeting would normally be held after the application and supporting documentation have been received and reviewed by the TTCAA.

(3) In addition to the application, the specific documents that must be submitted during the document compliance phase for a TTCAR No. 11, Part II certification include:

- (a) The rotorcraft lease, if appropriate;
- (b) Two copies of the Rotorcraft Load Combination Flight Manual;
- (c) Evidence that the chief pilot meets the requirements of TTCAR No. 11;
- (d) Evidence that pilots meet instrument qualifications and currency for instrument flight rules (IFR) operations, if proposed;
- (e) The proposed OpSpecs, if applicable; and
- (f) The Class D training programmes, including initial and recurrent training, if applicable.

(4) All rotorcraft to be used should be listed on Form TF-080.

(5) Application for renewal or amendment of a Rotorcraft External-Load Operator Certificate should be completed in the same manner as for the Initial issue of the certificate except that it should be clearly identified as application for renewal or amendment as applicable.

## **PILOTS**

5. (1) A person shall not be allowed to serve as a pilot in any helicopter external-load operation unless he has successfully demonstrated to the Authority the knowledge and skills requirements in relation to rotorcraft load combination.

(2) A pilot engaged in rotorcraft external-load operations must have in his personal possession, a letter of competency or an appropriate logbook entry indicating that he has successfully demonstrated to the Authority the knowledge and skills requirements applicable to the operation of the rotorcraft in external-load operations.

## **RESTRICTIONS ON OPERATIONS**

### ***Restricted Category Rotorcraft***

6. A restricted category helicopter is ineligible for use over congested areas during external-load operations. Under TTCAR No.11:35(1) (d) external load operation with a rotorcraft type-certified in the restricted category shall not be conducted:

- (a) Over a densely populated area;
- (b) In a congested airway; or
- (c) Near a busy airport where passenger transport operations are conducted.

### ***Normal and Transport Category Rotorcraft***

7. (1) A person holding a rotorcraft external-load operator certificate may conduct external load operations over congested areas with Rotorcraft that are type-certified in the normal category or transport category if such operations are conducted without jeopardizing the safety of persons or property on the surface and comply with the following requirements:

- (a) The operator shall develop a plan for each complete operation and obtain approval for each operation from the Authority which shall include:
  - (i) An agreement with the appropriate agency that he would exclude unauthorized persons from the area in which the operation will be conducted;

- (ii) Co-ordination of operations with Air Traffic Control;
  - (iii) Where necessary, a detailed chart depicting the flight routes and altitudes.
- (b) A flight shall be conducted at an altitude and on a route that will allow jettisoning of external load and landing of the rotorcraft in a emergency without jeopardizing the safety of persons or property on the surface.

(2) Where a plan is referred to in 1 (a) above, it is not intended that a separate plan be required for each flight. One plan will suffice for an operation that might require several flights to complete. Each plan should provide sufficient information for a realistic evaluation to be made of all safety matters. A chart depicting flight routes and altitudes should be included in each operating plan. Aeronautical charts may be used if the scale and detail is sufficient for evaluation purposes. If adequate charts are not available, hand-drawn chart may be used to identify routes over city streets, riverbeds and other landmarks etc. In order that each congested area operating plan may be properly evaluated, it should be submitted to the Authority at least five working days in advance of the proposed operation.

### ***Congested Areas***

**8.** (1) The term "congested area" is used to protect persons and property in small, sparsely settled communities, as well as persons and property in large metropolitan areas, from the hazards and from the noise of low flying aircraft. Thus, the size of the area is not the controlling factor. Thus use of the term congested area may apply to a variety of situations, including for example:

- (a) A small congested area consisting of approximately 10 houses and a school;
- (b) Any area of a city, town, or settlement;
- (b) The campus of a university;
- (c) A populated beach area; or
- (d) Along a highway;

(2) The presence of people is important in the determination of whether a particular area is "congested".

### ***Densely Populated Area***

**9.** A densely populated area is almost synonymous with a congested area. Those areas of a city, town, or settlement, which contain a large number of occupied homes, factories, stores, schools, university and hospital-type buildings, and other related business structures, might be considered densely populated areas. Additionally, a densely populated area may not contain any buildings, but could consist of a large gathering of persons, such as on a beach area, an airshow, a cricket or football match, a gathering at a family day, etc.

### ***Near a Busy Airport where Passenger Transport Operations are Conducted***

**10.** An external-load operation cannot be conducted within an airport traffic area when passenger transport operations are being conducted to or from those airports. Accordingly, the operator must be advised that advance coordination with the controlling air traffic control facilities will be necessary to ensure the establishment of proposed hours of external-load operation, and that adequate procedures will be utilized to ensure that no external-load operation is conducted when passenger transport operations to or from the airport are in progress. Passenger transport operations will be considered "in progress" whenever an aircraft engaged in such operations is in flight within the above defined areas, and, the operator is so advised by air traffic control.

## AIRWORTHINESS CERTIFICATION

11. (1) Under TTCAR No.11:33, an applicant for a rotorcraft external-load operator certificate must successfully demonstrate to Authority an operational flight check showing that the rotorcraft load combination has satisfactory flight characteristics. The external load weight including the external load attaching mechanism for the demonstration flight check shall have the maximum weight for which authorization is granted.

(2) In addition, the external load attaching means must be appropriately certified or a satisfactory demonstration must be performed. The flight demonstration must assume that pilots are able to activate the cargo quick-release device under simulated emergency conditions. Whenever the cargo quick-release switch location or function is modified, operators must ensure that their pilots re-demonstrate their ability to activate the switch in normal and simulated emergency operation without having to assume an unusual finger or thumb position. Having to assume unusual finger or thumb position may induce unwanted control inputs.

### OPERATIONAL FLIGHT CHECK

#### *Class A Rotorcraft-Load Combination*

12. The operational flight check for Class A Rotorcraft-load combination shall include the following manoeuvres:

- (a) Take off and landing;
- (b) Demonstration of adequate directional control while hovering;
- (c) Acceleration from hover;
- (d) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested.

#### *Class B and Class D Rotorcraft-Load Combination*

13. The operational flight check for Class B and Class D rotorcraft-load combination shall include the following manoeuvres:

- (a) Pickup of external load;
- (b) Demonstration of adequate directional control while hovering;
- (c) Acceleration from hover;
- (d) Horizontal flight at airspeeds up to the maximum airspeed for which authorization is requested;
- (e) Demonstrating appropriate lifting device operating;
- (f) Manoeuvring of the external load into release position and its release, under probable flight operation conditions, by means of each of the quick-release controls installed on the rotorcraft.

#### *Class C Rotorcraft-load Combination*

14. (1) The operational flight check for a Class C rotorcraft-load combination used in wire-stringing, cable-laying or similar operations shall consist of such relevant manoeuvres as prescribed for the operational flight check for Class B and Class D rotorcraft-load Combination in paragraph 13 above.

(2) Upon successful completion of all applicable requirements of TTCAR No.11: Part II, an applicant is eligible for a Rotorcraft External-Load Operator Certificate. This certificate becomes a current and valid airworthiness certificate for each standard category rotorcraft listed in that certificate when the rotorcraft is used in operations under TTCAR No.11: Part II or in operations incidental to those operations.

## ROTORCRAFT-LOAD COMBINATION FLIGHT MANUAL

**15.** TTCAR No.11:36 requires that a Rotorcraft-Load Combination Flight Manual be presented for approval. For the convenience of applicants, a sample manual is provided in Appendix. The applicant must note that the sample at Appendix 2 is a generic manual; depending upon the complexity of a particular applicant's proposal, the manual may need to contain more details than the sample shown.

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Ramesh Lutchmedial  
Director General of Civil Aviation

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## APPENDIX 2

### SAMPLE ROTORCRAFT LOAD COMBINATION FLIGHT MANUAL

#### CONTENTS

##### SECTION 1.

##### OPERATING LIMITATIONS:

1. Certification.
2. Persons aboard.
3. Area operation limitations.
4. Total weight -type certification.
5. Location of center of gravity (CG).
6. Total weight -load combination.
7. Airspeed limitations.
8. External-load weight in relation to attachment weight limitation.
9. Miscellaneous limitations.

##### SECTION 2.

##### LOAD COMBINATION OPERATING PROCEDURES:

1. Information peculiar to the load combination.
2. Operating procedures.
3. Emergency conditions.
4. Static electricity discharges.
5. Other information essential to operation safety.
6. Ground-to-air hand signals.
7. Demonstration of load-carrying capabilities.
8. Required placards.

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## SECTION 1

### OPERATING LIMITATIONS

1. In addition to the operating limitations set forth in the Approved Rotor-craft Flight Manual, this aircraft will be operated in accordance with the following operating limitations:

- (a) No person shall operate this aircraft with an external-load unless he holds a TTCAA External-Load Operator Certificate and has an entry in his logbook or a letter of competency as required by TTCAR No.11: 24 and TTCAR No. 11: 32. He must have the logbook or a letter of competency in his personal possession during the operation.
- (b) No person who is not a required crewmember may be carried aboard the aircraft (unless He performs an essential function in connection with the external-load operation.) When the aircraft used requires a hoist operator, the air crewmember must at all times wear an approved hoist operator's safety harness.
- (c) Operations shall not be conducted over congested areas unless coordinated with the TTCAA in accordance with a congested area plan developed in compliance with TTCAR No.11: 30(4).
- (d) The total weight of this aircraft and load combination shall not exceed \_\_\_\_\_pounds gross takeoff weight.
- (e) The location of the center of gravity for this aircraft and load combination shall be within the center of gravity range established during type certification under the appropriate airworthiness code for the aircraft or special purpose certification of the aircraft.
- (f) The total weight of this aircraft and load combination shall not exceed \_\_\_\_\_pounds.
- (g) This aircraft shall be operated within its limiting height/speed envelope, if any, but not to exceed (kts. or m.p.h.). Extreme caution should be exercised when carrying external-loads, as controllability may be affected due to the size and shape of the cargo--OR--this aircraft shall be operated at a speed elected by the pilot, but not to exceed (kts. or m.p.h.).
- (h) The external-load shall not exceed pounds.
- (i) Other limitations deemed necessary by the Operator.

## SECTION 2

### LOAD COMBINATION INFORMATION

1. Operator will list information pertaining to the peculiarities of the load combination, such as:

- (a) Oscillating tendencies;
- (b) Ground effect – in and out;
- (c) Density altitude;
- (d) Strong or gusty winds;
- (e) Abrupt control movements; and
- (f) Acceleration limitations.

2. Normal – inspect the cargo sling for proper installation and overall condition. Also check the load to make sure it is rigged properly and safely. Check the electrical release and the manual release on the ground before flight. Activate the circuit by pushing the cargo release circuit breaker IN. Position cargo release switch on panel to SAFE (off) when attaching cargo, then move switch to MANUAL or AUTO, as desired after cargo is attached and hook is locked.

*Note: When cargo release switch is positioned at AUTO, cargo can be released either by the electric manual switch or by touchdown; however, a minimum cargo weight of 125 pounds is required for automatic operation of the cargo hook. Lift cargo load to a hover and check the remaining power to determine if you have enough to safely carry the load. While hovering, verify that directional control smooth, slow control movements to minimize settling and to prevent the load from swinging. In forward flight, check for hazardous oscillations of the external-load. When approaching a landing area with a critical load, come in slowly and start bringing in power early so as to allow for the lack of a good ground cushion to slow your descent.*

3. In the event of electrical failure, use the manual release to drop the cargo load. If any difficulties arise during the flight and an emergency landing is necessary, release the load immediately. If for some reason the load will not release, use a full flare landing so as to eliminate dragging the load on the ground prior to touchdown as this will cause the aircraft to nose over with adequate aft cyclic control to compensate. (It is suggested that cable hand cutters be carried as an emergency means of releasing the load in the event electrical and manual means fail.)

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4. Information regarding static electricity discharges -Class B loads. Before attaching the cargo hook to the load, make sure the aircraft has been grounded so as to drain charges of static electricity that build up in flight.

5. Operator will list any other information essential for safe operation, such as:

- (a) Precautions to avoid high-tension wires;
- (b) Lightning (Class C loads);
- (c) Standard hand signals -ground crew to pilot. (See page 11 of this manual);
- (d) Crossing over main highways, etc;
- (e) Delivering cargo (an example is given on this subject). Caution must be exercised when approaching the ground with any sling load to make sure that the helicopter is at a complete hover and the load touches down without being dragged across the ground. Motion at touchdown not only damages the load, but places high forces on the sling which can affect control of the helicopter when movement is excessive.

6. All personnel engaged in the external-load operation will be familiar with and use the signals on page 11 of this manual.

7. This rotorcraft has demonstrated its flight characteristics and structure/design of external load attaching means in accordance with TTCAR No. 11:33 and No. 11:34 and is approved for class B rotorcraft load combinations up to a maximum external load of \_\_\_\_\_ pounds.

*Note: This maximum load figure was derived using a VO-pound pilot weight and gallons of gasoline. Allowances must be made for any changes in these factors.*

8. Required placards:

- (a) A placard for the maximum external-load will be marked on each side of the fuselage near the external-load hook.
- (b) An instrument panel placard will be installed describing CLASS load approval.

9. Illustration of Standard Hand Signals.

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**10.** After the helicopter has been directed into position, one ground crew-member should remain within sight of the pilot to direct with hand signals while two others attend to the cargo hookup. All hookups made to the helicopter while it is in a hover should be hastened to minimize the time the hookup personnel are required to spend underneath the helicopter. Whenever practical, the helicopter should be landed alongside the cargo for hookup. If a hookup is to be performed without the aid of a helicopter director, an air crewmember should lie prone on the floor and look downward from the main entrance doorway. From there, He can observe the actions of the ground crewmembers and direct the pilot on the interphone.

**11.** Hand signals. When giving hand signals to the pilot, a ground crew-member must stand in front of and to the right of the helicopter, in sight of the pilot and use standard hand signals as illustrated in the Operation Manual for day or night operations.

The operating limitations as set forth in Section 1 and the load combination information contained in Section 2 are the conditions under which I will conduct this rotorcraft external-load combination operation.

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(Operator's signature)

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**TRINIDAD AND TOBAGO**  
**THE CIVIL AVIATION ACT, 2001**  
**ROTOCRAFT EXTERNAL LOAD OPERATOR**  
**CERTIFICATE**

*This certificate is issued to*

**XVZ**

*whose home address is*

**Golden Rock, Maricao, Trinidad W.I.**

has met the requirements of the Civil Aviation Act, No. 1 of 2001 and related regulations and rules prescribed thereunder for the issuance of this certificate and is hereby authorized to operate as an Rotorcraft External Load Operator in accordance with said operating regulations and rules prescribed thereunder and the terms, conditions and limitations in the attached operations specifications.

This certificate is issued for the following rotorcraft : 9Y-ABC, 9Y-BCD, 9Y-CDE, is not transferable and, unless sooner surrendered, suspended or revoked, shall remain in effect until the expiry date.

\_\_\_\_\_

Initial issue date: \_\_\_\_\_

\_\_\_\_\_

Expiry date: \_\_\_\_\_

\_\_\_\_\_

Signature: \_\_\_\_\_

(/f/Authority)