

September 30, 2005 First Issue (KOKU-KU-KI-5029)
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Circular

Director, Airworthiness Division
Safety and Security Department
Civil Aviation Bureau
Ministry of Land, Infrastructure, Transport and Tourism

Subject: Preparation and Management of Implementation Plan for Conformity Inspection and Test Witnessing

1. Application

This circular is relating to a Type Certificate inspection, etc for aircraft manufactured in Japan, and summarizes preparation and management methods of Implementation Plan for Conformity Inspection and Test Witnessing, which are conducted to confirm conformity to the Test Plans for various Type Certificate tests.

This circular is applied to a Type Certificate for aircraft and a Type Approval for components (Engine and Propeller) designed by Japan. For Conformity Inspection and Test Witnessing which are conducted in accordance with this circular and performed by other departments than the Aircraft Engineering & Certification Center, a department specified as the Aircraft Engineering & Certification Center in this circular shall be interpreted to each department who performs relevant works.

2. Objectives

In relating to Conformity Inspection and Test Witnessing (hereinafter referred to as “Conformity Inspection, etc”) which are performed during tests for Type Certificate, etc (hereinafter referred to as “Type Certificate test, etc”), this circular specifies preparation and management methods of an Implementation Plan for Conformity Inspection, etc by clarifying standards and procedures regarding settings of subject which are established for each project of the Type Certificate, etc and scope of the Conformity Inspection, etc.,

3. Preparation of an Implementation Plan for Conformity Inspection, etc and its composition

Subjects and classifications of the Conformity Inspection, etc are specified in “an Implementation Plan for Conformity Inspection and Test Witnessing” for each project.

“An Implementation Plan for Conformity Inspection and Test Witnessing” is consisted of “an basic Implementation Plan for Conformity Inspection and Test Witnessing” (hereinafter referred to as “Basic Plan”) which specifies basic plans for subjects, classifications and responsible sections and “a detailed Implementation Plan for Conformity Inspection and Test Witnessing” (hereinafter referred to as “Detailed Plan”) which specifies details of a concrete plan.

3.1 Subjects for Conformity Inspection, etc

In principal, all Type Certificate test, etc are subjects for Conformity Inspection, etc.

Conformity Inspection, etc shall be conducted to confirm said subjects conform to specifications specified by Test Plans.

The following items are subjects for the Conformity Inspection, etc in order to ensure the conformity to Test Plans.

(1) Conformity Inspection

- 1) Test article
- 2) Test setups
- 3) Test equipment
- 4) Test instrument, Measuring instrument

(2) Test Witnessing

- 1) Test Witnessing

3.2 Classifications of subjects for Conformity Inspection, etc

The subjects for Conformity Inspection, etc described in 3.1 are classified as follows.

- ① New Technology / Special Material • Parts
- ② New Technology / Special Equipment • Instrument
- ③ New Technology / Special Assembly • Manufacturing Process
- ④ New Special Process
- ⑤ Relating to manufacturing articles other than above, and controlled by a quality control system approved and confirmed by the JCAB

⑥ Relating to manufacturing articles other than above

Detailed procedures to confirm agreement of said specifications are specified by a JCAB Circular No. 1-309 “Guidelines for Implementation of Conformity Inspections and Test Witnessing”.

3.3 Consideration of achievement, experience and organization of a manufacturer

When an Implementation Plan for Conformity Inspection, etc is prepared, achievement, experience and organization of the manufacturer may be considered.

Examples for consideration of achievement, experience and organization of the manufacturer are status of obtaining capabilities for the approved organization based on the Civil Aeronautics Act (Law) (hereinafter referred to as “CAL”) Article 20, and experience of obtaining a Type Certificate approval based on the CAL Article 12.

Concrete examples relating to these experience, etc are indicated as follows.

- (1) If a manufacturer does not have experience of obtaining approvals for the approved organizations based on the CAL Article 20 or design approvals for Type Certificate, etc;

Since the manufacturer has not established an inspection system for approved quality control system and manufacturing processes, guarantees to conformity for the article cannot be obtained.

Therefore the subjects cannot be classified as ⑤, can be classified as either ①~④, or ⑥ above and all subjects are selected as items which are inspected by the State for Conformity Inspection, etc.

In principal, actual witnesses are conducted during a said Conformity Inspection, etc.

Actual witnesses shall be performed properly based on contents of the Conformity Inspection, etc, however the inspection may be performed considering status of past Conformity Inspections, etc. For example, the actual witness may be omitted by utilizing a part of capabilities of the applicant which has been confirmed by the authority properly.

- (2) If a manufacturer has experience of obtaining a Type Certificate approval based on the CAL Article 12, or has capabilities for the approved organizations based on the CAL Article 20 except for an approval of aircraft design organization for said type of aircraft.

If the applicant does not have an approved quality control system applied for said type of aircraft, but has an inspection system, etc for articles of aircraft confirmed by inspection of manufacturing processes for Type Certificate, etc for other type of aircraft, or if a quality control system has been approved by other approvals than a design and inspection approval for

said type of aircraft, equivalent articles which the applicant declares that said manufacturing processes and control systems are applied on the articles may be confirmed by what the applicant declares.

Therefore all ①～⑥ above-mentioned are selected as subjects which are performed by the State for Conformity Inspection, etc, and they are performed as same as (1) above, however the inspection may be performed by utilizing properly a part of capabilities of the applicant which has been confirmed by the authority. For example, actual witnesses may be omitted for test articles which is considered to be equivalent to ⑤ for the Conformity Inspection.

- (3) If a manufacturer has obtained an approval of design and inspection organization for said type of aircraft based on the CAL Article 20.

In this case, an approved quality control system to be applied to design and inspection for said type of aircraft has been established, therefore conformity of articles is guaranteed by the system.

Therefore ⑥ cannot be applied, ①～④ mentioned-above are selected as subjects which are performed by the State for Conformity Inspection, etc, and they are performed as same as (1) above, however for ⑤, it may be performed by the applicant with said Approved Design Organization in principal, or may be performed by the State corresponding to status of certification.

In this case, sharing of roles shall be specified in “an Implementation Plan for Conformity Inspection and Test Witnessing”.

4. Procedures for preparation and management of an Implementation Plan for Conformity Inspection, etc

Procedures for preparation and management of an Implementation Plan for Conformity Inspection, etc established for each project shall be followed as described below.

- (1) Preparation and notification of an Implementation Plan for Conformity Inspection, etc
- a The applicant shall submit Appendix-1, “Information to determine subjects for Conformity Inspection and Test Witnessing” to Aircraft Engineering & Certification Center as an explanation document specified by JCAB Circular No. 1-003, item g of 2-2-1 (a) design plans.
 - b Aircraft Engineering & Certification Center shall prepare Appendix-2 “Basic Plan” with coordination with the applicant and responsible personnel, and shall notify subjects and schedules, etc of the Conformity Inspection, etc to the applicant and responsible personnel in well advance.

- c The applicant shall prepare Appendix-3 “Detailed information of each manufacturing article relating to Conformity Inspection and Test Witnessing” based on notified “Basic Plan”, and shall submit it to the Conformity Inspection Manager in well advance from starting of the manufacturing.
- d The Conformity Inspection Manager shall prepare Appendix-4 “Detailed Plan” with coordination with the applicant and responsible personnel, and shall notify it to the applicant in well advance from starting of the manufacturing of articles which are subjects for the Conformity Inspection, etc..

(2) Management of Conformity Inspection, etc

- a If it becomes necessary to change contents described in “Detailed Plan” or it becomes available to specify contents described as “to be determined” in “Detailed information of each manufacturing article relating to Conformity Inspection and Test Witnessing”, the applicant shall report necessary contents of the change to the Conformity Inspection Manager immediately.
- b When “Detailed Plan” is changed, the Conformity Inspection Manager shall notify contents of concerned changes to the applicant without delay.

5. Miscellaneous Provisions

In spite of procedures specified by item 3 and 4 of this circular, an alternate method can be used for preparation and management of an Implementation Plan for Conformity Inspection, etc, if a Director of the Aircraft Engineering & Certification Center accepts it as necessary.

Supplementary Provisions

- 1. This circular shall be effective on October 1, 2005.

Supplementary Provisions (June 30, 2011)

- 1. This circular shall be effective on July 1, 2011.

Please contact for questions or comments regarding this Circular to:

Airworthiness Engineer, Airworthiness Division, Safety and Security Department,
Civil Aviation Bureau, Ministry of Land, Infrastructure, Transport and Tourism
2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo, 100-8918

Tel. 81-3-5253-8735

Fax. 81-3-5253-1661

(The following form is a sample; any form is acceptable, if the same information is contained)

(Company's document control number and issue date)

Information to determine subjects for Conformity Inspection and Test Witnessing

1.Name of applicant	{○×Heavy Industry Co., Ltd}
2.Address of applicant	{Nagoya Airport, Nishikaugai, Aichi}
3.Project Number	{AECC-0-165}
4.Title of project	{ Type Certificate for Rotorcraft ○×Heavy Industry A184}
5.Responsible JCAB Dept.	{Aircraft Engineering & Certification Center}
6.Name & Dept. of a contact person of applicant	{Quality Control Group, Quality Assurance Dept. Tsuguo Tawa}
7.Name & Dept. of a person who issues conformity report	{Quality Control Group, Quality Assurance Dept. Daishi Gousyu}
8.Information relating to achievement, experience, quality control system	
① Achievement & Experience	<p>{Enter achievement and experience between the authority in Japan</p> <p>Example :</p> <ul style="list-style-type: none"> • Had inspection for manufacturing process and obtained a Type Certificate for aircraft ○×Heavy Industry OH114 • Obtained a Type Approval for auto flight equipment for rotorcraft △○Heavy Industry 9684 <p>}</p>
② Quality Control System	<p>{Enter approvals, etc obtained from the authority in Japan</p> <p>Example :</p> <ul style="list-style-type: none"> • Obtained approvals of Aircraft Production & Inspection and Aircraft Design & Inspection for aircraft ○× Heavy Industry OH114 • Enter status if the applicant is coordinating with the JCAB in order to obtain approvals for approved organizations for applied aircraft. <p>}</p>
③ Others	<p>{Enter achievement, experience and approval status of a quality control system between other authorities or foreign manufacturers.}</p>

9. Test plan, test overview and equivalent experience	
① Relative to Ground Test	<p>{Enter names of Test Plans, which is used? - test articles or test aircrafts, and past experience of equivalent tests</p> <p>Example :</p> <ul style="list-style-type: none"> • Full Aircraft Tie Down Test (test articles), Had experience of the test for Rotorcraft × @ Heavy Industry A11N0 • Endurance Test for flight control system (test articles) • Fuel Calibration Test (test aircraft) • Full Aircraft Operational/Functional Test (test aircraft) • Full Aircraft Static Strength/ Fatigue Strength Test (test article) <p>}</p>
② Relative to Flight Test	<p>{Enter a name of test flight planned, a numbers of test aircrafts to be used, and past experience of equivalent tests</p> <p>Example :</p> <ul style="list-style-type: none"> • A number of test aircrafts : 2 aircrafts • Flight Characteristics Test • Flight Performance Measurement Test • Spectrum Measurement Test , Had experience on × @Heavy Industry A11N0 <p>}</p>
③ Others	<p>{Enter names, general descriptions and management methods, etc of new technologies, special test equipment, test instruments, and measuring instruments, which are used for above tests.</p> <p>Example :</p> <ul style="list-style-type: none"> • Fully automated test equipment for endurance test of flight control systems : Equipment which is controlled by a computer program to operate flight control systems automatically, and used for endurance test. <p>Appropriateness of the automatic program is guaranteed by proper controls of programming and a test after the programming. Equipment itself is maintained properly by daily checks.</p> <p>}</p>

10. Adoption plan and general description of new technologies, special materials and manufacturing method, etc	
① Materials	<p>{Enter materials newly developed and adopted</p> <p>Example :</p> <ul style="list-style-type: none"> • Develop new composite material KLMS-119, and use it for rotor blades (Manufacturer : Toura) <p>}</p>
② Manufacturing Method	<p>{Enter new technologies or special manufacturing methods, etc and their general description</p> <p>Example :</p> <ul style="list-style-type: none"> • Adoption of FSW technology : Manufacture body structure by Friction Stir Welding Technology (Details are described in appendix) <p>}</p>
③ Others	<p>{Enter necessary equipment and instruments relating to new technologies or special manufacturing methods, etc}</p>

11. Information of manufacturing and test for the project	
① Approx. Numbers of manufacturing	<p>{Enter approximate numbers of assemblies and sub-assemblies, which are categorized as above-mentioned “New technologies or Special” .</p> <p>Example :</p> <ul style="list-style-type: none"> • Number of assemblies : Approx. 500 (New technology related Approx. 50) <ul style="list-style-type: none"> – Direct effect on safety when it fails : Approx. 100 (Approx. 0) – Reduction of safety when it fails : Approx. 250 (Approx. 20) – Others : Approx. 150 (Approx. 30) • Number of sub-assemblies : Approx. 1500 <p>}</p>
② Number of test articles	<p>{Enter names and a number of test articles, and additional processing for test, etc</p> <p>Example :</p> <ul style="list-style-type: none"> • Test articles for a tie down test (1 aircraft, excluding interiors) • Empennage for static strength test (1 Empennage, installation of strain gages and addition of damages) <p>}</p>
③ Main M/L location	<p>{Enter main manufacturing locations</p> <p>Example :</p> <ul style="list-style-type: none"> • Manufacturing of each part is; ○×Heavy Industry Shoe-Plant, Address～ • Assembly is; ○×Heavy Industry Omaki-Plant, Address～ <p>}</p>
④ Sub-contractor	<p>{Name, contracted work, address of sub-contractor who perform parts manufacturing and assembly</p> <p>Example :</p> <ul style="list-style-type: none"> • Tendon Kogyo : Sub-assembly of aircraft structure, Address～ • Shincho Denki : Manufacturing of Generator, Address～ <p>}</p>
⑤ Others	<p>{Enter other reference information relating to manufacturing articles}</p>

12. Information for use of approved design organizations for aircraft or parts

① Desire for Use

{Enter “Name of Test” , “Subjects of Conformity Inspection, etc” ,” Reason” which the applicant desires to use of approved design organizations for aircraft or parts
Example :

- Name of Test : Static Strength Test and Fatigue Strength Test for Flaps

Subject	Use	Reason
Test Articles	○	It is identical to a test aircraft except for addition of internal defects
Addition of damages	×	
Installation of strain gage	×	
Setups on equipment	×	
Strain Survey	×	
Limited Load Test	×	
Fatigue Strength Test 1	△	Since control of fatigue strength test is performed by a computer program automatically, it is reasonable to have a witness by the authority at beginning of the test, and to perform the following tests by an approved design organization.
Ultimate Load Test 1	○	Ultimate load test 2 is performed with a witness by the authority after two life’s fatigue tests.
Fatigue Strength Test 2	○	It is identical to fatigue strength test 1.
Ultimate Load Test 2	×	
Over Load Test	○	Objectives of test are to gather reference data.

○ : Desire for use of aircraft design and inspection approval

△ : Desire for partial use of aircraft design and inspection approval

×

}

② Others

{Enter other reference information regarding use of approved design organization for aircraft or component. }

To (Name of applicant)

To (Name of each responsible department)

Director, Aircraft Engineering & Certification
Center

Basic Implementation Plan for Conformity Inspection and Test Witnessing (Notification)

This is to notify the subject with regard to (Project Number) is determined as follows.

1. Subjects for Conformity Inspection, etc

Subjects for Conformity Inspection, etc relating to this Type Certificate test, etc are as follows.

- (1) All test articles relating to this Type Certificate test, etc
- (2) All test setups relating to this Type Certificate test, etc
- {If necessary, (3) {of XXX test} {test equipment} {test instrument} {measuring instrument}}

2. Classification of Conformity Inspection, etc

Above subjects for Conformity Inspection, etc shall be confirmed to conform to specifications stipulated by said Test Plans. After evaluation of achievement, experience and organizations of your company, the following portion of test articles shall be suitable for subjects for actual witness.

- (1) {Materials • Parts} {Equipment • Instrument} {Assembly • Manufacturing process} {Special Process} with regard to (names of new technologies, etc) which are regarded as {New technology} {Special}
 - (2) Other manufacturing articles than above, and articles corresponding to {Based on approved quality control system} {Not based on approved quality control system}
- Responsible department for implementation is described in a next column.

3. Responsible department for implementation of Conformity Inspection, etc

Conformity Inspection, etc corresponding to above shall be performed by {Aircraft Engineering & Certification Center for all inspections} {Aircraft Engineering & Certification Center and the Airworthiness Inspectors Office (that is responsible for manufacturer' s

location)} {Aircraft Engineering & Certification Center and the Airworthiness Inspectors Office (that is responsible for manufacturer' s location) or the foreign authority } {Aircraft Engineering & Certification Center and the Airworthiness Inspectors Office (that is responsible for manufacturer' s location) or the foreign authority, in addition, XXX design and inspection organization who had experience of having Conformity Inspection or Test Witnessing with success in the past}

(The following form is an example; any form is accepted if the same information is contained. It is recommended to submit by electronic data such as Microsoft Excel)

Detailed Information of each Manufacturing Articles relating to Conformity Inspection and Test Witnessing

1. Basic Information

Name of Applicant	
Project Number	
Basic Implementation Plan Number for Conformity Inspection and Test Witnessing	
Document Number and Revision Code	(Note 1)
Document Issue Date	

2. Relating to Test

Name of Test	Test Plans Number	Test Articles	Test Setups	Test Equipment, etc	Test Witnessing	Past Experience	Date/Location of Test	Responsible Department
{Enter each name of test}	{Enter Test Plans number and revision code(*)}	{Enter number of test articles used for each test and frequency of conformity test for test articles (Example :at the completion of test articles, at addition of damages) }	{Enter configuration and frequency of test setups required for each test}	{Enter name, specification, etc and their special condition of test equipment required for each test}	{Enter timing and frequency of Test Witnessing required for each test}	{Enter past experience of having Conformity Inspection, etc, a type of aircraft and equivalency to the inspection}	{Enter a planned date (*) and location for each test}	{Enter responsible department that the applicant desires}

3. Relating to Test Articles

Part Number	Drawing Number	Nomenclature of Assemble Parts	Manufacturing Serial Number	Quality Class for Assembly Parts	Use of New Technologies, etc	Past Experience	Manufacturer	Manufacturing Schedule (*)	Opinion of Applicant	Responsible Department
{Enter each part number of all test articles (including sub-part of test aircraft) in systematic order, use 「・」 「・・・」 for sub-part of the test articles. }	{Enter each drawing number and revision code (*) corresponding to each part number.}	{Enter each nomenclature corresponding to each part number.}	{Enter manufacturing serial numbers for each part number, enter aircraft manufacturing number or name of test articles which are used for test.}	{Enter class of quality control system applied to manufacturing of each part (Note-2)}	{Enter status of using new technologies (Note-3) and their contents applied to each part.}	{Enter past experience of having Conformity Inspection and it' s type of aircraft and equivalency.}	{Enter name and location of manufacturer of each part, including subcontractor.}	{Enter planned start and completion date of manufacturing of each part }	{After comparison between 「Basic Implementation Plan for Conformity Inspection and Test Witnessing」 and each part, enter status of assembly for subjects for Conformity Inspection, it' s appropriateness and necessity of Conformity Inspection tag.}	{Enter responsible department that the applicant desires.}

(*)

- Contents of this mark may be submitted as a revision of this form before issuance of Request for Conformity Inspection / Request for Witness Inspection.

(Note-1)

- Indicate revised areas by red letters, when a revision of this form is submitted.

(Note-2)

- Examples of a class of quality control system are ; Experience of having inspections for design and inspection approval, production and inspection approval or manufacturing process for Type Certificate.

(Note-3)

- Use of new technologies / special materials, parts
- Use of new technologies / Special equipment, instrument
- Use of new technologies / Special assembly, manufacturing process
- New special process

To (Name of applicant)

Director, Aircraft Engineering & Certification Center

Detailed Implementation Plan for Conformity Inspection and Test Witnessing (Notification)

With regard to above plans for (Project Number), this is to notify that it is determined to conduct the Conformity Inspection, etc on subjects described in an appended table (Document Number) , after careful review of detailed information (Document Number and Revision Code) submitted regarding each manufacturing article relating to Conformity Inspection and Test Witnessing, based on a basic Implementation Plan of Conformity Inspection and Test Witnessing (Document Number).

< Other reference >

{Example of description : Items described in the appended table as “ XXX design and inspection approval” for responsible department are asked to certifying staffs of the XXX of approved design organization.}

Detailed Implementation Plan for Conformity Inspection and Test Witnessing

1. Relating to Test

Name of Test	Test Plans Number	Subjects for Conformity Inspection, etc	Responsible Department	Remarks
{Enter each name of test}	{Enter number of Test Plans and revision code}	{Enter detailed breakdowns of subjects for Conformity Inspection, etc. (Enter subjects separately for {Test Article} {Test Setups} {Test Equipment, etc} {Test Witnessing}) Regarding Test Witnessing, after considering timing and frequency of Test Witnessing required for each test, enter subjects for each item of the Test Plans or for each witness (Example; witness at the first term of a fatigue test) }	{Enter responsible department for each subject for Conformity Inspection, etc. Enter department separately for {Aircraft Engineering & Certification Center} {Responsible Airworthiness Inspectors Office} {Foreign authorities} {XXX design and inspection approval}}	

2. Relating to Test Article

Part Number	Drawing Number	Name of Assembly Parts	Manufacturing Serial Number	Subjects for Conformity Inspection	Responsible Department	Remarks
{Enter for parts of the test article that is subject to Conformity Inspection.}	{Enter drawing number and revision code corresponding to each part number.}	{Enter name of assembly parts corresponding to each part number.}	{Enter each manufacturing serial number of test article that is subject to Conformity Inspection and aircraft manufacturing serial number or name of test article used.}	{Enter detailed breakdowns of subjects for Conformity Inspection. Enter subjects separately for {Manufacturing Article} {Materials • Parts} {Equipment • Instrument} {Assembly • Manufacturing Process} {Special Process}}	{Enter responsible department for each subject for Conformity Inspection. Enter department separately for {Aircraft Engineering & Certification Center} {Responsible Airworthiness Inspectors Office} {Foreign authorities} {XXX of approved design organization}}	