

**PROTOCOL OF UNDERSTANDING
FOR COOPERATION ON
AERONAUTICAL CERTIFICATION**

**Centro Técnico Aeroespacial (CTA)
BRASIL**

**Dirección General de Aeronáutica Civil (DGAC)
CHILE**

VALID FOR THE EMB-145 PROGRAM

DGAC AND CTA PROTOCOL OF UNDERSTANDING FOR COOPERATION ON AERONAUTICAL CERTIFICATION

I.- INTRODUCTION

This Protocol of Understanding has been developed as a function of the industrial cooperation agreement established between EMBRAER and ENAER for manufacture of EMB-145 parts and/or assemblies. A complete description of the work to be performed by ENAER is included as (Annex 01) to this document.

To fulfill its overall responsibility as the primary certification agency for the EMB-145 regarding compliance with the airworthiness requirements and conformity with the approved type design, without incurring an excessive economic burden or inducing important delays on the certification program milestones, the CTA has requested the cooperation and support of the DGAC for the accomplishment of certain activities, herewith described, related with type and/or production certification.

II.- OBJECTIVE

To establish the quality control procedures which shall be adopted by the DGAC to perform on behalf of the CTA and upon its request the following activities:

- Monitoring of the quality control and quality assurance system adopted by ENAER according to EMBRAER document DSGQ-011 "QUALITY ASSURANCE PLAN - GUIDELINES FOR SUPPLIERS" and DSGQ-010 "QUALITY ASSURANCE REQUIREMENTS FOR SUPPLIERS";
- Performing conformity inspections of test articles, production parts or assemblies;
- Certifying conformity or airworthiness approval of parts and assemblies produced by ENAER and delivered to EMBRAER or other facilities.

III.- PROCEDURES

3.1 Administrative

- a) The procedures hereby established are not exhausted and therefore may be amended by common agreement of both authorities during the effectiveness of the industrial cooperation agreement referred on paragraph I, either to include new procedures and tasks, or to adapt those already established to new conditions.
- b) Unless otherwise provided the English language shall be used in all documents exchanged between the CTA and the DGAC, including: forms, reports, etc.
- c) The CTA, as the primary authority responsible for the aircraft certification and, as such, main responsible for approving the compliance substantiation, reserves the right to participate directly in the quality control and engineering activities conducted by ENAER to whatever extent it finds necessary.
- d) The CTA shall provide directly or take actions to provide the DGAC with all data, i.e.: drawings, reports, norms, specs, instructions, guidelines, policies, etc, deemed necessary to accomplish the activities established herein.

3.2 QUALITY ASSURANCE

- a) The DGAC will survey permanently the ENAER quality assurance and control system, implemented for the industrial cooperation program, to check compliance with the guidelines established in EMBRAER documents DSGQ-011 and -10 accepted by the CTA. Deviations from such guidelines affecting the basic quality assurance functions, shall be submitted to CTA for analysis and acceptance.

- Quality System/Process/Product Audit

The DGAC, when required by CTA, shall conduct periodic quality system, process or product audits, to evaluate the need for improvement or corrective action and to assure conformance to the project. When required, at CTA's sole discretion, such audits may be extended to ENAER suppliers.

The special process audit, will be formally requested by CTA, through form FDH-200-14 "REQUEST FOR CONFORMITY" (Annex 02)

The DGAC shall complete and send to CTA the forms DGAC 19/2/8120-7 - "REGISTRO DE EVALUACION DE SISTEMAS" (SER) and 19/2/8120-8 "INFORME DE REVISION DE ANALISIS DE SISTEMAS" (Annex 06 and 07).

- **Quality Assurance Plan (QAP)**

The QAP prepared by ENAER and approved by EMBRAER, according to document DSGQ-011, shall have its compliance, monitored by DGAC.

The QAP is the basic document for evaluation and audit of the ENAER Quality Assurance System.

- b) The DGAC will perform the conformity inspections of test articles requested by CTA through form FDH-200-014 which shall indicate the approved drawings to be used for such inspection.

Test articles shall be presented to DGAC for conformity inspection accompanied by a CONFORMITY STATEMENT - Form FDH-300-18 (Annex 03) - fulfilled by EMBRAER representative. The result of the conformity inspections shall be documented on CTA Form FDH-300-19 - CONFORMITY INSPECTION REPORT (Annex 04). Any deviation in conformity not previously approved shall be recorded and may be considered reason to invalidate the test results.

- **First Article Inspection**

The DGAC shall audit the First Article Inspection conducted by ENAER, in order to verify, but not limited to, the following:

- the availability and adequacy of all required documents - drawings, specifications, work instructions, etc, applicable to manufacturing and inspection;
- the conformity of production and control means against the requirements of the manufacturing order;
- the sequence of operations and methods specified in the manufacturing orders are adequate and followed as established;
- the personnel qualification/certification;
- the article compliance with all the applicable requirements: raw material, dimensional/functional, characteristics identification, protective finishes, interchangeability, configuration, etc...

- **Conformity Inspection - Prototypes/Tests Samples**

After receiving the Form FDH-200-14, the DGAC will contact ENAER to conduct the necessary inspections. According to CTA request, the following must be supplied by DGAC:

- FORM FDH-300-19 - This form must be filled out by DGAC inspectors; the pertinent instructions are displayed on the form and DGAC Order 8110-4;

FORM FDH-300-18 - This form, applicable to each assembly or subassembly presented for inspection or test, must be signed by an EMBRAER representative.

- c) The DGAC shall certify all parts and assemblies exported to Brazil by fulfilling form DGAC 18-3/8130-3, Conformity Certification side, for parts/assemblies exported previously to the CTA Type certificate issuance. The Airworthiness Approval Tag side must be used for parts/assemblies exported after Type Certificate issuance (Annex 05).

Any major deviation, or concession from the approved standard, or the approved type design affecting such parts/assemblies, shall be previously accepted by the CTA.

- FORM DGAC 19/2/8130-3 - Conformity Certification/Airworthiness Approval Tag

This tag must be attached to each segment exported to BRAZIL.

NOTE: 1) All parts/assemblies exported to BRAZIL must be identified with the DGAC 19/2/8130-3 tag. If the tag is missing, the part/assembly must be rejected at EMBRAER.

2) Instructions to complete the form are included on DGAC Handbook 8130-2B.

- Assembly Inspection Report - A.I.R.

ENAER shall fill out and deliver with each finished unit the appropriate Assembly Inspection Report (AIR), issued in accordance with DSGQ 014. The DGAC inspectors must check this document to verify completeness and adequate content.

The non conformance list must be checked and all concessions, if exists, must have EMBRAER approval.

- Service Difficulty.

The DGAC, by CTA request, will review service difficulties found in operation related with the work performed by ENAER and present recommendations of possible corrective actions for CTA analysis and approval.

IV.- GENERAL

- a) Communications between both authorities regarding the subjects covered by this Protocol shall be forwarded to the address indicated below:

CENTRO TECNICO AEROESPACIAL - CTA

Instituto de Fomento e Coordenacao Industrial - IFI

Divisao de Homologacao Aeronautica - FDH

Praca. Mal. Eduardo Gomes, 50 - Vila das Acacias

12231-970 - SAO JOSE DOS CAMPOS/SP - BRASIL

Phone: 55 123 41 4600

Fax : 55 123 41 4768

Focal Point: Chefe da Divisao de Homologacao Aeronautica.

DIRECCION GENERAL DE AERONAUTICA CIVIL - DGAC

Dirección de Ingeniería

Departamento Certificación

Avda Francisco Bilbao 1369, 3º Piso, Providencia

Santiago - CHILE

Phone: 56 2 204 7657

Fax : 56 2 204 7790

Focal Point: Jefe Departamento de Certificación.



ANNEX I

COMPONENT/PART DESIGNATION	PART NUMBER	DESIGN	MANUFACTURER	TESTING/ENGINEERING ANALYSIS
ELEVATOR ASSY	145-22361-401/402	EMBRAER	ENAE	EMBRAER
HORIZONTAL STABILIZER ASSY	145-25350-401 AND 145-23350-403	EMBRAER	ENAE	EMBRAER
STABILIZER LEADING EDGE ASSY	145-21941-401/402	EMBRAER	ENAE	EMBRAER
FIN ASSY	145-20440-401	EMBRAER	ENAE	EMBRAER
KIT, INSTALLATION STABILIZER	145-20223-401	EMBRAER	ENAE	EMBRAER
COVER, SUPPORT CONNECTOR	145-28580-401	EMBRAER	ENAE	EMBRAER

EMPRESA NACIONAL DE AERONAUTICA - ENAE

Avda.: J.M. CARRERA, n° 11087

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SANTIAGO - CHILE

REQUEST FOR TEST WITNESSING	CENTRO TÉCNICO AEROESPACIAL Instituto de Fomento e Coordenação Industrial Divisão de Homologação Aeronáutica
To: _____ _____	Attention: _____
Request for Test Witnessing	Project: _____
☐ Structural Test _____	Date: _____
☐ System Test _____	
☐ Other _____	
A test witnessing pertaining to the subject is request for the following:	
Applicant Name: _____	
Company Name: _____	
Street: _____	State: _____ Zip: _____
Time/Date Available: _____	☐ Company will contact ...
Type Test Installation: _____	
Make/Model: _____	
Test Proposal (with Revision/Date): _____	
Design Data (with Revision/Date): _____ _____	
Special Instruction _____ _____ _____	
CTA Test responsible _____	Phone: _____
Remarks: _____ _____ _____	
☐ Test Report Required	
☐ FDH-300-18 Required	
REQUEST FOR TEST WITNESSING NO: _____	

STATEMENT OF CONFORMITY		CENTRO TÉCNICO AEROESPACIAL Instituto de Fomento e Coordenação Industrial Divisão de Homologação Aeronáutica	
SECTION I - AIRCRAFT			
1. MAKE		2. MODEL	
3. SERIAL NO.		4. REGISTRATION NO.	
SECTION II - ENGINE			
1. MAKE		2. MODEL	
3. SERIAL NO.			
SECTION III - PROPELLER			
1. MAKE		2. HUB MODEL	
3. BLADE MODEL		4. HUB SERIAL NO.	
5. BLADE SERIAL NOS.			
SECTION IV - CERTIFICATION			
I hereby certify that:			
☐ A. I have complied with Section 21.33(a).			
☐ B. The aircraft described above, produced under type certificate only RBHA 21 Subpart F), conforms to its type certificate, is in a condition for safe operation, and was flight checked on _____ (Date)			
☐ C. The engine or propeller described above, presented herewith for type certification, conforms to the type design therefor.			
☐ D. The engine or propeller described above produced under type certificate only RBHA 21 Subpart F), conforms to its type certificate and is in a condition for safe operation. The engine or, if applicable, the variable pitch propeller was subjected by the manufacturer to a final operational check on _____ (Date)			
Deviations:			
SIGNATURE OF CERTIFIER		TITLE	
ORGANIZATION		DATE	

INSTRUCTIONS

This form should be submitted to a representative of the CTA under the following circumstances:

1. By the applicant for a type certificate or a supplemental type certificate at the time he presents an aircraft or parts thereof to the CTA for tests.
2. By the applicant for a type certificate or a supplemental type certificate for each engine or propeller submitted for type certification.
3. By the type certificate holder or licensee manufacturing products under a type certificate only, upon the initial transfer by him of the ownership of each product or upon application for the original issue of an aircraft airworthiness certificate, or an Airworthiness Approval Tag, (CTA FORM FOH-100-01).

This form should be completed as follows:

Section I. Aircraft. Complete the pertinent part of only this section when certification covers an aircraft or part thereof.

Section II. Engine. Complete this section when certification covers an engine.

Section III. Propeller. Complete this section when certification covers a propeller.

Section IV. Certification

Item A. Check this block when an aircraft or part thereof is presented for flight or ground tests during type certification or supplemental type certification.

Item B. Check this block when the holder or licensee of a type certificate only, initially transfers the ownership of an aircraft manufactured under that type certificate, or applies for the original issuance of an airworthiness certificate.

Item C. Check this block when an engine or propeller is presented for type certification.

Item D. Check this block when an engine or propeller is presented for airworthiness approval and insert the date the product completed a final operational check.

The certification must be signed by an authorized person who holds a responsible position in the manufacturing organization.

REPUBLICA DE CHILE DIRECCION GENERAL DE AERONAUTICA CIVIL TARJETA DE APROBACION DE AERONA VECABILIDAD	
DESCRIPCION DE LA PARTE	
☐ NUEVA ☐ RECEN OVERHAULEADA	
BASE DE APROBACION	
CANTIDAD, NOMBRE Y NUMERO DE PARTE	
ELIGIBLE PARA INSTALACION EN: (PRODUCTO CONT.C.)	
VER FACTURA NUMERO:	
INSPECCIONADA Y APROBADA POR	
NOMBRE Y NUMERO DEL FABRICANTE O ETEA	
NOMBRE Y FIRMA DEL INSPECTOR DGAC	
FECHA	
DGAC Form. 19/28130-3 (10-93)	

ANVERSO

REPUBLICA DE CHILE DIRECCION GENERAL DE AERONAUTICA CIVIL CERTIFICACION DE CONFORMIDAD	
DESCRIPCION DE LA PARTE	
☐ NUEVA ☐ RECEN OVERHAULEADA	
BASE DE APROBACION	
CANTIDAD, NOMBRE Y NUMERO DE PARTE	
PARA INSTALACION EN:	
VER FACTURA NUMERO:	
INSPECCIONADA POR	
NOMBRE Y NUMERO DEL FABRICANTE O ETEA	
NOMBRE Y FIRMA DEL INSPECTOR DGAC	
FECHA	
DGAC Form. 19/28130-3 (10-93)	

REVERSO

DIRECCION GENERAL DE AERONAUTICA CIVIL
DIRECCION DE INGENIERIA
DEPARTAMENTO CERTIFICACION

ANEXO 05

REGISTRO DE EVALUACION DE SISTEMAS (SER)					
1. Nº DE PROYECTO	2. Nº DE LAS CONCLUSIONES				
3. INFORMACION DE CONTROL DE CALIDAD O SECCION APLICABLE DEL DAR 08					
4. FUNCION PRINCIPAL EVALUADA					
5. CONCLUSIONES -- <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">a. Sección del DAR 08 involucrada</td> <td style="width: 50%;">b. Deficiencia/infracción</td> </tr> <tr> <td>c. Causa</td> <td>d. Acción correctiva recomendada</td> </tr> </table>		a. Sección del DAR 08 involucrada	b. Deficiencia/infracción	c. Causa	d. Acción correctiva recomendada
a. Sección del DAR 08 involucrada	b. Deficiencia/infracción				
c. Causa	d. Acción correctiva recomendada				
6. FIRMA DEL ESPECIALISTA					
7. CARGO					
8. FECHA					

INFORME DE REVISION DE ANALISIS DE SISTEMAS

1.FABRICANTE		2.NUMERO DE PROYECTO	
3.DIRECCION			
4.ACTIVIDAD DE PRODUCCION		5.TIPO Y EJECUCION	
☐ PC ☐ PROVEEDOR ☐ APIS ☐ TSOA ☐ PMA		A. EJECUTADO POR ☐ EQ. QASAR ☐ INSP. DESIG. B. TIPO DE AUDITORIA ☐ PROGRAMADA ☐ APIS ☐ INICIAL ☐ PCB ☐ ESPECIAL	
6.FECHAS DE LA EVALUACION			
A. DESDE		B. HASTA	
7.INFORMACION Y DATOS DE QC			
8.ANALISIS DE SISTEMAS			
A.FUNCIONES PRINCIPALES		B.RESULTADOS	
FASE I INFORMACION DEL SISTEMA DE QC FASE II CONTROL DE INFORMACION TECNICA PROCESOS DE FABRICACION PROCESOS ESPECIALES INSPECCIONES NO DESTRUCTIVAS CONTROL DE INSTRUM. Y HERRAMIENTAS CONTROL DE PROVEEDORES ENSAYOS REVISION DE MATERIALES ALMACENAMIENTO CERTIFICACION DE AERONAVEGABILIDAD DIFICULTADES EN SERVICIO		SATISFACTORIO MARQUE CON UNA X INSATISFACTORIO ANOTE LOS NUMEROS DE LAS CONCLUSIONES REGISTRADAS EN EL SER	
9.INTEGRANTES DE LA AUDITORIA			
NOMBRE		CARGO	
10.JEFE DEL EQUIPO DE LA AUDITORIA		11.FECHA	

12. OBSERVACIONES- RESUMA TODAS LAS CONDICIONES INSATISFACTORIAS ANOTADAS Y LAS ACCIONES CORRECTIVAS QUE SE TOMARON. HAGA REFERENCIA AL NUMERO DE REGISTRO DE LA EVALUACION DE ANALISIS DE SISTEMAS.

13. NOMBRE Y CARGO

14. FIRMA

15. FECHA

INFORME DE REVISION DE ANALISIS DE SISTEMAS

1.FABRICANTE		2.NUMERO DE PROYECTO	
3.DIRECCION			
4.ACTIVIDAD DE PRODUCCION ☐ PG ☐ PROVEEDOR ☐ APIS ☐ TSOA ☐ PMA		5.TIPO Y EJECUCION A. EJECUTADO POR ☐ EQ. QASAR ☐ INSP. DESIG. B. TIPO DE AUDITORIA ☐ PROGRAMADA ☐ APIS ☐ INICIAL ☐ PCB ☐ ESPECIAL	
6.FECHAS DE LA EVALUACION			
A. DESDE		B. HASTA	
7.INFORMACION Y DATOS DE QC			
8.ANALISIS DE SISTEMAS			
A.FUNCIONES PRINCIPALES		B.RESULTADOS	
FASE I		SATISFACTORIO	
INFORMACION DEL SISTEMA DE QC		MARQUE CON UNA X	
FASE II		INSATISFACTORIO	
CONTROL DE INFORMACION TECNICA		ANOTE LOS NUMEROS DE LAS CONCLUSIONES REGISTRADAS EN EL SER	
PROCESOS DE FABRICACION			
PROCESOS ESPECIALES			
INSPECCIONES NO DESTRUCTIVAS			
CONTROL DE INSTRUM. Y HERRAMIENTAS			
CONTROL DE PROVEEDORES			
ENSAYOS			
REVISION DE MATERIALES			
ALMACENAMIENTO			
CERTIFICACION DE AERONAVEGABILIDAD			
DIFICULTADES EN SERVICIO			
9.INTEGRANTES DE LA AUDITORIA			
NOMBRE		CARGO	
10.JEFE DEL EQUIPO DE LA AUDITORIA		11.FECHA	

12. OBSERVACIONES: RESUMA TODAS LAS CONDICIONES INSATISFACTORIAS ANOTADAS Y LAS ACCIONES CORRECTIVAS QUE SE TOMARON. HAGÁ REFERENCIA AL NUMERO DE REGISTRO DE LA EVALUACION DE ANALISIS DE SISTEMAS.

13. NOMBRE Y CARGO

14. FIRMA

15. FECHA