

TECHNICAL AIRWORTHINESS AUTHORITY ADVISORY (TAA ADVISORY)	
Title	Experimental Flight Permit
TAA Advisory Number	2011-03-v3e
Effective Date	June 2011 (revised August 2022)
References	TAM, Part 5, Chapter 7
OPI / Telephone	DTAES 3-2 / 819-939-4813
RDIMS #	1027D-812-6 Vol 1 AEPM # 1369777 (English) AEPM # 1464816 (français)

1. Purpose

- 1.1 This TAA Advisory provides guidance for the issuance of an Experimental Flight Permit (EFP) by the TAA (Directorate of Technical Airworthiness and Engineering Support (DTAES) 3 staff), for the purposes identified in paragraph 2. EFPs released by accredited Weapon System Management (WSM) organizations are issued in accordance with AF9000 procedure EMT09.047 (reference 3.3.a).

2. Applicability

- 2.1 This TAA Advisory applies to TAA, WSM and Project Management Office (PMO) staff.
- 2.2 EFPs will be issued by the TAA (DTAES 3 staff) when flight testing:
- a. is conducted on an aircraft that is on the Department of National Defence (DND) Military Aircraft Register, but has neither a TAA-issued initial Technical Airworthiness Clearance (TAC) (or Provisional TAC (PTAC)), nor a Certificate of Airworthiness (CofA);
 - b. is conducted on a civil-registered aircraft for which TAA and Operational Airworthiness Authority (OAA) oversight is performed through a Temporary Authority to Operate (TAO), in accordance with TAA Advisory 2011-04 (reference 3.3.b);
 - c. supports a design change that is beyond the scope and depth of authority for the WSM organization, including their Weapon System Support Network (WSSN), to grant Airworthiness Approval;
 - d. exceeds, or may exceed, the design operating limitations identified in the Flight Manual/Aircraft Operating Instructions; or
 - e. supports scientific or engineering research and development that is non-fleet specific.

3. Related Material

- 3.1 **Definitions:** See the *Technical Airworthiness Manual* (TAM) (Reference 3.2.a) Glossary for applicable definitions.

3.2 Regulatory References:

- a. C-05-005-001/AG-001 – *Technical Airworthiness Manual* (TAM), Part 5, Chapter 7

3.3 Other References:

- a. AF9000 procedure EMT09.047 – *Flight Permit*
- b. TAA Advisory 2011-04 – *Temporary Authority to Operate* (TAO)
- c. C-05-020-007/AM-000 – *Flight Test Orders for the Canadian Forces*

- d. AF9000 procedure TAA04.003 – *TAC for a New Aircraft Fleet*
- e. DAOD 3003-1 – *Management, Security and Access Requirements Relating to Controlled Goods*
- f. C-02-007-000/AG-001 – *Controlled Technology Access and Transfer (CTAT) Manual, Part 2, Section 1*

4. Discussion

- 4.1 **General.** An EFP is required to authorize flight tests identified as Developmental Test and Evaluation (DT&E) or Engineering Test and Evaluation (ET&E), as defined in reference 3.3.c. DT&E is conducted in the design and development of a weapon system, or part thereof, and is normally done for the purpose of research and development (R&D) or prototype integration. ET&E is conducted to determine if a design is in compliance with airworthiness requirements and in conformance with contracted technical performance specifications, or to collect technical data related to weapon system life cycle management. In general, an EFP is issued to authorize flight tests for the following activities:
- a. Demonstration and test of developmental prototypes, to prove airworthiness;
 - b. Compliance test and evaluation, including certification activities, to determine whether the system meets airworthiness requirements, and qualification activities, to determine whether the system meets contractually agreed-upon specifications;
 - c. Conformance test and evaluation, to determine if the system conforms to its approved type design, which normally occurs after manufacture, modification, or repair and overhaul (R&O);
 - d. Technical test and evaluation for purposes of data gathering, to support engineering decisions related to performance issues, troubleshooting and/or procurement decision making; and
 - e. Production Acceptance Test and Evaluation (PAT&E) prior to the Transfer of Title of a new aircraft.
- 4.2 The Commanding Officer (CO) of AETE is authorized as the Flight Test Authority (FTA) for the Canadian Armed Forces (CAF). The FTA, or an authorized member of their staff, must always be consulted via the AETE Project Control Officer (PCO) when:
- a. Flight testing is conducted using aircraft on the DND Military Aircraft Register;
 - b. Flight testing is conducted on aircraft that are providing defence-related services under a TAO (reference 3.3.b); or
 - c. A flight testing activity involves CAF or DND personnel on board the aircraft, even if the flight test itself is conducted by another flight test agent.

NOTE

It is the responsibility of the Applicant (PMO or WSM) to ensure that the FTA has authorized a contractor organization, such as the OEM or ISS provider, to conduct flight testing on its behalf before submitting a draft EFP to DTAES 3 for review.

- 4.3 When an EFP is issued by an accredited WSM organization in accordance with AF9000 procedure EMT09.047, both an EFP Justification Form (AEPM 204) and an EFP Form (AEPM 205) are required. When EFPs are issued by the TAA (DTAES 3 staff), only the EFP Form (AEPM 205) is used (the EFP Justification Form is not required, and paragraph 2 of the EFP Form should be annotated "N/A").
- 4.4 **EFP Issuance.**
- 4.4.1 The Applicant must ensure that the FTA has been consulted in the development of all EFPs released by DTAES 3, on behalf of the TAA, regardless of whether these are being issued to AETE, or to another flight test agent authorized by the FTA.
- 4.4.2 EFPs only require TAA/AI approval and FTA/AI acknowledgement. The Operational Airworthiness Authority (OAA) does not approve EFPs. CO AETE has an assignment of Operational Airworthiness (OA) authority from the OAA to operate aircraft for the purposes of flight test and to provide OA oversight of flight testing performed by another flight test agent. In addition, for aircraft equipped with Flight Test Instrumentation (FTI), the AETE Senior Design Engineer (SDE) has an Assignment of Technical Airworthiness Authority to approve that Flight Test Instrumentation (FTI) for the purposes of AETE flight test. If there is a requirement for 1 or 2 Canadian Air Division (CAD) involvement with the EFP development, the Applicant or AETE PCO will engage the appropriate OA Desk Officer.

- 4.4.3 To achieve optimum efficiency of test and evaluation (T&E) resources, an EFP may be issued to an Integrated Test Team (ITT) performing a joint ET&E and Operational Test & Evaluation (OT&E). The Applicant must receive approval from the FTA to include OT&E in the EFP, as oversight of the OT&E becomes the responsibility of the FTA.
- 4.4.4 The Applicant must obtain a scheduled date for the convening of the Safety Review Board (SRB) from the AETE PCO, to allow sufficient time for the development and approval of the EFP Substantiation Report and the flight permit. The AETE PCO is expected to provide the Applicant with the SRB date at least three (3) weeks in advance of scheduled SRB date. DTAES 3 is expected to provide the approved EFP to the AETE PCO at least forty-eight (48) hours in advance of the scheduled SRB date.
- 4.4.5 **EFPs Issued Prior to Initial (P)TAC.** In the event that the initial TAC or PTAC has not been issued, an EFP Substantiation Report must be written and signed by DTAES prior to staffing the EFP for approval. The substantiation report is written by DTAES 3 & 4 staff, with input from the Applicant (PMO or WSM). The purpose of this report is to ensure that all relevant TAC elements have been appropriately addressed prior to commencement of flight testing. While the EFP will contain the mitigations required to address yet-to-be-certified design changes, the report will address all of the TAC requirements necessary to support operations that are not contained in the EFP itself. DTAES specialists will be required to assess the level of safety of the aircraft, should type certification not be completed, including the identification of any technical hazards that are known and unique to the flight testing. The Applicant might be required to staff one or more Records of Airworthiness Risk Management (RARMs), prepared in accordance with the TAM (reference 3.2.a), to identify any airworthiness risk(s) not directly associated with the flight test activity. The substantiation report must address all relevant aeronautical product elements and, as such, the Applicant will be required to obtain the aircraft type designation, registration number, approval of the markings and paint scheme and aircraft technical record, in accordance with reference 3.3.b. Provisional acceptance of maintenance, design and technical organizations will be required to ensure that the aircraft can be supported. The maintenance program and flight manual will require review/acceptance by DTAES 4 and 7 staff, respectively. The level of effort required to develop the EFP Substantiation Report is not insignificant; therefore, the Applicant must provide DTAES 3 with sufficient notice of the intent to conduct flight testing.
- 4.4.6 An initial TAC Report template is available internally, within DND, in the AEPM RDIMS library, under RDIMS #1996928. This template can be used as the basis for the EFP Substantiation Report. The process of staffing for the substantiation report will be identical to that used for the TAC report. AF9000 procedure TAA04.003 (reference 3.3.d) provides detailed explanations of all aspects of the TAC report, including staffing.
- 4.5 **EFP Completion.**
- 4.5.1 The EFP form (AEPM 205) is available internally, within DND, on the Manual of Aerospace Procedures (MAP) SharePoint intranet website of the AEPM Division Business Management System. DTAES 3 staff can also provide a copy of the form upon demand. The EFP should be kept as concise as possible. If it is necessary to include lengthy instructions or detailed information, consider placing them in an annex.
- 4.5.2 Sections A, B and D. These sections are self-explanatory and should be completed as necessary. Accredited WSM organizations will assign the EFP number. PMOs and those WSMs without an accreditation are to request an EFP number from the TAA staff (DTAES 3-2-3).
- 4.5.3 Section C – Description. The background to the EFP should be explained and the scope of the flying activities or tests that are to be carried out under the EFP should be described in this section, as follows:
- a. Background. The reason for the EFP, including the objective and the desired outcome of the flight test, must be explained. The features of the equipment that will be subject to the test and/or details of the developmental project (as applicable) should be described. Any specific conditions or requirements, such as those contained in an accepted estimate (this is where AETE formally finalizes the test objectives), should be included. This section should also include a description of the physical and functional completeness/readiness of the tested item(s) during the test flight, including the level of completeness of the design change certification (if the test flight is performed in support of the design change). The Applicant should also list all previously approved flight permits that are excluded from being used in conjunction with this EFP.

- b. Scope of Flying Activities/Tests. The Applicant must define the scope of the flying activities to be carried out under the EFP, as identified in the accepted estimate. Specific details of how the tests are to be conducted are not required, as this will be determined by the flight test agent. The Applicant should also include any other information on the tested equipment, test instruments and intended flight test regimes that may be available.

- 4.5.4 Section E – Authorized Configuration. The Applicant should describe the aircraft configuration(s) (including role equipment, where applicable) that is/are authorized by the EFP, and specify only additional equipment and/or those configurations that are peculiar or different from the standard aircraft. AETE is an Acceptable Design Organization (ADO) that is authorized to approve Flight Test Instrumentation (FTI). As a result, FTI approved by the AETE ADO for the test program does not need to be listed in the EFP. Approval of FTI by another ADO (OEM or flight test agent) should be formally documented and referenced in the EFP Substantiation Report and/or the EFP.
- 4.5.5 Section F – Maintenance Instructions. Any maintenance instructions that are not present in existing documentation must be listed here. For example, if an item under test is new to the aircraft and has not yet been certified, there may be no approved maintenance procedures; if so, the details of what servicing and maintenance is required, as well as who will do it and at what frequency, must be provided. The Applicant must include (or reference) installation/removal instructions for the equipment being tested, as required. Where applicable, any other supplementary instructions or manuals to be used should also be identified.
- 4.5.6 Section G – Operational Instructions, Limitations and Restrictions. Only those limitations or restrictions that are different from those approved for the standard aircraft must be listed in this section. Thus, if an aircraft is being tested within the approved flight envelope, then this section requires little or no text. It is not necessary to specify how to approach any limits. Test techniques and the flight test organization's risk mitigation process will address those considerations. Technical instructions or limitations/restrictions can be provided to mitigate hazards, where possible, in consultation with the AETE PCO (for example, the EFP could include a draft carriage and release envelope, which will be validated by flight testing). These can include RARM mitigations where the RARM is addressing a risk not specific to the flight testing. It is the responsibility of the Applicant to work with DTAES specialists and AETE staff to ensure that any additional limitations/restrictions are acceptable to AETE before submitting the draft EFP for DTAES 3 signature.
- 4.5.7 Section H – Hazard Identification. This section must identify those technical hazards that are considered to be significant and unique to flight under the EFP (it should be noted that the TAA staff does not identify risks; only hazards). Even if a hazard is not tangible or quantifiable, it should be included in this section so that it can be addressed by the flight test organization. When the EFP is issued to AETE, the flight test planning, risk assessment and risk acceptance for the flight test activities are the responsibility of the FTA. AETE Technical Review Board (TRB) and SRB processes will identify and assess these flight test hazards during the test plan's risk assessment, prior to acceptance by the FTA (AETE TRB and SRB are standard AETE procedures, contained in reference 3.3.c and do not need to be repeated in the EFP). If the flight testing is carried out by a flight test agent other than AETE, it may be necessary to identify or refer to the flight test agent's standard procedures. DTAES 3 staff (who will liaise with AETE) should be consulted, when appropriate.
- 4.5.8 Section J – EFP Approval – FTA Acknowledgement. Once the EFP has been signed by DTAES 3, it must be staffed to the AETE PCO for FTA Acknowledgement. The FTA acknowledgement confirms that applicable OA requirements have been met prior to commencement of flight testing. This signature is particularly important when the EFP is being issued to a flight test agent other than AETE. In this case, the FTA Acknowledgement signature must be obtained before the TAA-approved EFP can be sent to the flight test agent. It is the responsibility of the DTAES 3 project officer to send the EFP to the AETE PCO to obtain the FTA Acknowledgement signature before sending the EFP to the external flight test agent.

NOTES

1. *After completing each section of the form, all instructions and comments should be deleted (i.e., those identified with the "less-than" (<) and "greater-than" (>) marks, such as < Delete as required >).*
2. *Wet ink or digital signatures are acceptable on EFPs. Digital signatures must be added using the Public Key Infrastructure (PKI) card.*

4.6 **EFP Rescission.** DTAES 3, on behalf of the TAA, can rescind an EFP at any time, without requiring FTA concurrence. However, before taking this action, DTAES 3 staff are required to review the need for rescinding the EFP with the FTA and any other flight test agent(s) affected. In addition, immediately following rescindment of the EFP, a notification must be sent to the FTA and any other flight test agent(s) affected.

4.7 **Controlled Goods.** If the EFP contains any technical data, the document must be marked to indicate whether or not the technical data are Controlled Goods, in accordance with reference 3.3.e. The markings must conform to reference 3.3.f, Figure 2-1-3 or Figure 2-1-6.