

TYPE INSPECTION REPORT INSTRUCTIONS

1. Purpose. The Type Inspection Report (TIR) is used to record and report to the Federal Aviation Administration (FAA) the product configuration and all significant unsatisfactory conditions found as a result of the activities of manufacturing and flight test personnel during the type inspection. It provides a record of the inspections; and ground and flight tests conducted, as authorized, on the Type Inspection Authorization (TIA) to show compliance with all the applicable regulations pursuant to Title 14, Code of Federal Regulations (14 CFR). It also provides a record of other information identifying the test article and the FAA certification activities applicable to each project with an issued TIA.

2. Audience. The requirement to complete a TIR applies to all manufacturing inspection personnel and all flight test personnel.

3. Requirements.

- a. Complete the TIR within 90 days after type certificate issuance.
- b. Include all required TIA inspection and test results.
- c. Include a chronological list of all changes made to the prototype product during the test program and identified as “made by the applicant” or “required by FAA as a result of type certification tests showing noncompliance.”
- d. Must be approved by the manufacturing inspection district office manager for Part I and by the flight test branch manager for Part II.

4. How to Complete a TIR.

a. **Part I - Ground Inspection.** Manufacturing inspection personnel or properly authorized designees must complete Part I - Ground Inspection (to ensure a detailed and comprehensive report):

- (1) All questions must be answered.
- (2) When an answer requires an explanation, record the explanation under:
 - (a) Part I - Ground Inspection, Item (7), “Remarks,” or
 - (b) Part I - Ground Inspection, Item (n) (12), “TIA Comments.”
- (3) Manufacturing inspection personnel or properly authorized designees must complete Part I, Ground Inspection, within 2 weeks of the last conformity and:
 - (a) After all required TIA inspections are completed, and
 - (b) If applicable, after endurance testing and teardown inspections are completed on TIRs for engines and propellers.

NOTE: You must include the conformity inspection records, teardown inspection results, and copies of all memoranda pertaining to the inspection.

- (4) Complete the following sections:
 - (a) Product Make
 - (b) Product Model

- (c) Applicant name and address
- (d) Basis for Certification
 - i. Enter 14 CFR part with dates and amendment levels. Allow reference to G-1 issue paper if one was done for the project.
- (e) Original Conformity Inspection Record, FAA Form 8100-1:
 - i. The manufacturing inspector or his properly authorized designee must list each inspection by initiating an FAA Form 8100-1, Conformity Inspection Record.
 - ii. The manufacturing inspector or his properly authorized designee, the certifying Aircraft Certification Office (ACO), and the applicant must resolve all unsatisfactory items listed on FAA Form 8100-1 prior to issuing the airworthiness certificate.
 - iii. The manufacturing inspector or his properly authorized designee must list all corrective actions on FAA Form 8100-1. The original 8100-1 form must be attached to the TIR.
- (f) Statement of Conformity, FAA Form 8130-9:
 - i. Enter the TIA project number in the top margin of the form.
 - ii. Attach the form to the TIR.
- (g) Request for Conformity, FAA Form 8120-10.

If a Conformity Inspection Request is issued after the TIA for the same project, the originals become an attachment to the TIR as “other inspections deemed necessary.”
- (h) Supporting Data.

Copies of all other supporting data, such as weight and balance reports.
- (i) Inspection conducted by and date.
- (j) “Report prepared by” and date.
- (k) “Report reviewed by” and date.
- (l) “Report approved by” and date.
- (m) Administrative Data:
 - i. Period of inspection from _____ to _____;
 - ii. Location(s) of inspections;
 - iii. Number of conformity inspections conducted and recorded on FAA Form 8100-1, Conformity Inspection Record, and recorded in project file.

- iv. Were design changes needed to correct deficiencies revealed by FAA inspections?

If yes, identify changes under Part I - Ground Inspection, Item (n) (12) "TIA comments," or on attachment.

- v. Have all products/articles subjected to inspections and/or tests been properly recorded by part number(s), serial number(s), as appropriate, on page 1, or in attachment? If "No", items must be explained under Item (n) (12) "TIA comments."

Answer this question by checking the "Yes" or "No" check box. If "No", items must be explained under Item (n) (12) "TIA comments."

- vi. Does the applicant have on file inspection records showing conformity to the type design or change in type design, as applicable and acceptable quality of the product? If "No", items must be explained under Item (n)(12) "TIA comments."

Answer this question by checking the "Yes" or "No" check box. If you answer "No" to this question, items must be explained under Item (n) (12) "TIA comments."

- vii. Reserve this item for Remarks.

- (n) TIA Comments item. Include comments made with respect to special instructions and/or tests conducted by reason of instructions contained in Block 12 of the TIA, and identified in accordance with TIA numbering. Additional pages must be attached if needed.

b. Technical Information.

1.0 Empty Weight and Corresponding Center of Gravity. Complete the following sections:

1.1 Describe Leveling Marks or Means.

1.2 Location of Datum.

1.3 Horizontal Distance (Inches) From Datum to Average Front Main Scale Center Line (CL)

Horizontal Distance (Inches) from Datum to Average Rear Main Scale Center Line (CL)

Horizontal Distance (Inches) from Datum to Auxiliary Scale Center Line (CL)

1.4 Empty Weight.

Enter the Scale Reading, Tare, and Net Weight for each item

Note: The empty weight and corresponding center of gravity may be determined by weighing the aircraft with --

- (1) Fixed Ballast
- (2) Unusable Fuel
- (3) Full operating fluids, including:(i) oil (ii) hydraulic fluid and (iii) other fluids required for normal operation of aircraft systems, except potable water, lavatory precharge water, and water intended for injection in the engines.

Enter location of center of gravity in inches with respect to Datum.

Note: The applicant's weight and balance report may be used in lieu of the weight and dimensional page of this TIR form. Include the applicant's report as an attachment to this TIR form.

2.0 Removable Ballast.

Answer each question by checking the “Yes,” “No” or “N/A” check box. If “No”, items must be explained under Item (n) (12) “TIA comments.”

- 2.1** If removable ballast is used to show compliance with the flight requirements, is the location for carrying ballast installed and marked in accordance with the type design or change in type design, as applicable?

Ref.: § 21.31

3.0 Fabrication Process.

Answer each question in each section by checking the “Yes,” “No” or “N/A” check box. If “No”, items must be explained under Item (n) (12) “TIA comments.”

3.1

- a. Has the applicant shown that materials, products, parts, processes, construction, and assemblies conform to the specifications and drawings shown in the type design or change in type design, as applicable?
- b. Has the product been changed between the time it was shown to comply with item 3.1.a. of this report and the time it was presented for FAA Inspection? Record any changes on FAA Form 8100-1.
- c. Has the applicant made all inspections and tests necessary to determine
 - (1) Compliance with the applicable airworthiness and noise/emission requirements;
 - (2) That the materials and products conform to the specifications in the type design or change in type design, as applicable;
 - (3) That the parts of the product conform to the drawings in the type design or change in type design, as applicable;
 - (4) That the manufacturing processes, construction, and assembly conform to those specified in the type design or change in type design, as applicable?

Ref. § 21.33

- 3.2** Has the suitability and durability of materials used for parts, the failure of which could adversely affect safety:
- a. Been established by experience or tests?
 - b. Been established through approved specifications that ensure the strength and other properties assumed in the design data?
 - c. Been evaluated to take into account the effects of environmental conditions, such as temperature and humidity, expected in service?

Ref. § xx.603(a)

- 3.3** Have high standards of workmanship been used in the fabrication of parts?

Ref. § xx.603(b)

4.0 Fuselage and Wings.

Answer each question in this section by checking the “Yes,” “No” or “N/A” check box. If “No”, items must be explained under Item (n) (12) “TIA comments.”

- 4.1** Is the fuselage or wing in conformity with type design or change in type design, as applicable?

Ref.: §21.33

5.0 Control System.

Answer each question in this section by checking the “Yes,” “No” or “N/A” check box. If NO, items must be explained under Item (n) (12) “TIA comments.”

- 5.1** Is the control system in conformity to type design or change in type design, as applicable?

- 5.2** Do the control surface travels conform to the type design or change in type design, as applicable?

Ref. § 21.31(a)

6.0 Personnel and Cargo Accommodations.

Answer each question in this section by checking the “Yes,” “No” or “N/A” check box. If “No”, items must be explained under Item (n) (12) “TIA comments.”

- 6.1** Are the personnel and cargo compartments in conformity with the type design or change in type design, as applicable?

Ref. § 21.31(a)

7.0 Powerplant Installation.

Answer each question in this section by checking the “Yes,” “No” or “N/A” check box. If “No”, items must be explained under Item (n) (12) “TIA comments.”

7.1 Does the powerplant installation conform to the type design or change in type design, as applicable?

Ref. § 21.31(a)

8.0 Equipment.

Answer each question in this section by checking the “Yes,” “No” or “N/A” check box. If “No”, items must be explained under Item (n) (12) “TIA comments.”

8.1 Is the installed equipment in conformity to the type design or change in type design, as applicable?

Ref. § 21.31 (a)

8.2 Is each item of equipment installed in accordance with the type design or change in type design, as applicable?

- a. Labeled as to the identification, or operation limitations, or any applicable combination of these factors; and
- b. Installed according to limitations specified for that equipment?

Ref. § xx.1301 (b) and (c)

8.3 Are the electrical, radio, and electronic systems in the type design or change in type design, as applicable free from hazards in themselves, in their method of operation, and in their effects on other components?

Ref. § xx.1351(b)(1)(i), xx.1431 or xx.1431(a)

8.4 Are electrical cables and wire bundles included in the type design or change in type design, as applicable protected from fuel, oil, water, and other detrimental substances, and from mechanical damage?

Ref. § xx.1351(b)(1)(ii)

8.5 Are the radio and electronic equipment, controls, and wiring installed so that operation of any one unit or system of units will not adversely affect the simultaneous operation of any other radio or electronic unit or system of units required by the airworthiness or operation rules?

Ref. § xx.1431(b) or (c)

c. **Part II - Flight Test Report.** Flight test personnel complete the required sections of the report. For the first page enter the following information:

(1) **Project Number:**

(2) **Flight Tests Conducted by:** Enter name(s) and roles (eg: Flight Test Pilot, Flight Test Engineer, etc.) of flight test personnel. If a designee, provide DER number.

(3) **Report Prepared by:**

(4) **Report Approved by:** Enter name, title, and date of manager reviewing and approving report.

d. Technical Information.

1.0 Administrative Information. Enter sufficient administrative or general flight test information to show compliance with 14 CFR Part 21 requirements. The information must include, but not be limited, to the following:

1.1 Description of flight test item/modification.

1.2 Flight test instrumentation description.

1.3 Test Aircraft. Enter serial number and registration number of aircraft tested.

1.4 Test Sites. Enter location and date of aircraft testing. It is required to specify the test locations if the location of the tests was a determining factor. The location must be included to avoid any discrepancies regarding the test site.

1.5 Alterations made during FAA flight testing. Include a chronological list of all changes made to the prototype product during the test program and identified as “made by the applicant” or “required by the FAA as a result of type certification tests showing noncompliances.”

1.6 Flight test log (excluding function and reliability test) with total official FAA flight test time. Include information such as takeoff weight, takeoff center of gravity (c.g.), and flight number, if applicable.

1.7 Total number of flight hours for function and reliability test (if required).

1.8 Explanation for credit given to other than FAA flight time.

1.9 Survival Equipment (life rafts, survival first aid kits, Emergency Locator Transmitter (ELT), survival tools, etc.)

1.10 Personal Protective Equipment (oxygen bottles, oxygen masks, smoke hoods, firefighting gloves, fire extinguishers, Nomex flight suits, etc.)

2.0 Certification Information. Sufficient certification information must indicate operating limitations to include:

2.1 Category (normal, utility, acrobatic, etc.).

2.2 Type of operations (visual flight rules, instrument flight rules, day, night, icing, etc.).

2.3 Approved maneuvers may be presented, if appropriate.

2.4 Equipment required for each type of operation. This entry must agree with the limitations section of the Airplane/Rotorcraft Flight Manual (AFM/RFM).

- 2.5** Limitations for weight, center of gravity, airspeeds, power plant operations, and recommended airspeeds for climbs, auto-rotations, and approaches.
- 3.0** **Applicable Requirements.** Sufficient information must show compliance with TIA and 14 CFR requirements. For type certification divide the TIR into sections such as equipment and flight operation, power plant operation, performance, and handling qualities.
- 4.0** **Flight Test Results and Findings.** Include information on the results and findings of the flight tests and inspections described in the TIA, Block (12)b. A brief description of each test and the results of the tests must be included. Reference to the flight cards contained in an appendix can be made if adequate data are included on the flight cards to support completion of the TIA. Include a chronological list of all changes made to the prototype product during the test program and identified as “made by the applicant” or “required by the FAA as a result of type certification tests showing non-compliances.
- 5.0** **Operational evaluations identified by the Aircraft Evaluation Group (AEG).** Include information on the results and findings of operational evaluations identified and conducted by the AEG.
- 6.0** **Appendices.** Include additional information necessary to show compliance with TIA and 14 CFR requirements. Reference this information in the Table of Contents in the TIR. Additional information may include, but is not limited to: flight test data, approved flight test plan, applicant's flight test report, AFM/RFM or AFM/RFM supplements with dates of approvals, flight logs and flight cards, and the associated TIA.

Federal Aviation Administration

Type Inspection Report for

Part I - Ground Inspection

Project Number:

- a. Product Make:
- b. Product Model:
- c. Applicant name and address:

- d. Basis for Certification:

- e. Original Conformity Inspections Record, FAA Form 8100-1. Attach FAA Form 8100-1 to part I.
- f. Statement of Conformity, FAA Form 8130-9. Attach all applicable FAA Forms 8130-9 to part I.
- g. Request for Conformity Inspection, FAA Form 8120-10. If a Conformity Inspection Request is issued after the TIA for the same project, the originals become an attachment to the TIR as "other inspections deemed necessary." Attach FAA Form 8120.10 to Part I.
- h. Supporting Data. Attach copies of all other supporting data, such as weight and balance reports to Part I.

- i. Inspection conducted by: Date:
- j. Report prepared by: Date:
- k. Report reviewed by: Date:
Date:
- l. Report approved by:

TYPE INSPECTION REPORT - Part I - Ground Inspection

m. Administrative Data

- (1) Period of Inspect from: _____ to: _____
- (2) Where conducted?
- (3) Number of conformity inspections conducted and recorded on FAA Form 8100-1 and recorded in project file.
- (4) Were design changes needed to correct deficiencies revealed by FAA Inspection? If yes, identify changes under item (n)(12) "TIA comments", or include an attachment. Yes No
- (5) Have all products/articles subjected to inspections and/or tests been properly recorded by part numbers(s), serial number(s), or registration number(s), as appropriate, on page 1 or in attachment? If no, identify changes under item (n)(12) "TIA comments", or include an attachment. Yes No
- (6) Does the applicant have on file inspection records showing conformity to the type design and acceptable quality of the product? If no, identify changes under item (n)(12) "TIA comments", or include an attachment. Yes No
- (7) Remarks:

"No" items must be explained under appropriate TIA comments.

TYPE INSPECTION REPORT - Part I - Ground Inspection

- n. The following comments are made with respect to special inspections and/or tests conducted by reason of instructions contained in Block 12 of the TIA, and are identified in accordance with TIA numbering. Additional pages may be attached if needed.

Block 12:

1.0 Empty Weight and Corresponding Center of Gravity

1.1 Describe Leveling Marks or Means

1.2 Location of Datum

Ref: § .871

1.3 Horizontal Distance (inches) from Datum to average Front Main Scale CL

Horizontal Distance (inches) from Datum to average Rear Main Scale CL

Horizontal Distance (inches) from Datum to Auxiliary Scale CL

4.1 Empty Weight

	Scale Reading	Tare	Net Weight
Forward Left Main Scale			
Forward Right Main Scale			
Rear Left Main Scale			
Rear Right Main Scale			
Auxiliary Scale			
Empty Weight			

NOTE: *The empty weight and corresponding center of gravity must be determined by weighing the aircraft with --*

(1) Fixed Ballast

(2) Unusable Fuel

(3) Full operating fluids, including (i) oil (ii) hydraulic fluid and (iii) other fluids required for normal operation of aircraft systems, except potable water, lavatory precharge water, and water intended for injection in the engines.

Center of Gravity is inches Forward Aft of Datum

Ref: § .29

2.0 Removable Ballast

- 2.1 If removable ballast is used to show compliance with the flight requirements, is the location for carrying ballast installed and marked in accordance with the type design or change to the type design? Yes No N/A
 Ref: § 21.31

3.0 Fabrication Process

- 3.1 a. Has the applicant shown that materials, products, parts, processes, construction, and assemblies conform to the specifications and drawings shown in the type design or change in type design, as applicable? Yes No N/A
- b. Has the product been changed between the time it was shown to comply with item 3.1.a. of this report and the time it was presented for FAA Inspection? Record any changes on FAA Form 8100-1. Yes No N/A
- c. Has the applicant made all inspections and tests necessary to determine
- (1) Compliance with the applicable airworthiness and noise/emission requirements; Yes No N/A
- (2) That the materials and products conform to the specifications in the type design or change in type design, as applicable; Yes No N/A
- (3) That the parts of the product conform to the drawings in the type design or change in type design, as applicable; Yes No N/A
- (4) That the manufacturing processes, construction, and assembly conform to those specified in the type design or change in type design, as applicable? Yes No N/A
 Ref: § 21.33
- 3.2 Has the suitability and durability of materials used for parts, the failure of which could adversely affect safety:
- a. Been established by experience or tests? Yes No N/A
- b. Been established through approved specifications that ensure the strength and other properties assumed in the design data? Yes No N/A
- c. Been evaluated to take into account the affects of environmental conditions, such as temperature and humidity, expected in service? Yes No N/A
 Ref: § .603(a)
- 3.3 Have high standards of workmanship been used in the fabrication of parts? Yes No N/A
 Ref: § .603(b)

4.0 Fuselage and Wing

- 4.1 Are the fuselage and wings in conformity with the type design or change in type design, as applicable? Yes No N/A
 Ref: § 21.33

5.0 Control System

- 5.1 Is the control system in conformity with the type design or change in type design, as applicable? Yes No N/A
- 5.2 Do the control surface travels conform to the type design or change in type design, as applicable? Yes No N/A
 Ref: § 21.31(a)

6.0 Personnel and Cargo Accommodations

- 6.1 Are the personnel and cargo compartments in conformity with the type design or change in type design, as applicable? Yes No N/A
 Ref: § 21.31(a)

7.0 Powerplant Installation

7.1 Does the powerplant installation conform to the type design or change in type design, as applicable? Yes No N/A
Ref: § 21.31(a)

8.0 Equipment

8.1 Is the installed equipment in conformity to the type design or change in type design, as applicable? Yes No N/A
Ref: § 21.31(a)

8.2 Is each item of equipment installed in accordance with the type design or change in type design, as applicable?

a. Labeled as to the identification, or operation limitations, or any applicable combination of these factors; and Yes No N/A

b. Installed according to limitations specified for that equipment? Yes No N/A
Ref. § .1301 (b) and (c)

8.3 Are the electrical, radio, and electronic systems included in the type design or change in type design, as applicable, free from hazards in themselves, in their method of operation, and in their effects on other components? Yes No N/A
Ref. § .1351(b)(1)(i), .1431 or .1431(a)

8.4 Are electrical cables and wire bundles included in the type design or change in type design, as applicable, protected from fuel, oil, water, and other detrimental substances, and from mechanical damage? Yes No N/A
Ref. § .1351(b)(1)(ii)

8.5 Are the radio and electronic equipment, controls, and wiring installed so that operation of any one unit or system of units will not adversely affect the simultaneous operation of any other radio or electronic unit or system of units required by the airworthiness or operation rules? Yes No N/A
Ref. § .1431(b) or (c)



U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration

Type Inspection Report for

(1) Project Number:

Part II - Flight Test Report

(2) Flight Tests Conducted by:

(3) Report prepared by:

Date:

(4) Report approved by:

Date:

1.0 Administrative Information

1.1 Description of flight test item/modification:

1.2 Flight test instrumentation description:

1.3 Test Aircraft:

Serial Number	Registration Number

1.4 Test Sites:

1.5 Alterations made during FAA flight testing:

TYPE INSPECTION REPORT - Part II - Flight Test Report

1.6 Flight test log (excluding function and reliability test) with total official FAA flight test time (include information such as takeoff weight, takeoff center of gravity (c.g.), and flight number, if applicable):

1.7 Total number of flight hours for function and reliability test (if required):

1.8 Explanation for credit given to other than FAA flight time:

1.9 Survival equipment (life rafts, survival first aid kits, Emergency Locator Transmitter (ELT), survival tools, etc.):

1.10 Personal protective equipment (oxygen bottles, oxygen masks, smoke hoods, fire fighting gloves, fire extinguishers, Nomex flight suits, etc.):

2.0 Certification Information (operating limitations:)

2.1 Category (normal, utility, acrobatic, etc.):

2.2 Type of operations (visual flight rules, instrument flight rules, day, night, icing, etc.):

2.3 Approved maneuvers:

2.4 Equipment required for each type of operation:

2.5 Limitations for weight, center-of-gravity, airspeeds, power plant operations, and recommended airspeeds for climbs, auto-rotations, and approaches:

3.0 Applicable Requirements

4.0 Flight Test Results and Findings

5.0 Operational Evaluations Identified and Conducted by the AEG

6.0 Appendices