

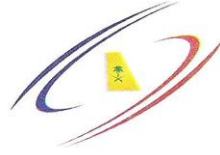


AIRWORTHINESS GUIDE (AG) – 7

AIRCRAFT ALTERATIONS & REPAIRS



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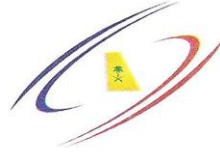


REVISION HISTORY

Issue Number	Issue Date	Affected Pages/ Paragraphs	Description of Change (Administrative, Scope, Process, or New)	Initiated By
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2	04-May-2003	All	Updated Issue	---
3	07-Jan-2014	All	Updated Issue	Mr. Abdulrahman Rashad Mr. Ghassan Qawas Mr. Mohammed Softa



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1 Table of Contents

1	CHAPTER 1: GENERAL.....	11
1.1	Purpose.....	11
1.2	Cancellation	11
1.3	Background.....	11
1.4	Explanation of changes.....	12
1.5	How to use this document.....	13
1.6	Definitions & Acronyms.....	13
1.7	Reference Documents	14
1.8	Distribution	14
1.9	Airworthiness Guide Approval Statement.....	15
2	CHAPTER 2: POLICY STATEMENT	17
2.1	General.....	17
2.2	Design Approvals	17
2.3	Performance and recording of alterations and repairs	17
2.4	Continued Airworthiness	17
3	CHAPTER 3: MAJOR OR MINOR?	19
3.1	General.....	19
3.2	Classification Guidance	20
3.2.1	Design Criteria.....	20
3.2.2	Certification criteria.....	29
3.2.3	Installation criteria:	30
3.2.4	Still not sure?	30
3.3	Minor Alterations and Minor Repairs.....	30
3.4	A Special Case–Classification as Minor by an EASA Approved Organizations	31
4	CHAPTER 4: APPROVED DATA	33
4.1	General.....	33
4.2	Purposes of Approved Data	33
4.2.1	Installation Data Approval.....	33
4.2.2	Equipment Approval.....	34
4.2.3	Findings of Compliance:.....	34
4.3	Types of Approved Data for Major Alterations and Major Repairs	35
4.3.1	General.....	35
4.3.2	Installation Data Approval (Foreign):.....	35



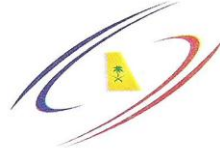
4.3.3	Installation Data Approval (Domestic):.....	38
4.3.4	Equipment Approval Data (Foreign):.....	38
4.3.5	Equipment Approval Data (Domestic):.....	39
4.3.6	Findings of Compliance (Foreign):.....	39
4.3.7	Findings of Compliance (Domestic):.....	40
4.4	Special Cases	40
5	CHAPTER 5: PERFORMANCE AND RECORDING OF ALTERATIONS AND REPAIRS	43
5.1	General.....	43
5.2	GACA Form 8320-1, Major Alterations & Repairs	43
5.2.1	Block 8 - Description of Work.....	43
5.2.2	Block 6 - Conformity Statement.....	44
5.2.3	Block 7 - Approval for Return to Service.....	45
5.2.4	Retention of GACA Form 8320-1:	45
6	CHAPTER 6: GACA STC APPROVAL PROCEDURES	47
6.1	General.....	47
6.2	Phase 1 – Project Initiation	48
6.2.1	Letter of Intent	48
6.2.2	GACA response to the Letter of Intent	49
6.2.3	Letter of Application.....	49
6.2.4	Fees and Charges	50
6.2.5	GACA Project Acceptance and Project Docket.....	50
6.2.6	GACA Project Authorization Number.....	51
6.2.7	Certification Plan	51
6.2.8	Basis of Certification	51
6.2.9	Compliance Checklist	52
6.2.10	Additional Information	53
6.2.11	Changes in Project Scope.....	53
6.2.12	Project Coordination Meetings	53
6.3	Phase 2 – Developing Data, Ensuring Conformity, Showing Compliance.....	54
6.3.1	Developing Data	54
6.3.2	Parts Fabrication	57
6.3.3	Ensuring Conformity "Conformity Inspection Program"	57
6.3.4	Showing Compliance.....	58



6.3.5	Flight Testing	60
6.4	Phase 3 – GACA Verifying Conformity and Finding Compliance	61
6.4.1	Conformity Verification Procedures	61
6.4.2	Compliance Inspections	63
6.4.3	Test Witnessing.....	64
6.4.4	Reports	64
6.4.5	Findings of Compliance	64
6.5	Phase 4 – STC Issuance	65
6.5.1	GACA Certification Project Manager’s Recommendation for GACA STC Issuance: 65	
6.5.2	Approval of certain required operating data:	65
6.5.3	Issuance of the GACA STC Certificate:	65
6.5.4	Closure and Filing of Project Docket:	66
6.5.5	Data retention:.....	66
6.6	Post Certification Activities	66
7	CHAPTER 7: GACA REPAIR DESIGN APPROVAL (RDA) PROCEDURES.....	67
7.1	General.....	67
7.2	Specific provisions for the GACA RDA process.....	67
7.3	Issuance of the GACA RDA.....	67
8	CHAPTER 8: FOREIGN INSTALLATION DATA APPROVALS USING AN AIRCRAFT REGISTERED IN THE KSA AS THE PROTOTYPE.....	69
8.1	General.....	69
8.2	Procedure for an FAA STC project	69
8.2.1	Notification by the Organization	69
8.2.2	Notification by the FAA	70
8.2.3	GACA response to the FAA notification.....	70
8.2.4	FAA STC Project Initiation Meeting	71
8.3	Performance of work on the aircraft	71
8.4	Flight Testing	71
8.5	Return of aircraft to service prior to foreign STC issuance	71
9	CHAPTER 9: CONTINUED AIRWORTHINESS	75
9.1	Responsibilities	75
9.2	Reporting Format	75
10	CHAPTER 10: APPENDICES	77



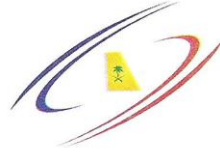
10.1	Appendix 1 - Related Forms	78
10.1.1	GACA Form 201 Application and/or Renewal for Airworthiness Certificate	78
10.1.2	GACA Form 1001 Petition for Regulatory Exemption	79
10.1.3	GACA Form 8100-1 Conformity Inspection Record	80
10.1.4	GACA Form 8110-1 Type Inspection Authorization (TIA).....	81
10.1.5	GACA Form 8110-2 STC Certificate	86
10.1.6	GACA Form 8110-3 Statement of Compliance.....	88
10.1.7	GACA Form 8110-12 Application for STC or RDA.....	89
10.1.8	GACA Form 8120-10 Request for Conformity Verification.....	90
10.1.9	GACA Form 8130-7 Special Airworthiness Certificate	91
10.1.10	GACA Form 8130-9, Statement of Conformity	93
10.1.11	GACA Form 8320-1, Major Repair and Alteration.....	94
10.1.12	GACA Form 8330-2, Malfunction or Defect Report.....	96
10.2	Appendix 2 – Flowcharts	97
10.2.1	AG-7 Overall Decision Process	97
10.2.2	Major/Minor Classification.....	98
10.2.3	STC Process - Phase 1	99
10.2.4	STC Process - Phase 2	100
10.2.5	STC Process - Phase 3	101
10.2.6	STC Process - Phase 4	102
10.2.7	Special C-of-A (Experimental) Process.....	103
10.2.8	EASA Validation Process	104
10.2.9	Issue Paper Process	105
10.2.10	Regulatory Exemption Page 1	106
10.2.11	Regulatory Exemption Page 2	107
10.3	Appendix 3 - Types Of Approved Data (Summary).....	108
10.4	Appendix 4 - Fees and Charges	110
10.5	Appendix 5 - Letter of Intent – Sample	112
10.6	Appendix 6 - Certification Plan – Sample	113
10.7	Appendix 7 - AFMS Approval Page – Sample.....	114
10.8	Appendix 8 - Airworthiness Limitation Approval Page - Sample.....	115
10.9	Appendix 9 - GACA STC – Sample.....	116
10.10	Appendix 10 -GACA RDA – Sample.....	118
10.11	Appendix 11 - Simple Alteration Certification Documentation	120



10.11.1	Document 1: Example of a Letter from the Applicant.....	120
10.11.2	Document 2: Memorandum Recommending Approval (STC) – Sample.....	121
10.11.3	Document 3: Memorandum Recommending Approval (RDA) – Sample.....	122
10.11.4	Document 4: Sample of a letter from GACA	123
10.11.5	Document 5, Additional Guidelines	124
10.12	Appendix 12 - Project Docket Checklist	125
10.13	Reference Documents	127
10.13.1	Primary Regulations	127
10.13.2	Bilateral Airworthiness Agreements Related to Certification of Aeronautical Products 127	
10.13.3	GACA Guidance Documentation:	127
10.13.4	FAA Guidance Documentation:	128
10.13.5	Related Forms:	130



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1 CHAPTER 1: GENERAL

1.1 Purpose

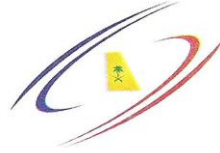
This document provides information on the objectives, regulations, policies, procedures, and general practices for the General Authority of Civil Aviation approval of alterations and repairs of civil aircraft (or engines, propellers, appliances, or parts installed or to be installed thereon) registered in the Kingdom of Saudi Arabia. Specifically, this AG-7 addresses purposes and types of data, alteration/repair approval procedures, return to service, and continued airworthiness.

1.2 Cancellation

This document cancels and replaces AG-7 Issue 2 dated May 4, 2003.

1.3 Background

- (a) Alterations and repairs are made to aircraft for a variety of reasons, whether because of rule changes, mandatory actions, product improvements, incorporation of customer options, or sustained damage.
- (b) The GACA has incorporated the airworthiness codes and certification procedures of Title 14 of the U.S. FARs except for generic and obvious differences (e.g., FAA and GACA organizational structures, U.S. and KSA civil aviation legal bases) or as specifically noted by the GACA. The GACA/FAR regulations require that major alterations and major repairs be performed in accordance with Approved Data.
- (c) The State of Registry is responsible for the approval of major alterations and repairs. This is specified in ICAO Annex 8, Airworthiness of Aircraft. In the KSA, the GACA is the responsible civil aviation authority for all alterations and repairs made to aircraft registered on its civil register. Notwithstanding the above, the overall responsibility of an alteration or a repair always rests with the aircraft owner or operator.
- (d) Recently, the level of activity related to aircraft alterations and repairs has increased. This has raised the need to further clarify and detail the policies and procedures for the GACA to approve major alterations and major repairs, notwithstanding the fact that these policies and procedures are based on existing FAA guidance material. Indeed, the FAA guidance material needs to be customized and tailored to fit the GACA and the KSA aviation environment, and this is done in this AG-7.
- (e) This AG-7 is for use by all organizations and individuals involved or having an interest in alterations and repairs of aircraft registered in the KSA. Notwithstanding, the approach and the terminology used in AG-7 was chosen to suit the GACA AMOs and air operators in particular because they are the main users of this document. For this reason AG-7 focuses more towards "alterations" than to "changes in type design". It can be quite useful to understand the differences between the two. When a particular aircraft is modified, two main sets of activities actually take place: the change in type design (of the aircraft) and the actual alteration of the aircraft. A change in type design alters the definition of the aircraft (drawings, design data, etc.)



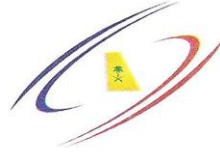
and is a subject of GACA/FAR Part 21. A change in type design does not physically modify an aircraft whereas an alteration is the actual physical act of modifying an aircraft. Alteration is a subject of GACA/FAR Part 43. The fundamental link between the two is that the alteration must be performed in accordance with the approved design data defining the change in type design. The two are inextricably linked. An alteration can simply not happen without a change in type design having taken place first. In other words, the change in type design process ends with the design data, while the alteration process starts with the same design data.

- (f) It should be noted that although the term "modification" is used synonymously with "alteration" and appears in various relevant regulations (in particular GACA/FAR Parts 21, 43, 91, 121, 125, 135, 145 and 183), it does not have a GACA/FAR regulatory definition as such and therefore is not used in this AG-7 to help alleviate confusion. Furthermore, the FAA, for its own reasons, has processes available for alteration approvals that are different from the process to approve changes in type design. The GACA does not use the same approach and, instead, uses one unified process.
- (g) It should also be noted that the use of the term "aircraft" in this document is flexible and can mean the complete aircraft, as well as the airframe, engine, propeller, appliance or part installed or to be installed thereon. This improves the readability of AG-7. The context of the paragraph within which this word is used is always to be considered.
- (h) This AG-7 addresses alterations and repairs made to KSA registered aircraft i.e., after they have been entered on the KSA register. For alterations and repairs made to aircraft that are to be imported to the KSA but are not yet entered onto the KSA register, AG-3 (Importation Requirements) applies.

1.4 Explanation of changes

This issue of AG-7 introduces the following main changes:

- (a) Policy statements reworded for clarity.
- (b) Change all references of PCA-ASSD to GACA to reflect the new organizational structure of the Civil Aviation Authority of the Kingdom of Saudi Arabia.
- (c) Applicable fees for a GACA STC have been described.
- (d) Additional guidance added concerning classification of major and minor design changes and repairs by EASA approved organizations.
- (e) Chapter 6, GACA STC Approval Procedures has been restructured to outline a four phase process for GACA STC projects.
- (f) Additional guidance added on establishing the basis of certification in accordance with GACA/FAR 21.101 (i.e. the Changed Product Rule).
- (g) Updated procedures added for petitioning for exemptions to the design standards.
- (h) Additional information added concerning obtaining GACA STCs when utilizing an EASA Design Organization in accordance with the provisions of the GACA/EASA working arrangement.



- (i) Additional guidance added concerning GACA validation of EASA STCs.
- (j) Clarifications added concerning GACA conformity verification procedures.
- (k) Explanations added concerning compliance inspections.
- (l) The addition of guidance concerning Electrical Wiring Interconnection Systems (EWIS).
- (m) The addition of guidance concerning GACA/FAR Part 26 requirements - Continued Airworthiness and Safety Improvements for Transport Category Airplanes.
- (n) Revised procedures for releasing aircraft to service prior to final STC issuance.
- (o) Updated procedures for foreign STC projects utilizing aircraft registered in the KSA as the prototype.
- (p) Introduction of new GACA STC numbering system.
- (q) Updating of relevant reference documents.
- (r) Updating of several forms.
- (s) Addition of the GACA STC project docket checklist.
- (t) Changing the title of Project Engineer to Certification Project Manager.

1.5 How to use this document

- (a) One does not need to read the whole document to make use of it. The chapters are built relatively independently so that only one or two chapters might be sufficient to provide all the guidelines for a particular repair or alteration project.
- (b) The flowcharts in Appendix 2 guide the reader through this document. By using them, the reader will be led to those chapters that matter for his/her particular repair or alteration project.

1.6 Definitions & Acronyms

Approved Data:

Data that may be used in support of a major alteration or repair on a KSA registered aircraft.

Acceptable Data:

Data that may be used in support of a minor alteration or repair on a KSA registered aircraft.

Data accepted by the GACA:

Data which does not require any further engineering approval from the GACA before becoming Approved Data.

Data approved by the GACA:

Data which required further engineering approval from the GACA before becoming Approved Data.

Organization:

GACA certificated air carrier, air operator or repair station certificated under GACA/FAR Parts 121, 125, 135 or 145, or a GACA/FAR Part 91 Aircraft Owner/Operator who has engineering resources or can obtain engineering services under contract.



Information Note 1.1: GACA Part 145 approved AMOs have to have major repairs/major alterations rating in their capabilities list.

State of Design:

The State (country) having jurisdiction over the organization (company) responsible for the type design.

AC	Advisory Circular (FAA)	i.e.	That is, in other words
ACO	Aircraft Certification Office (FAA)	IAW	In accordance with
AD	Airworthiness Directive	ICA	Instructions for Continued Airworthiness
AFMS	Aircraft Flight Manual Supplement	KSA	Kingdom of Saudi Arabia
AMO	Approved Maintenance Organization	MMEL	Master Minimum Equipment List
CAA	Civil Aviation Authority	MMS	Maintenance Manual Supplement
CP	Certification Plan	NTO	No Technical Objection
DAR	Designated Airworthiness Representative	ODA	Organization Designation Authorization - FAA
DER	Designated Engineering Representative	PMA	Parts Manufacturer Approval
DOA	Design Approval Organization (EASA)	PMI	Principal Maintenance Inspector
e.g.	for example	POI	Principal Operations Inspector
EASA	European Aviation Safety Agency	RC	Regulation Circular
ETOPS	Extended Operations	RDA	Repair Design Approval
EU	European Union	SB	Service Bulletin
FAA	Federal Aviation Administration	SOC	Statement of Compliance
FAAO	Federal Aviation Administration Order	SoD	State of Design
FAR	Federal Aviation Regulations	SRM	Structural Repair Manual
GACA	General Authority of Civil Aviation, Saudi Arabia	STC	Supplemental Type Certificate
GACA/FAR	GACA regulations	TSO	Technical Standard Order (FAA)
GACAR	General Authority of Civil Aviation Regulation	U.S.	United States

1.7 Reference Documents

Refer to Appendix 10.

1.8 Distribution

Internal and external. This document is appropriate for all owners and operators of aircraft registered in the KSA, all holders of GACA Air Operator Certificate (AOC) and/or Approved Maintenance Organization (AMO), all GACA appointed Designated Engineering/Airworthiness Representatives, and foreign CAAs (including their delegated individuals or organizations) involved in Saudi registered aircraft modifications/maintenance. This document will be posted in the official GACA website; www.gaca.gov.sa.

For additional information please contact:

Director of Airworthiness

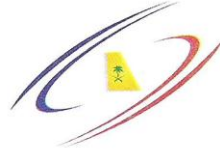
Flight Standards Department

Safety & Economic Regulation Sector

General Authority of Civil Aviation (GACA)

P.O. Box 887 Jeddah 21421, Kingdom of Saudi Arabia.

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1.9 Airworthiness Guide Approval Statement

The contents of this Airworthiness Guide and its associated appendices address the GACA requirements for approval of alterations and repairs of civil aircraft registered in the Kingdom of Saudi Arabia.

Approved by:

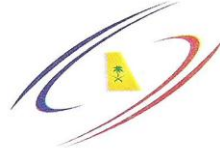
(Original signed by Capt. M. A. Jamjoom)

Captain Mohammed Ali Jamjoom

Vice President
Safety & Economic Regulation
General Authority of Civil Aviation



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2 CHAPTER 2: POLICY STATEMENT

2.1 General

- (a) The following policy statements list the GACA airworthiness policies associated with alterations and repairs to aircraft registered in the Kingdom of Saudi Arabia. In case of conflict between this AG-7 and any of the related guidance material documents, this AG-7 is to prevail.
- (b) AG-7 is not retroactive, the policies and procedures stated herein are effective from the date of issue.

2.2 Design Approvals

- (a) GACA Supplemental Type Certificates (STC) may be granted to approve design changes in accordance with GACA/FAR 21.113 and the procedures described in chapter 6 of this document.
- (b) GACA RDAs may be granted for major repairs in accordance with the procedures described in chapter 7 of this AG-7.
- (c) The GACA no longer issues Field Approvals to approve major alterations nor major repairs.
- (d) GACA imposes fees and charges in accordance with the Implementing Regulations of the Civil Aviation Tariff Act.
- (e) The GACA may decline an application for an STC or RDA if it determines that the alteration or repair is of such extent (scope and nature) that it exceeds the GACA resources necessary for meeting its ICAO State of Design responsibilities. In such cases, the Organization will be notified and they must seek an alternate source of data that can be considered as accepted by the GACA as per this AG-7.
- (f) Notwithstanding GACA/FAR 21.119(c), a GACA STC or a GACA RDA does not entitle the holder to a production certificate.
- (g) Notwithstanding GACA/FAR 21.303, at the present time GACA does not issue Parts Manufacturer Approval (PMA) for replacement or modification parts.

2.3 Performance and recording of alterations and repairs

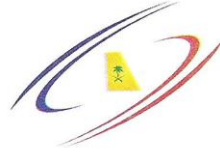
Alterations and repairs to KSA registered aircraft must be performed and approved as per GACA/FAR Parts 21, 26, 43, 91, 121, 125, 135 and 145 as supplemented by the policies and procedures of this AG-7 and AG- 5.

2.4 Continued Airworthiness

- (a) The Organization that was granted a GACA STC or RDA is responsible for retaining all the relevant data until all affected aircraft are permanently withdrawn from service, and either, maintaining on staff, or ensuring access to, engineering resources to address continued airworthiness issues related to that STC or RDA. STC or RDA Holder must return all certification data to GACA if and when they get out of business.



- (b) The owner or operator of an aircraft registered in the KSA to which an alteration or a repair was made is responsible for the overall continued airworthiness of that aircraft.



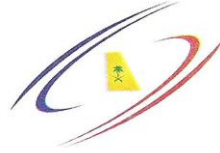
3 CHAPTER 3: MAJOR OR MINOR?

3.1 General

- (a) Classifying an alteration or repair as major or minor is the very first step in the approval process. The classification is an essential and critical step because it determines what kind of data (Approved or Acceptable) is required, and therefore how much resources the Organization will have to expend. Classification is made by the Organization, but subject to GACA review.
- (b) GACA/FAR 1.1 provides regulatory definitions for major and minor alterations and repairs. GACA/FAR Part 43, Appendix A provides additional regulatory material for the classification of major alterations and major repairs. In parallel, GACA/FAR 21.93 provides a regulatory definition for major and minor changes in type design that is quite similar to the ones for major and minor alterations and repairs. This regulatory material must be used as a starting point when classifying an alteration or a repair as major or minor. There is no FAA guidance material that directly discusses the classification of major/minor, but some guidance material does address it indirectly (e.g. FAAO 8900.1). There is also guidance material available from other foreign CAAs and from ICAO. However, all of these sources of information do not agree on many fronts and often further confuse.

Given the current state of the available regulatory and advisory material for the classification of major/minor alterations and repairs, the GACA recognizes that the determination of major/minor can sometimes be a difficult and contentious decision. To clarify, to the extent practicable, and maximize the usefulness of this chapter 3, the GACA has rationalized and included therein in one single location all of the applicable regulatory material and related guidance material (which has also been expanded). Hence, all the information applicable to the classification of an alteration or repair to an aircraft registered in the KSA can be found in this chapter. If further guidance is nevertheless required, the Organization should contact the GACA.

- (c) It is useful to pause and review the differences between a repair and an alteration. The essential difference is that a repair restores an aeronautical product from a non-airworthy condition to an airworthy condition while an alteration changes an aeronautical product from an already airworthy condition (notwithstanding those alterations mandated by an AD) to another airworthy condition. The regulatory definitions go further and identify two additional differences. First, the definition of major repair does not exclude those repairs that are already in manufacturer's specifications (such as SRM). The GACA favors the approach where whether an alteration or a repair is addressed in the manufacturer's specifications is not a factor for the classification of Major and Minor. Therefore, this difference is to be ignored. Second, the definition of major repair includes the phrase "if done improperly". The GACA believes that this is also applicable to alterations. Therefore, this difference is also to be ignored.



- (d) Industry and CAA statistics show that only a minority of all alterations and repairs are actually major. Even at that, the classification of major does not necessarily result in an expensive and long approval process because many of these major alterations or repairs are relatively simple. For such cases, full benefits can be gained from the flexibility built into the GACA STC or RDA processes.

3.2 Classification Guidance

The guidance for the classification of alterations and repairs has been divided in three groups of criteria: design, certification and installation. A given alteration or repair must be tested against all the criteria of all three groups. If any of the criteria applies, the alteration or repair is major; otherwise, it is minor. Of course, for a given alteration or repair, more than one criteria in more than one group may apply. The three groups actually represent three different approaches and, in some cases, are repetitive. Given the occasional difficulty in classifying alterations and repairs, this is seen as beneficial as it helps increase the certainty of the classification. The content of this chapter should be read in conjunction with the Major/Minor classification decision flow chart in appendix 2.

3.2.1 Design Criteria

- (a) Alterations or repairs whose design has an appreciable effect on the weight and balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product, are to be classified as major.
- (b) A design that has an appreciable effect is one whose effect will be functionally noticeable or technically quantifiable (whether from a systems or structures perspective), for all approved aircraft operating conditions. If it is not possible to determine whether this is the case, the alteration or repair is to be compared with typical projects that represent major alterations or repairs.
- (c) An effect is functionally noticeable when the flight or cabin crew will be able to perceive a difference in the aircraft operational characteristics (performance, operation of systems and equipment). It is also when the maintenance personnel will be able to perceive a difference in the aircraft servicing procedures or environment, or in the aircraft maintenance procedures.
- (d) An effect is technically quantifiable when differences in systems parameters or structural properties, both for short and long term reliability, can be measured or calculated, and when these differences reduce design safety margins significantly (e.g., more than two percent). Engineering resources are normally needed to make such an assessment.
- (e) To further help, the following list describes typical projects that represent major alterations or repairs (as applicable). The list represents a rationalized compilation of examples from several FAA, other foreign CAA, and ICAO sources. Note that this list is not exhaustive, i.e., it does not list all possible projects that represent major alterations and repairs. Notwithstanding, the list must be used in conjunction with the



concept of "appreciable effect" discussed above. For example, it is not necessarily any repair to a frame that is major, it is a repair to a frame that has an appreciable effect on airworthiness, as defined above.

3.2.1.1 Weight and Balance:

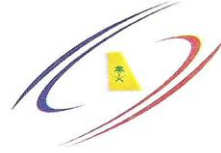
Typical alterations or repairs, as applicable, that may appreciably affect weight and balance include, but are not limited to:

- (a) Changes that increase the certificated maximum weight limits (maximum gross weight, maximum take-off or landing weights, and maximum zero fuel weight);
- (b) Changes in the certificated center of gravity range limits (for example, decreasing the forward limit or increasing the aft limit); and
- (c) Changes that increase the operational limits (maximum speed limits such as VA, VFE, VNE, VMO and VMMO, minimum speed limitations such as stall speed, and increases in service ceiling).

3.2.1.2 Structural Strength:

Typical alterations or repairs, as applicable, that may appreciably affect this include, but are not limited to:

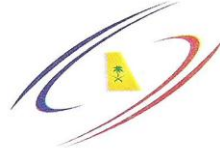
- (a) Changes to Principal or Primary Structural Elements – PSE (see Note below), including material substitution or changes that affect mass distribution;
- (b) Creation of new PSEs;
- (c) Change to a life-limited part or a structural element that is subject to a damage tolerance assessment or fail-safe evaluation;
- (d) Changes in fastener type for primary structure
- (e) Change that affect the strength or structural stiffness of a pressure vessel, including penetration;
- (f) Changes that affect or create new airworthiness limitations;
- (g) Change or relocation of systems (including hydraulic, oil, fuel, or any actuating systems) and equipment that affect structural integrity;
- (h) Changes that affect a containment or restraint system intended for occupants or the storage of items of mass (e.g. cargo);
- (i) Changes that affect the structure of seats, harnesses, or their means of attachment;
- (j) Changes that involve the use of synthetic covering material, new titanium applications, ceramic coatings, new magnesium applications, use of synthetic resin glues, or new plating coatings; and
- (k) Changes or repairs to the following parts of an airframe especially those involving the strengthening, reinforcing, splicing, and manufacturing of PSEs or their replacement, when replacement is by fabrication such as riveting or welding:
 - (1) box beams;



- (2) monocoque or semimonocoque wings or control surfaces;
- (3) wing stringers or chord members;
- (4) spars;
- (5) spar flanges;
- (6) members of truss-type beams;
- (7) thin sheet webs of beams;
- (8) keel and chine members of boat hulls or floats;
- (9) corrugated sheet compression members which act as flange material of wings or tail surfaces;
- (10) wing main ribs and compression members;
- (11) wing or tail surface brace struts;
- (12) engine mounts;
- (13) fuselage longerons;
- (14) members of the side truss, horizontal truss, or bulkheads;
- (15) main seat support braces and brackets;
- (16) landing gear brace struts;
- (17) axles;
- (18) wheels;
- (19) skis, and ski pedestals;
- (20) parts of the control system such as control columns, pedals, shafts, brackets, or horns;
- (21) repairs involving the substitution of material (if not listed in the approved manufacturer material substitution list);
- (22) the repair of damaged areas in metal or plywood stressed covering exceeding six inches in any direction;
- (23) the repair of portions of skin sheets by making additional seams;
- (24) the splicing of skin sheets;
- (25) the repair of three or more adjacent wing or control surface ribs or the leading edge of wings and control surfaces, between such adjacent ribs;
- (26) repair of fabric covering involving an area greater than that required to repair two adjacent ribs;
- (27) replacement of fabric on fabric covered parts such as wings, fuselages, stabilizers, and control surfaces; and
- (28) repairing, including rebottoming, of removable or integral fuel and oil tanks.

Note 3.1: Definition of Principal Structural Element:

- (a) Principal (or Primary) Structural Element (PSE) is defined in FAA AC 25.571-1(), Damage Tolerance and Fatigue Evaluation of Structure. Accordingly, a PSE is an element of structure that contributes significantly to the carrying of flight, ground, or pressurization loads, and whose integrity is essential in maintaining the overall structural integrity of the aircraft. These



can include frames, longerons, stringers, spars, ribs, stressed skin, fittings, shock absorbers, bracing, cowling, fairings, and rotor blade.

(b) Typical examples of such elements are as follows:

(1) Wing And Empennage:

- (i). Control surfaces, slats, flaps, and their mechanical systems and attachments (hinges, tracks, and fittings);
- (ii). Integrally stiffened plates;
- (iii). Primary fittings;
- (iv). Principal splices;
- (v). Skin or reinforcement around cutouts or discontinuities;
- (vi). Skin-stringer combinations;
- (vii). Spar caps; and
- (viii). Spar webs.

(2) Fuselage:

- (i). Circumferential frames and adjacent skin;
- (ii). Door frames;
- (iii). Pilot window posts;
- (iv). Pressure bulkheads;
- (v). Skin and any single frame or stiffener around a cutout;
- (vi). Skin or skin splices, or both, under circumferential loads;
- (vii). Skin or skin splices, or both, under fore and aft loads;
- (viii). Skin around a cutout;
- (ix). Skin and stiffener combinations under fore and aft loads;
- (x). Door skins, frames, and latches; and
- (xi). Window frames.

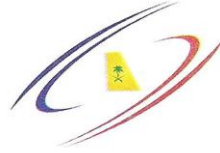
(3) Landing gear and their attachments; and

(4) Engine mounts.

3.2.1.3 Reliability:

Typical alterations or repairs that may appreciably affect reliability include, but are not limited to:

- (a) Changes to manifolding, air induction systems or intake doors, engine cowling or baffle that affect the flow of engine cooling air and carburetor/fire ignition heat rises;
- (b) Changes to the basic engine or propeller design, controls, and operating limitations;
- (c) Changes to engine/propeller adjustments and setting limitations having an effect on power output;
- (d) Changes to approved avionics equipment such as changes:
 - (1) Deviating from the design environmental performance;
 - (2) Deviating from the component manufacturer's operating limitations;
 - (3) To software; and
 - (4) To wire shielding that may affect High Intensity Radiated Fields (HIRF) and Electromagnetic Interference (EMI).

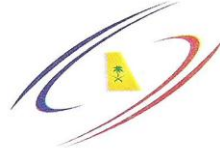


- (e) Changes to electrical, pneumatics, and hydraulic systems components affecting their reliability.

3.2.1.4 Operational Characteristics:

Typical alterations or repairs that may appreciably affect operational characteristics include, but are not limited to:

- (a) Changes that affect stability, controllability, or stall characteristics;
- (b) Changes that increase drag or exceed aerodynamic smoothness limits;
- (c) Changes that affect the flight crew's visibility or their ability to control the aircraft;
- (d) Changes that affect the approved performance such as high altitude operation or braking performance;
- (e) Changes that affect the flight envelope (speeds, altitude, etc.);
- (f) Changes that affect the handling qualities such as changes to the flight control functions (gain adjustments, functional modification to software) or changes to the flight protection or warning systems;
- (g) Changes to (including material substitution) or relocation of systems (including hydraulic, oil, and fuel systems) and equipment that affect structural integrity, flight crew procedures, flight or ground handling characteristics, lightning characteristics, or noise/acoustics of the aircraft;
- (h) Changes to the movable control surfaces that affect the dynamic and/or static balance, affect aeroelastic, flutter or vibration characteristics, alter the aerodynamic contour, or change the weight distribution;
- (i) Changes to control surface travel, to the method of control system mechanical advantage, or to the direction of motion;
- (j) Changes in basic dimensions or external aerodynamic contour/configuration of the aircraft, such as wing and tail planform or incidence angles, canopy, cowlings, contour or radii, the location of wing and tail fairings, winglets, wing lift struts, tip tanks, windows, and doors that would require flight or performance revalidation, or affect aeroelastic, flutter or vibration characteristics;
- (k) Installation of structures and/or appliances to the exterior (e.g. night sun, camera, spray/dusting equipment, search lights, skis, baskets);
- (l) Changes to or installation of new flight critical electrical/electronic systems, electronic flight controls or engine control systems such as FADEC and fly-by-wire;
- (m) Changes that affect aircraft performance, drag, engine power, RPM, or exhaust muffler; and
- (n) Changes that affect noise or flight characteristics.



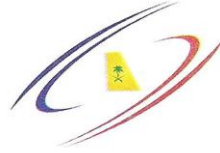
3.2.1.5 Other Characteristics Affecting Airworthiness

This category is broad and includes all the systems, powerplants, propellers, and crashworthiness.

(a) Mechanical systems

Typical alterations or repairs, as applicable, that may appreciably affect mechanical systems include, but are not limited to:

- (1) Changes to or new landing gear and related components, such as internal parts of shock struts, length, geometry of members, changes to brake and brake systems, or additions thereto;
- (2) Changes to miscellaneous systems such as:
 - (i). Relocation of fuel vents or drains;
 - (ii). Crew or passenger oxygen, including Liquid Oxygen (LOX), or on-board generating systems; and
 - (iii). External critical access doors, APU ram air, nacelle blowout doors, fuel drain.
- (3) Changes to oil, hydraulic, pneumatic and fuel lines (including routing), systems or their components that affect their operation or installation and flammability requirements, such as:
 - (i). New types of hoses and/or hose fittings which may not meet the installation requirements such as flow rate and flammability requirements;
 - (ii). Changes to fuel dump valves;
 - (iii). New oil/fuel/hydraulic line materials or sealants;
 - (iv). New flammable fluid tanks or system components; and
 - (v). Change to, or addition of, permanent fuel tanks or fuel system components.
- (4) Changes in fixed fire extinguisher or detector systems that affect the system effectiveness or reliability, such as:
 - (i). Relocation of discharge nozzle, detector units or fixed fire extinguisher bottles;
 - (ii). Using new or different detector components (including TSO-approved detector in new or existing circuit arrangements); and
 - (iii). Decreasing the amount or changing the type of extinguishing agents.
- (5) Changes to cooling, heating, deicing or exhaust systems and their components that affect their operation or installation and flammability requirements;
- (6) Any novel, unique or complex changes which will include special process that, if not correctly done, has a significant adverse effect on the integrity of the product;
- (7) Installing new, or modifying existing, icing protection system;
- (8) Changes that increase the pressure profiles and limitations, including differential pressure limits, of an atmospheric or climatic control system of the aircraft and aircraft interior compartments;

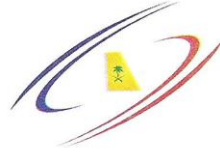


- (9) New installation of systems that extract additional power from powerplants;
- (10) Changes that alter dynamic components of rotorcraft (e.g., loads, vibration, fatigue, damage tolerance, flaw tolerance, characteristics of main or tail rotor system, transmission system, gear box, driveshafts, driveshaft support bearings, main and tail rotor blades).

(b) Electrical, Electronic and Avionics Systems

Typical alterations or repairs, as applicable, that may appreciably affect electrical, electronic and avionics systems include, but are not limited to:

- (1) Changes to electrical systems and components, such as new emergency back-up power sources, rerouting of high power wires, or rerouting of wires in proximity to high power wires (such as Fuel Quantity Indication System wires);
- (2) Changes that may affect High Intensity Radiated Fields (HIRF) and Electromagnetic Interference (EMI);
- (3) Changes that alter electrical systems (including batteries) that increase electrical loading, affect load shedding capability, or affect fault clearing capability;
- (4) Changes that affect an electrical generation device, or the electrical distribution system between the generating source and either its primary distribution bus, or any other bus designated as an essential bus;
- (5) Changes that affect critical or essential components of the electrical system such as generators, alternators, inverters, batteries, distribution busses, or bus protecting and control devices;
- (6) Changes that reduce the storage capacity of the primary battery;
- (7) Flight deck lighting changes to support Night Vision Goggle use, or any approvals related to Night Vision Goggles;
- (8) Installation of new systems or equipment for primary means of navigation, such as heads-up displays, Traffic Alert and Collision Avoidance System (TCAS), autopilots, flight data recorder (FDR), ground proximity warning systems (GPWS), electronic flight instrument service (EFIS), Terrain Awareness and Warning System (TAWS)-A, and Emergency Vision Assurance System (EVAS);
- (9) Changes to an aircraft instrument, indicator or communication system that is required by the regulations;
- (10) Changes to other flight deck instrumentation and controls;
- (11) Changes to engine or flight control systems;
- (12) New installation of Health Usage Monitoring Systems (HUMS) on board rotorcraft;
- (13) Changes to level A, B or C software, as classified by RTCA DO-178B.
- (14) Changes that affect long term reliability of the wiring or affects its EWIS maintenance program.



(c) Powerplants

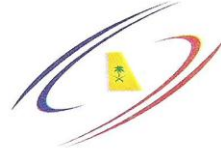
Typical alterations or repairs, as applicable, that may appreciably affect powerplants include, but are not limited to:

- (1) Conversion of an aircraft engine from one approved model to another, involving any changes in compression ratio, propeller reduction gear, impeller gear ratios or the substitution of major engine parts which requires extensive rework and testing of the engine;
- (2) Changes to powerplant primary structures (structure, casings, mounts, bearing support structure, and pressure vessels);
- (3) Changes to the engine by replacing aircraft engine structural parts with parts not supplied by the original manufacturer or parts not specifically approved by the GACA;
- (4) Installation of an accessory which is not approved for the engine;
- (5) Removal of accessories that are listed as required equipment on the aircraft or engine specification;
- (6) Conversions of any sort for the purpose of using fuel of a rating or grade other than that listed in the engine specifications;
- (7) Changes that affect or create new life-limited parts, including rotating parts;
- (8) Changes that alter the dynamic or/and static balance of movable or rotating parts or components;
- (9) Changes that affect engine operating speeds, temperatures, weight, and other limitations;
- (10) Changes to any part of the engine which would require substantiation of the containment capability of the structure; and
- (11) More specifically for repairs, changes to the following parts of an engine and repairs of the following types:
 - 1) Separation or disassembly of a crankcase or crankshaft of a reciprocating engine equipped with an integral supercharger;
 - 2) Separation or disassembly of a crankcase or crankshaft of a reciprocating engine equipped with other than spur-type propeller reduction gearing; and
 - 3) Special repairs to structural engine parts by welding, plating, metalizing, or other methods.

(d) Propellers

Typical alterations or repairs, as applicable, that may appreciably affect propellers include, but are not limited to:

- (1) changes in blade design (airfoil, platform, material, retention system);
- (2) changes in hub design;
- (3) changes in the governor or control design;
- (4) installation of a propeller governor or feathering system;
- (5) installation of propeller deicing system;



- (6) installation of parts not approved for the propeller;
- (7) mating a propeller to an engine when the propeller model is not approved for that engine;
- (8) more specifically for repairs:
 - (i). Changes to or straightening of steel blades;
 - (ii). Repairing or machining of steel hubs;
 - (iii). Shortening of blades;
 - (iv). Retipping of wood propellers;
 - (v). Replacement of outer laminations on fixed pitch wood propellers;
 - (vi). Repairing elongated bolt holes in the hub of fixed pitch wood propellers;
 - (vii). Inlay work on wood blades;
 - (viii). Repairs to composition blades;
 - (ix). Replacement of tip fabric;
 - (x). Replacement of plastic covering;
 - (xi). Repair of propeller governors;
 - (xii). Overhaul of controllable pitch propellers;
 - (xiii). Repairs to deep dents, cuts, scars, nicks, etc., and straightening of aluminum blades; and
 - (xiv). The repair or replacement of internal elements of blades.

(e) Appliances

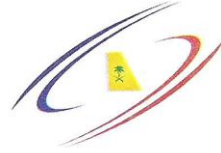
Typical alterations or repairs, as applicable, that may appreciably affect appliances include, but are not limited to:

- (1) Changes not made in accordance with recommendations of the appliance manufacturer; and
- (2) Changes in the basic design of radio communication and navigation equipment approved under type certification or an equipment approval that have an effect on frequency stability, noise level, sensitivity, EMI, selectivity, distortion, spurious radiation, AVC characteristics, or ability to meet environmental test conditions and other changes that have an effect on the performance of the equipment.

(f) Crashworthiness:

Typical alterations or repairs, as applicable, that may appreciably affect this include, but are not limited to:

- (1) changes to the aircraft structure, cabin interiors, or equipment relocation (including seats) that affect ditching and other emergency provisions (evacuation, exits, exit arrangement, egress assist means and escape routes, exit marking, lighting, exit access, width of aisle, maximum number of seat abreast, and lower deck surface compartments) such as:
 - (i). changes to or introduction of dynamically tested seats;
 - (ii). changes to the pitch between seat rows;

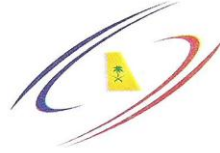


- (iii). changes of distance between seat and adjacent obstacle like a divider;
 - (iv). changes to cabin layouts that affect evacuation path or access to exits;
 - (v). installation of new galleys, toilets, wardrobes; and
 - (vi). installation of new type of electrically powered galley insert.
- (2) Changes that increase the certificated seating capacity;
 - (3) Initial installation of litter systems; and
 - (4) Changes that include substituting engine/propeller/airframe/cabin materials that affect fire protection, lightning protection, or flammability.

3.2.2 Certification criteria

Alterations and repairs whose design certification results in one or more of the following criteria being met are to be classified as major:

- (a) Revisions are required to published certification data or procedures related to the characteristics, e.g., the AFM, weight and balance certification data, engine intermix certification data, hazard analysis, MEL, Airworthiness Limitations, Reduced Vertical Separation Minima Letters of Authorization, cargo loading instructions, placards required by the regulations, etc.;
- (b) Tests are required to re-establish compliance with the GACA/FAR applicable to the alteration or repair, and/or to confirm that hazardous or unreliable conditions are not introduced in the product as a result of the alteration or repair;
- (c) Adjustment to the certification basis (amendment level, special condition, equivalent safety finding, election to comply, exemption) is required;
- (d) There is a new interpretation of the requirement used for the certification basis that has not been published by the FAA or the GACA;
- (e) Aspects of the means of compliance have not been previously accepted;
- (f) The extent of new substantiation data necessary to comply with the applicable airworthiness requirements, and the degree to which the original substantiation data has to be assessed and re-evaluated is considerable; and
- (g) For systems, the alteration or repair introduces or affects functions where the failure effect is classified as major, severe major/hazardous or catastrophic. A catastrophic failure condition (or effect) is one that prevents continued safe flight and landing, resulting in the loss of the aircraft and fatal injury to a relatively large number of occupants. In this guidance about major alterations and repairs, a major failure condition (or effect) is one that would reduce the capability of the aircraft or the ability of the crew to cope with adverse operating conditions to the extent that, for example:
 - (1) In the less severe cases, there would be a significant reduction in safety margins or functional capabilities, a significant increase in crew workload or in conditions impairing crew efficiency, or discomfort to occupants, possibly including injuries; or
 - (2) In the more severe cases, there would be a large reduction in safety margins or functional capabilities, physical distress or higher workload



such that the flight crew cannot be relied upon to perform their tasks accurately or completely, or serious or fatal injury to a relatively small number of the occupants.

- (h) Changes are made to TSO articles that do not comply with GACA/FAR 21.611;
- (i) Changes that alter critical or life-limited parts, including engine/APU rotating parts;
- (j) Changes that are inconsistent with the required actions of an existing AD;
- (k) Major alterations to systems required for ETOPS of approved aircraft; and
- (l) Alteration of passenger-carrying aircraft to an all-cargo or combi configuration.

3.2.3 Installation criteria:

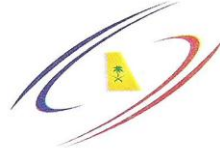
- (a) Alterations and repairs not listed in aircraft, engine or propeller specifications and whose installation cannot be performed according to accepted practices or cannot be done by elementary operations, are to be classified as major.
- (b) Accepted practices are those documented in FAA guidance material such as Advisory Circulars (e.g., AC 43.13-1()), in national standard documents, or in manufacturer maintenance documents. Elementary operations are the generic maintenance tasks that are part of basic mechanics training and are not normally documented in manufacturer's maintenance documents.

3.2.4 Still not sure?

The major/minor classification process has been the focus of international efforts for years. All of the guidance materials available, including this chapter 3, are only that: guidelines. After having been led, by the classification process in this chapter, to classify an alteration or repair as major, it is possible that an Organization will still doubt, based on technical grounds, that the alteration or repair is indeed major. While the classification of major/minor is the responsibility of the Organization, it is also its responsibility to seek additional guidance if in doubt. The situation should be discussed with the GACA accordingly. This will alleviate disagreements and potential costly corrective actions later.

3.3 Minor Alterations and Minor Repairs

- (a) Minor alterations and repairs, as classified per this chapter 3, need not be performed IAW Approved Data. Instead, they must be performed IAW with Acceptable Data. Acceptable Data must fully define the configuration and design features of the repair or alteration such that the installation can be completed on the aircraft.
- (b) Sources of Acceptable Data includes applicable FAA Advisory Circulars (e.g. AC 43.13-1(), AC 43.13-2()) and manufacturer's technical information (e.g., manuals, bulletins). Another source of Acceptable Data is data issued by a foreign delegated design organization in support of a minor alteration or minor repair if there is a bilateral agreement containing appropriate provisions for the acceptance of this data between the country having jurisdiction over that organization and the U.S. or the



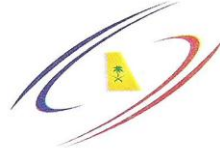
KSA. The procedures to be followed are to be as per the bilateral agreement provisions. Data approved by an EASA approved design organization is one example of Acceptable Data for minor alterations and minor repairs.

3.4 A Special Case–Classification as Minor by an EASA Approved Organizations

- (a) Owners and operators of aircraft registered in the KSA who utilize EASA approved maintenance organizations (who also hold a GACA approved Repair Station) for performing their alterations and repairs may be faced with a special situation since the criteria for classifying major alterations and repairs in the EASA system is slightly different than the GACA regulatory system.
- (b) For alterations and repairs classified as minor by an EASA approved organization in accordance with EASA classification criteria, it may be necessary for an EASA DOA to supply approved data for the subject alteration or repair. See paragraph 4.4 for more details.



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4 CHAPTER 4: APPROVED DATA

4.1 General

- (a) GACA/FAR requirements specify that major alterations and major repairs must be performed in accordance with Approved Data. It is important that the Organization differentiates between the different purposes of Approved Data, based on whether it constitutes an installation data approval, an equipment approval, or a finding of compliance. This will help ensure that the Approved Data used in support of a major alteration or major repair is suitable for the intended use. A generic discussion on the purposes of Approved Data is provided in paragraph 4.2. Specific types of Approved Data are detailed in paragraph 4.3 and summarized in Appendix 3.
- (b) It is important when performing major alterations and major repairs IAW Approved Data that the compatibility of the alteration or repair with all existing alterations and repairs has been assessed to ensure that the interrelationship between all alterations and repairs will not introduce any adverse effects upon the airworthiness of the product. Such assessment must be made by the installer.
- (c) It is also important when performing major alterations and major repairs IAW Approved Data to ensure that operational considerations are also addressed. There are cases where operational rules require additional airworthiness requirements. Examples include but are not limited to, flammability of seat cushions, fuel system safety, etc.
- (d) The term "data" refers to either descriptive data (also called type design data or engineering data) or to certification data (also called compliance or substantiation data).

Descriptive data is the information that defines the alteration to the aircraft, such as assembly drawings, material specifications, installation instructions, etc. Certification data is the information that explains how the descriptive data meets the applicable requirements, such as test reports, structural substantiation reports, electrical load analyses, AFMS, ICAs, etc. Any data that is required to physically perform the alteration on the aircraft is descriptive data; otherwise it is certification data. Both the descriptive data and the certification data can be Approved Data.

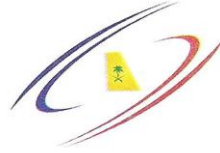
- (e) See AC 21-40 () chapter 5 for further discussions on data.

4.2 Purposes of Approved Data

When data is approved it is done so in the context of the purpose for which the data will be used. Three general categories of approved data exist, each category with a specific purpose. These three categories of approved data and the purposes for which the data is approved are described in the following paragraphs.

4.2.1 Installation Data Approval

- (a) Installation data approval constitutes approval of data for an installation in its entirety on a given aircraft or an aircraft type. An installation data approval signifies that all applicable airworthiness requirements have been satisfied. All major alterations or



major repairs require a GACA installation data approval. See paragraphs 4.3.2 and 4.3.3 for a listing of the different types of installation data approvals.

Information Note 4.1: The term "installation data approval" is not to be interpreted as meaning an approval for the work physically performed on the aircraft. The term strictly relates to the approval of data.

- (b) Installation data approvals often originate by combining an equipment approval with additional findings of compliance to address the installation aspects of the equipment into the aircraft. Each of these items are described more fully below.

4.2.2 Equipment Approval

- (a) Equipment approvals are issued when the data for an item of equipment has been shown to meet all requirements of a specific performance standard. Equipment approvals DO NOT constitute installation data approval of that equipment except in the specific case as indicated in paragraph 4.3.2. See paragraphs 4.3.4 and 4.3.5 for a listing of the different types of equipment approvals.
- (b) An equipment approval is used as one of the elements leading to and streamlining the process of an installation data approval. During the installation data approval process to approve the installation of approved equipment, any equipment essential to the safe operation of the aircraft must be shown to perform its intended function, and it must be shown that the equipment does not create a hazard. The installation of TSO items must be assessed for compliance with the manufacturer's instructions and limitations and must be shown to be compatible with the intended use and in compliance with all pertinent airworthiness requirements. A TSO approval, in itself, does not ensure satisfactory or safe operation of that equipment in an aircraft.
- (c) Equipment that has no equipment approval must be approved as part of the installation data approval and will require significant additional certification activities.

4.2.3 Findings of Compliance:

Findings of Compliance are made by authorized representatives of a CAA when specific data has been found to comply with some – but not necessarily all – applicable airworthiness requirements. Because these findings of compliance may or may not include findings to all applicable airworthiness requirements, they DO NOT constitute an installation data approval except in the specific cases as indicated in paragraphs 4.4. A finding of compliance is used as one of the elements leading to an installation data approval. See paragraphs 4.3.6 and 4.3.7 for a listing of the different types of findings of compliance.



4.3 Types of Approved Data for Major Alterations and Major Repairs

4.3.1 General

- (a) Data used to support major alterations and major repairs must be Approved Data. Types of Approved Data can be broadly divided into two categories: foreign and domestic.
- (1) Foreign Approved Data is data approved by a foreign CAA or by an individual/organization delegated by a foreign CAA, and accepted by the GACA. In some cases, GACA acceptance is dependent on the existence of a bilateral agreement between a country the KSA.
 - (2) Domestic Approved Data is data that has been approved by the GACA, for example, following an approval process as described in Chapters 6 and 7 of this AG-7.
- (b) Notwithstanding the type of the Approved Data, it is important that the user of the data ensures that the type of Approved Data it uses is applicable to the intended application and that the limitations and conditions stated in that Approved Data can be complied with.

Information Note 4.2: Any other type of data that is not listed in this chapter 4 is to be considered as either not accepted by the GACA or not applicable. If in doubt, the Organization should contact the GACA.

- (c) Approved Data is normally protected by proprietary rights. The Organization must ensure that it has secured the right to use such Approved Data, as applicable. This will help ensure proper in-service support if required.

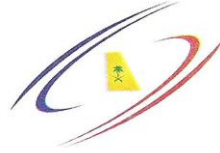
4.3.2 Installation Data Approval (Foreign):

The following provides the types of foreign installation data approvals accepted by the GACA. For those foreign installation data approval projects using an aircraft registered in the KSA as prototype, see chapter 8 first.

- (a) Existing FAA Supplemental Type Certificate (STC):

Subject to the condition noted in the following paragraph, an existing FAA STC, whether issued by the FAA itself or by an FAA ODA, is a type of Approved Data accepted by the GACA that can be used as installation data approval for a major alteration without any further involvement from, or approval by, the GACA.

The Organization is to ensure that the aircraft is eligible for the STC as per its applicability provisions. FAA STCs are not used to approve major repairs. Related FAA approved AFMS and Airworthiness Limitations, as well as FAA accepted ICAs, are thereby GACA approved and accepted respectively. They do not need to be resubmitted to the GACA, nor does the GACA issue any additional document to formally signify acceptance.



Information Note 4.3: The phrase "without any further involvement from or approval by the GACA" means that the installation data does not require any further review by the GACA. However, the GACA could still be involved on a case-by-case basis if GACA has additional requirements or FAA cannot make a finding of compliance of a system or for other aspects, e.g., performance of the alteration or repair on the aircraft.

Information Note 4.4: For a new or ongoing FAA STC project using an aircraft registered in KSA, procedures in chapter 8 must be followed.

Information Note 4.5: Only GACA approved AMOs can perform physical work on a KSA registered aircraft, refer to AG-5.

(b) Existing EASA Supplemental Type Certificate (STC):

An existing EASA STC is a type of Approved Data accepted by the GACA that can be used as installation data approval for a major alteration if, and only if, the data has been validated by the GACA in accordance with the procedures of the GACA/EASA working arrangement (see the GACA website for further details). Related EASA approved AFMS and Airworthiness Limitations, as well as EASA accepted ICAs must be validated by GACA.

Information Note 4.6: For a new or ongoing EASA STC project using an aircraft registered in KSA, procedures in chapter 8 must be followed.

(c) Airworthiness Directives from the FAA or from the CAA of the State of Design:

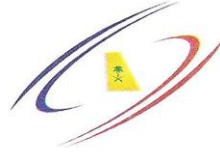
An AD from the FAA or from the CAA of the State of Design is a type of Approved Data accepted by the GACA that can be used as installation data approval for a major alteration or a major repair without any further involvement from or approval by the GACA airworthiness engineering (see AG-6, Airworthiness Directive policies and procedures).

(d) FAA Parts Manufacturer Approval (PMA):

An FAA PMA is a type of Approved Data accepted by GACA that can be used as installation data approval for a substitute or replacement part without any further involvement from or approval by the GACA airworthiness engineering if, and only if, the PMA document specifically authorizes it or the part is listed in the aeronautical products specifications (e.g. Illustrated Parts Catalog). The Organization is to pay particular attention to the applicability of a PMA part with respect to the aircraft. Otherwise, an FAA PMA can only be used as an equipment approval.

(e) Manufacturers' Major Design Changes:

Major design changes introduced by the aircraft manufacturer are a type of Approved Data accepted by the GACA that can be used as installation data approval for a major



alteration without any further involvement from or approval by the GACA provided they are FAA approved or otherwise accepted by the FAA or GACA under the provisions of a bilateral agreement. Examples include Level 1 EASA Major Change Approvals, Level 2 EASA Major Change Approvals that have been FAA approved, and FAA approved Manufacturer's Service Bulletins.

(f) Manufacturers' Continued Airworthiness and Service Documentation:

Manufacturers' Continued Airworthiness and Service Documentation are a type of Approved Data accepted by the GACA that can be used as installation data approval for a major alteration or a major repair without any further involvement from or approval by the GACA provided they contain approval statements from the CAA of the State of Design. Examples include the manufacturer's Structural Repair Manual, Service Bulletins, and Service Letters.

(g) Repair data approved by FAA Designees:

Repair data approved with a Statement of Compliance FAA Form 8110-3, Form 8100-9 (or equivalent) by FAA engineering designees (e.g. DER) employed by an FAA type certificate holder or an ODA, located in the U.S. are a type of Approved Data accepted by the GACA that can be used as installation data approval for major repairs to Saudi registered aircraft. Repair data approved by FAA designees not employed by a FAA type certificate holder are only accepted by the GACA on a case-by-case basis. See Paragraph 4.4 for more details.

(h) Other forms of Foreign Repair Design Approvals:

Repair design approvals from a CAA other than the FAA are a type of Approved Data accepted by the GACA that can be used as installation data approval for a major repair if, and only if, the repair design approval meets at least one of the following criteria:

- (1) Data has been validated by the GACA in accordance with the procedures of a bilateral agreement or working arrangement containing appropriate provisions for the acceptance of this data.
- (2) The data has been validated by the FAA in accordance with the provisions of a bilateral agreement between the US and the country who issued the Repair Design Approval.

(i) FAA AC 43.13-1 and -2 () as amended:

The engineering data contained in the FAA AC 43.13-1 and -2 () as amended is a type of data that can be used as installation data approval for a major alteration or repair without any further involvement from, or approval by, the GACA airworthiness engineering if:

- (1) The Organization has determined that it is appropriate to the product being repaired;



- (2) It is directly applicable to the repair being made;
- (3) It is not contrary to manufacturer's data; and
- (4) The applicable AC 43.13-1 () and -2 () chapter, page and paragraph for the procedure are listed in block 8 of the GACA form 8320-1 being used to record the major alteration or repair (see chapter 5).

4.3.3 Installation Data Approval (Domestic):

(a) GACA Supplemental Type Certificate (STC):

A GACA STC is a type of Approved Data that required involvement from and approval by the GACA airworthiness engineering. A GACA STC can be used as installation data approval for a major alteration only. See Chapter 6 of this AG-7 for the procedures to obtain a GACA STC. GACA STCs are not used to approve major repairs.

(b) GACA Repair Design Approval (RDA):

A GACA RDA is a type of Approved Data that required involvement from and approval by the GACA airworthiness engineering. A GACA RDA can be used as installation data approval for a major repair only. GACA RDAs are signified by GACA stamp and signature in Block 3 of GACA form 8320-1. See Chapter 7 of this AG-7 for the procedures to obtain a GACA RDA. Note that the GACA RDA process is very similar to the GACA STC process. GACA RDAs are not used to approve major alterations.

(c) Engineering Data Issued by GACA approved Air Carriers:

Engineering data issued by GACA approved Air Carriers and approved by GACA in accordance with a GACA approved procedure are a type of Approved Data for installation data approval for major alterations and major repairs on an aircraft of the Air Carrier's fleet.

Information Note 4.7: An engineering document (e.g., Engineering Order) issued by a GACA approved Air Carrier which refers to an existing Installation Data Approval (such as an FAA AD) without any major deviation or addition does not need to be further approved by GACA.

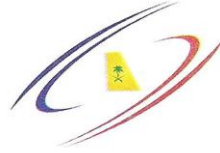
(d) ADs from the GACA:

A GACA AD is a type of Approved Data that required involvement from and approval by the GACA airworthiness engineering. A GACA AD can be used as installation data approval as applicable for a major alteration or a major repair.

4.3.4 Equipment Approval Data (Foreign):

a. FAA Technical Standard Order (TSO) Authorizations:

FAA TSO Authorization or FAA Letter of TSO Design Approval is a type of Approved Data accepted by GACA that can be used as equipment approval in support



of a major alteration. FAA TSOA does not, however, constitute an installation data approval.

b. EASA Technical Standard Order (TSO) Authorizations:

EASA TSO Authorization is a type of Approved Data accepted by GACA that can be used as an equipment approval in support of a major alteration. EASA TSOA does not, however, constitute an installation data approval.

c. FAA Parts Manufacturer Approval (PMA):

An FAA PMA is a type of Approved Data accepted by GACA that can be used as equipment approval in support of a major alteration or a major repair provided the installation of the part is similar to the installation for which the PMA was originally issued. The Organization is to pay particular attention to applicability of a PMA part with respect to the aircraft. It can also be used as an installation data approval under specific conditions.

4.3.5 Equipment Approval Data (Domestic):

The GACA does not issue equipment approvals, at the time being.

4.3.6 Findings of Compliance (Foreign):

(a) Statements of Compliance made by FAA Designee (individual):

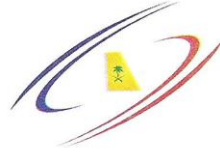
Statements of Compliance made by FAA engineering designee individuals (e.g. DER) are a type of Approved Data that may be accepted by the GACA for use as findings of compliance in support of a GACA STC or RDA project provided that, the DER Certificate has been endorsed by GACA (Refer to AG-4), the Statements of Compliance have been issued in accordance with GACA policies applicable to GACA designees and the GACA has reviewed and accepted the document (see 4.4.b for more details).

Information Note 4.8: If a GACA DER has only recommended the approval of data and that there is no further indication of approval from the GACA, the GACA form 8110-3 does not constitute Approved Data.

(b) Statements of Compliance made by other Foreign Designee (individual):

Statements of Compliance made by a foreign delegated individual other than an FAA designee are a type of Approved Data accepted by the GACA that can be used as findings of compliance in support of a major alteration or a major repair if, and only if, there is a bilateral agreement containing appropriate provisions for the acceptance of such data between the country having jurisdiction over that individual and the KSA. The procedures to be followed are to be as per the bilateral agreement provisions.

(c) Statements of Compliance Issued by a Foreign Delegated/Approved Design Organization:



- (1) A delegated/approved design organization is an engineering organization within a foreign company that has been formally authorized by the CAA of the country having jurisdiction over that company to make findings of compliance in support of a major alteration or a major repair.
- (2) Data issued by a foreign design organization is a type of Approved Data that can be used as findings of compliance for a major alteration or a major repair if, and only if, one of the following situations apply:
 - (i). The design organization is a US based design organization that has been delegated by the FAA (e.g. ODA) provided that the Statements of Compliance have been issued in accordance with FAA policies applicable to FAA designees working with foreign registered aircraft (Ref. FAAO 8110.37 as amended) and the GACA has reviewed and accepted the document (see 4.4.2 for more details).
 - (ii). The design organization is a Europe based design organization that has been approved by the EASA (i.e. they are an EASA DOA) and they are operating in accordance with the provisions of the GACA/EASA working arrangement.
 - (iii). The foreign design organization has been authorized by their CAA and there is a bilateral agreement containing appropriate provisions for the acceptance of this data between the country having jurisdiction over that organization and the U.S. or the KSA. The procedures to be followed are to be as per the bilateral agreement provisions.

Note that in the cases listed above, the Approved Data issued by the design organizations cannot be used as installation data approval.

4.3.7 Findings of Compliance (Domestic):

Statements of Compliance made by GACA Designated Engineering Representatives (GACA-DER) are a type of Approved Data accepted by the GACA that can be used as findings of compliance in support of a major alteration or major repair.

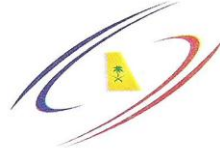
4.4 Special Cases

(a) FAA Field Approvals:

An FAA Field Approval is not a type of Approved Data accepted by the GACA and cannot be used as an installation data approval nor a finding of compliance after an aircraft has been registered in the KSA. An FAA Field Approval is accepted by the GACA only if the alteration or repair was made to the aircraft before registration in the KSA.

(b) Data approved by FAA designees using Statements of Compliance (e.g. FAA Form 8110-3):

Notwithstanding repair data approved by FAA designees employed by FAA type certificate holders based in the US (Ref. Paragraph 4.3.2(f)), data approved by FAA designees for Major Alterations and Major Repairs on aircraft registered in the KSA is only accepted by the GACA on a case-by-case basis and only when they have been



authorized by GACA to work on the project. In these situations the Organization must submit the Statement of Compliance to the GACA for review. The GACA may also ask to review the substantiating data on which the Statement of Compliance was based. GACA will record its ruling by way of letter or other forms of official correspondence.

(c) Letters of “No Technical Object”:

A statement of “No Technical Objection” or similarly worded statements from the manufacturer does not constitute Acceptable Data or Approved Data and thus requires formal regulatory approval from the GACA.

(d) Alterations and repairs classified by EASA as minor with additional showing of compliance:

A special case exists for alterations and repairs classified as “minor with additional showing of compliance” by an EASA approved design organization. For alterations and repairs in this category the installation must be performed in accordance with data approved by an approved EASA design organization. The EASA design organizations will utilize a Classification Statement and a Declaration of Compliance for these purposes. These declarations issued by the EASA approved design organizations must be reviewed on a case-by-case basis by GACA. GACA will either accept the declaration of compliance as acceptable data for a minor alteration or repair or they will rule that the alteration or repair is major and thus the Organization will need approved data as defined earlier in this chapter. GACA will record its ruling by way of letter or other forms of official correspondence.



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5 CHAPTER 5: PERFORMANCE AND RECORDING OF ALTERATIONS AND REPAIRS

5.1 General

All alterations and repairs, whether minor or major, are to be performed and recorded as per GACA/FAR Parts 43, 65, 91, 121, 125 and 135 as applicable. All alterations and repairs, whether minor or major, must be recorded as an entry in the aircraft records.

5.2 GACA Form 8320-1, Major Alterations & Repairs

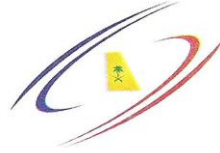
- (a) Major alterations and repairs, in addition to the aircraft record entry, must also be recorded using GACA form 8320-1, Major Alterations and Repairs. Air Carriers certified in accordance with GACA/FAR Part 121 may use alternate procedures and forms provided that they are approved by GACA and are described in their Manual.
- (b) If a GACA STC is being used as the Approved Data, a single GACA form 8320-1 is to be used to address all the major alterations that are authorized by the same project authorization number (see chapters 6 and 7). Furthermore, no work other than the work authorized by the project authorization number is to be recorded on that GACA form 8320-1. The same applies regarding major repairs when a GACA RDA is being used as the Approved Data.
- (c) The form is to be completed as per GACA/FAR Part 43 appendix B (GACA form 8320-1 is the equivalent of the FAA form 337) and the additional guidelines contained in AC 43.9-1() and the following paragraphs in the chronological order presented. In addition to Blocks 6 and 8, Blocks 1, 2, 4 and 5 must also be completed.

5.2.1 Block 8 - Description of Work

- (a) The first line is to indicate, as a minimum, the aircraft registration mark, model and serial number, and GACA project number if applicable (GACA STC or RDA).
- (b) Then, a clear, concise, and legible statement is to be made describing the work accomplished the sources of Approved Data and required operating and maintenance data.
- (c) With respect to the work accomplished, it is important that the configuration and location of the repair or alteration be fully described. The amount of detail of this description should be such that a conformity inspection of the entire installation could be performed based on the descriptive data.

Information Note 5.1: It is important that the descriptive data include details of applicable process specifications and wire routing and mounting. In addition, if reference is made to standard practices in AC43.13 () then reference must be made to the specific amendment and paragraphs of that document.

- (d) Data used as a basis for approving major repairs or alterations for return to service must be listed in block 8. Sources of data for major alterations and repairs may not be other than those listed in chapter 4 of this AG-7 and are to be identified by document



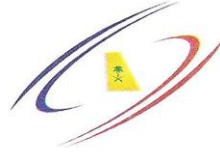
- number, revision numbers, paragraphs as applicable, dates, etc. And shall also include a reference to the specific paragraph in chapter 4 of this AG- 7 that provides for the GACA acceptance of this data. As an example, if the data used is FAA STC XXXXX, indicate "ref. AG-7, Para. 4.3.2(a)" adjacent to the FAA STC number.
- (e) Deviations from these documents which would by themselves constitute a major alteration or repair must be documented in some form of Approved Data which must also be listed. Deviations from these documents which would constitute a minor alteration or repair should also be documented in block 8 and should be indicated in the aircraft record entry. Notwithstanding, any deviations (minor or major) from an AD must be approved by the GACA through an AMOC (see AG-6).
 - (f) Required Operating and Maintenance Data such as AFMS, pilot's guides, MMS, MMEL supplements, etc. should be listed including document numbers and revision levels as appropriate. Any new Airworthiness Limitations must also be indicated and the resultant life limit identified in terms of flight cycles, flight hours, etc.
 - (g) In cases where weight and balance of the aircraft are affected, the changes should be entered in the aircraft weight and balance records with the date, signature, and reference to the work performed on the GACA Form 8320-1 that required the changes.
 - (h) If additional space is needed to describe the repair or alteration, attach sheets bearing the aircraft nationality and registration mark and the date work was completed.

5.2.2 Block 6 - Conformity Statement

Conformity statement must be made by the approved maintenance organization. The conformity statement in block 6 serves the purpose of formally stating that the major alteration or repair as installed conforms to the installation data as noted in block 8.

This block should be completed as follows:

- (a) "A" - Agency's Name and Address:
Enter name of the mechanic, Organization, or manufacturer accomplishing the alteration or repair. Mechanics should enter their name and permanent mailing address. Manufacturers and Organizations should enter the name and address under which they do business.
- (b) "B" - Kind of Agency:
Check the appropriate box to indicate the type of person or organization who performed the work.
- (c) "C" - Certificate Number:
Mechanics should enter their mechanic certificate number in this block. Organizations should enter their air agency certificate number and the rating or ratings under which the work was performed, e.g., 1234, Airframe Class 3 or, if it is an organization which is the subject of a one-time approval, the one-time approval authorization number (see AG-5, AMOs).
- (d) "D" - Conformity Statement:



This space is used to certify that the repair or alteration was made in accordance with the data listed in block 8. When work was performed or supervised by certificated mechanics not employed by an Organization, they should enter the date the alteration or repair was completed and sign their full name. Organizations are permitted to authorize persons in their employment to date and sign this conformity statement.

5.2.3 Block 7 - Approval for Return to Service

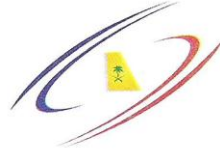
- (a) For major repairs performed using data approved under a GACA RDA, block 7 cannot be signed and the aircraft cannot be returned to service before block 3 is signed by the GACA. See chapter 7, GACA RDA procedures.
- (b) GACA/FAR Part 43 establishes the conditions under which major alterations or repairs to airframes, powerplants, propellers, and/or appliances may be approved for return to service following major alteration or repair. Block 7 of the form is used to indicate approval or rejection of the alteration or repair of the unit involved and to identify the person or agency making the airworthiness inspection.
- (c) The "approved" or "rejected" box is used to indicate the finding. Additionally, check the appropriate box to indicate who made the finding. Use the box labeled "other" to indicate a finding by a person other than those listed. Enter the date the finding was made. The authorized person who made the finding should sign the form and enter the appropriate certificate or designation number.
- (d) In accordance with GACA/FAR Part 43, Appendix B, a completed copy of the GACA form 8320-1 must be forwarded to the GACA within 48 hours after the work is inspected.

5.2.4 Retention of GACA Form 8320-1:

GACA forms 8320-1 are to be retained in the Repair Station files for at least two years as per GACA/FAR 145.219. Air operators are to keep them as per GACA/FAR 91.417, 121.380 or 135.439 as applicable. Notwithstanding the above, GACA forms 8320-1 used to record a GACA RDA (block 3) must be kept in the Repair Station files up to two years after the aircraft has been deregistered. Furthermore, a copy of the same GACA form 8320-1 must be kept by the owner or operator until the aircraft has been deregistered.



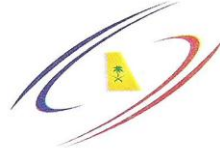
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6 CHAPTER 6: GACA STC APPROVAL PROCEDURES

6.1 General

- (a) The GACA STC is used by GACA to signify an approval of a major change in type design (i.e. an installation data approval of a major alteration on a KSA registered aircraft). The GACA STC process is based on the FAA STC process. Accordingly, AC 21-40() should be read in conjunction with the procedures provided in this chapter. In case of conflict between the two, the procedures in this chapter are to prevail.
- (b) Major changes in type design may be GACA approved only after the Organization has shown, and the GACA has found, that the changed product complies with the applicable airworthiness requirements of paragraphs (a) and (b) of GACA/FAR 21.101 and the aircraft has no feature or characteristic that makes it unsafe for the category in which certification is requested.
- (c) A GACA STC will not be issued to:
 - (1) Approve alterations to TSO approved articles unless the TSO is invalidated for the altered article. A GACA STC which alters a TSO article must provide for installation; or
 - (2) Combine two or more GACA STCs or other foreign approvals accepted by the GACA without additional showing of compliance.
- (d) In general, the process for GACA STCs follows the process described in AC 21-40() and FAAO 8110.4(), except as identified in this AG-7. The following sections describe a generic four phase certification process for a GACA STC project. The sequencing of these phases and their associated steps and activities as described in this AG-7 is representative of the ideal sequence of events but it is understood that many of these steps and activities will overlap or may follow a different chronological order.
- (e) It is essential to understand that the GACA STC process described herein is flexible in the sense that some of the procedures may be simplified or omitted on a case-by-case basis, as determined by the GACA. The GACA will advise the Organization of all the applicable procedural steps or simplification thereof at the time the project is accepted. The degree of customization of the GACA STC procedures will be a function of the project scope (number of alteration packages and number of aircraft affected) and of the nature (complexity and criticality) of the alterations. This merely means that the rigor in finding compliance may vary; however, the minimum level of safety of any alteration remains the same. Appendix 11 contains an example of the certification documentation for a simple (but major) alteration as well as some additional guidelines that may help streamline the process in such cases.
- (f) Notwithstanding the inherent flexibility permitted by the GACA STC process, some of the steps are required and/or cannot be substantially simplified regardless of the project. These steps include: letter of application, GACA acceptance of the project,



fee payment, applicant showing conformity and compliance, certification data, STC issuance and project closure.

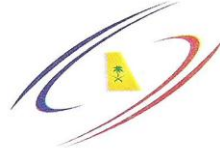
- (g) Organizations are strongly encouraged to obtain the services of GACA designees for certification services for GACA STC projects. The appointment and certification activities of GACA designees must be in accordance with the policies and procedures of GACA Airworthiness Guide (AG) - 4, GACA Designated Engineering Representatives (DER) and of GACA Airworthiness Guide (AG) - 9, GACA Designated Airworthiness Representatives (DAR)
- (h) Alternatively, aircraft owners may seek GACA STCs through the use of EASA Design Organizations in accordance with the provisions of the GACA/EASA working arrangement.
- (i) A GACA/FAR Part 121 Air Carrier is to follow the same steps and activities described in this chapter.
- (j) The GACA may use the technical assistance from other CAAs with which it has a bilateral agreement with appropriate provisions. Such technical assistance could be with respect to conformity inspections, test witnessing, finding of compliance, etc. and will be documented in the GACA project file.
- (k) The application for an STC may be subject to a sequencing process due to work load which may impact the initiation of the project.

6.2 Phase 1 – Project Initiation

Phase 1 of the certification process involves all activities commencing with notification by the applicant that they intend to seek certification of a major alteration through the formal acceptance of the certification plan by the GACA and the issuance of a GACA project authorization number.

6.2.1 Letter of Intent

- (a) Applications for a GACA STC should normally be initiated by an Organization in the form of a letter of intent sent to the GACA. The letter of intent should be of sufficient detail to allow the GACA to determine GACA resource requirements necessary to support the GACA STC process and to assess whether nominated persons (i.e. already appointed GACA-DERs, GACA-DARs, FAA DERs or other foreign delegated individuals) would have sufficient scope of delegation to address the required compliance aspects of the project. A letter of intent is not a mandatory step in the process. However, it is an excellent means to ensure that the Organization does not expend resources to produce the documents required with the Letter of Application for a project that the GACA might decline thereafter.
- (b) A sample letter of intent is provided in Appendix 5. Project information required includes:
 - (1) Identification of aircraft make, model, serial number(s) and registration(s);
 - (2) Description of the alteration(s) - highlight novel and unusual design features;
 - (3) Location of the aircraft and the certification activities;



- (4) Use of existing approvals as a basis for the GACA STC (e.g., FAA STC), if applicable;

Information Note 6.1: An installation data approval (e.g., FAA STC) that an Organization would wish to use with a deviation that would constitute a major change in itself would need further approval. However, the Organization would only need to obtain additional findings of compliance for those requirements that are affected by the deviation. A GACA STC would still be required as the installation data approval but such an approach would be more efficient (than a full GACA STC project, for example) from both the Organization's and GACA's point of view.

- (5) project schedule including major milestones , and
(6) as required, the names and expected roles of each already appointed GACA-DERs and GACA-DARs, or FAA DERs and other foreign delegated individuals and organizations, to be authorized for the project if known, or the identification of areas of specialties (e.g., avionics, conformity inspections) to be covered by GACA-DERs, GACA-DARs, FAA DERs and other foreign delegated individuals yet to be nominated and/or authorized.

- (c) The owner/operator of the aircraft is to be copied on the letter of intent.

6.2.2 GACA response to the Letter of Intent

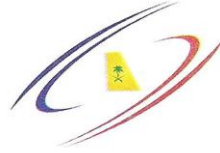
The GACA will respond to the letter of intent by advising whether the project described therein can be supported or not. This response by GACA does not signify formal acceptance of the project but rather indicates that the Organization is invited to submit a formal letter of application along with the applicable fee.

6.2.3 Letter of Application

- (a) The letter of application is a mandatory step in the GACA STC process and it must contain the following:
- (1) A request for project authorization number
 - (2) The nomination of individuals and/or authorization request for the use of specific GACA-DERs, GACA-DARs, FAA DERs and other foreign delegated individuals or organizations, if applicable
 - (3) A certification plan for each alteration package
 - (4) Supporting documents of existing approvals to be used.

Information Note 6.2: After the Letter of Application has been submitted, it is possible that the GACA will require additional clarifications or corrections before formally accepting the project.

- (b) An application for STC (GACA Form 8110-12) must be filled out and submitted to the GACA along with the Letter of Application. See Appendix 1, figure 6.



- (c) Already appointed GACA-DERs and GACA-DARs still need to be authorized for each project, and the request needs to specify exactly what roles each will play. If the Organization nominates an individual for appointment as a GACA-DER or GACA-DAR so that the individual may work on the project, all required documents must be submitted with the Application letter (see AG-4, GACA Designated Engineering Representatives (DER) Guidance Handbook and AG-9, GACA Designated Airworthiness Representatives (DAR) Guidance Handbook).

Information Note 6.3: It is GACA policy that GACA-DER and GACA-DAR authorizations for a particular project remain valid until the end of the project, even if the GACA-DER or GACA-DAR Certificate of Authority expire during the course of the project activities.

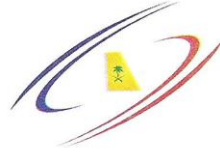
6.2.4 Fees and Charges

There are administration fees for a GACA STC. There is a fixed fee due at time of application and then hourly charges based on the number of hours that GACA inspectors/engineers dedicate to the project. Proof of payment of the application fee is due at the time of application. Hourly charges will be invoiced either at the end of the project or at periodic intervals for long duration projects. Proof of Payment of the hourly charges has to be submitted to GACA before the STC is issued.

Inspector/engineer charges and travel expenses incurred by the GACA during the STC process are the responsibility of the Organization. Appendix 4 provides additional information on fees, charges, travel expenses and the methods of payment

6.2.5 GACA Project Acceptance and Project Docket

- (a) The GACA acceptance is a mandatory step in the GACA STC project. Once satisfied that the letter of application is complete GACA will issue a letter of acceptance. This letter will provide the project authorization number, authorize the GACA-DERs and GACA-DARs for the project if applicable, and specify which steps of the GACA STC process are applicable or simplified by specifying paragraphs of AG-7 chapter 6.
- (b) Furthermore, if applicable, the GACA will specify whether test plans approval and witnessing is delegated. In exceptional cases, GACA will conditionally accept the project and specify the conditions to be met (e.g., additional GACA-DER). Finally, the letter will provide the name and contact information of the GACA airworthiness engineer(s) assigned to the project.
- (c) If required, the GACA will appoint new GACA-DERs and GACA-DARs as requested based on the supporting documents provided by the Organization. This will be done in correspondence separate from the acceptance letter as per the procedures of AG-4 and/or AG-9.
- (d) At this point the assigned GACA Certification Project Manager will also open a project docket where all relevant documentation concerning the STC project will be kept.



6.2.6 GACA Project Authorization Number

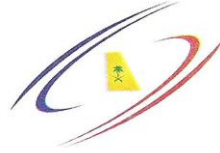
- (a) A project authorization number will be assigned by GACA for each GACA STC project. The unique number is used by the GACA to track and control all documentation associated with each unique project. A project authorization number is assigned whether GACA-DERs and GACA-DARs are employed on the project or not.
- (b) The project authorization number is to appear on all GACA forms and correspondence related to the project.
- (c) The project authorization number is issued by the GACA to the Organization in the acceptance letter in response to the application letter, and will also ultimately be used as the basis for the GACA STC number.
- (d) GACA project authorization numbers are composed of two elements an Organization identifier number and a sequential counter. As an example, STC project GACA/008-023 was assigned to a GACA STC project that had GACA AMO#008 as the applicant and it was the 23rd project in the project register.

6.2.7 Certification Plan

- (a) Certification plans are important documents because, once agreed upon, they constitute the basic certification agreement among all parties (Organization, delegated individuals, owner/operator, GACA). A certification plan may vary from a few to dozens of pages, depending on the alteration package. Each alteration package (i.e., an alteration that is complete on its own and does not rely on other alterations for proper functions and operations) is to have its own certification plan. Each certification plan should have as a minimum the same content as the letter of intent (except that the description of the alterations needs to be more detailed), plus the basis of certification, a compliance checklist, and additional information such as a proposed conformity inspection verification program and, if applicable, a certification test program. Each element is discussed below. Furthermore, refer to FAA AC 21-40(), chapter 2 for additional details. Also, an example of a certification plan is provided in Appendix 6.
- (b) Certification plans are dynamic documents that will be revised as the project progresses. Before they are submitted to the GACA, they must be signed off by all the GACA-DERs, FAA DERs and other foreign delegated individuals and organizations that have been authorized for the project. Sign-off must be effected formally either by signature block in the certification plan document, GACA form 8110-3 recommendation for approval, letter, or other means.

6.2.8 Basis of Certification

- (a) The Basis of Certification must be established as per GACA/FAR 21.101. Further guidance on this very important step can be found in FAA AC 21.101-1(), Establishing the Certification Basis of Changed Aeronautical Products.
- (b) A basis of certification normally consists of the following elements:
 - (1) The basic regulatory basis which is composed of the design, environmental and continued airworthiness requirements (e.g., GACA/FAR Part 25 at



amendment 25-72, part 34 at amendment 34-3, part 36 at amendment 36-20 and part 26);

- (2) Special conditions;
 - (3) Findings of equivalent safety;
 - (4) Exemptions; and
 - (5) Elections by the applicant to comply with later amendments.
- (c) The applicant must provide sufficient evidence to the GACA to support any requests for reversion to earlier design standards in accordance with the provisions of GACA/FAR 21.101(b).
- (d) Exemptions to specific design standards must be petitioned for in accordance with the procedures specified in GACAR Circular R-7-2009. The related form GACA S&ER 1001 shall be used by the petitioner.

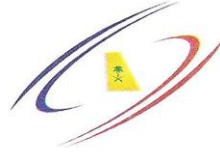
Information Note 6.4: Design requirements stated in operational rules (e.g., subparts J and K of GACA/FAR Part 121) should also be included in the basis of certification because the aircraft owner/operator is likely to be required to show that the altered aircraft meets these requirements in order to be eligible to operate under the provisions of the applicable requirements of GACA/FAR Part 91, 121, 125 or 135 as applicable.

6.2.9 Compliance Checklist

- (a) Compliance checklists are required to be submitted by Organizations for all GACA STC projects. Compliance checklists are normally in a table format but need not to be for small alteration packages where only a few requirements are affected. The compliance checklist shall include, as a minimum, the following information:
- (b) List of all affected airworthiness requirements contained in the Basis of Certification (including amendment level)
- (c) For each requirement noted above; the Means of Compliance, the Form of Proof, and the GACA-DER (if applicable) who will be making a finding of compliance. Each is discussed in the following paragraphs.
- (d) The list of all affected airworthiness requirements should include the paragraph number (e.g., 25.853(a)) and the identification of the amendment that last changed the paragraph as agreed in the Basis of Certification. Paragraphs should be broken down into sub-paragraphs as required to ensure that the corresponding information across the columns is appropriate. If AFMS and ICA are planned, XX.1581 and XX.1529 respectively are to be listed.

Information Note 6.5: Information about the amendments that last changed paragraphs can be obtained by consulting the FAA Regulatory Guidance Library (RGL) web site.

- (e) The Means of Compliance describes how compliance with the requirement will be shown (e.g., drawing review, analysis, ground test, laboratory test, inspection, flight



test). Using a pre-defined coding to identify the different Means of Compliance is acceptable.

- (f) The Form of Proof identifies in what certification document the showing of compliance will be documented. This is different than the descriptive data whose purpose is to define the design. Reliance on existing equipment approvals (TSOA, PMA, etc.) should be clearly identified.

Information Note 6.6: For very simple alterations a separate certification document might not be justified for providing the details of how compliance was shown for each specific requirement. Instead, it would be acceptable to provide a short narrative explaining how compliance was shown in a Remarks column of the compliance checklist.

- (g) The GACA-DERs authorized to participate in the project will have their specific involvement indicated in the compliance checklist against each requirement for which they will be making a finding of compliance or a recommendation of a finding of compliance.

Information Note 6.7: FAA AC 21-40() provides additional information and sample formats for compliance checklists.

6.2.10 Additional Information

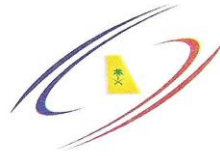
The supporting documents of existing approvals to be used must be provided and should clearly show that the approval is applicable to the aircraft. Any deviation from the existing approvals must be identified to the GACA. FAA STC documents need to be accompanied by a letter of permission from the STC holder.

6.2.11 Changes in Project Scope

- (a) A change in project scope is defined as either an addition of an independent alteration package unrelated to the other alteration packages already accepted under the given project authorization number, and/or a change in the scope of an accepted alteration package to a point where the compliance checklist must be revised, or the GACA-DER or the foreign delegated individuals authorized activities are exceeded.
- (b) When there is a change in scope, the Organization, the GACA-DER or the foreign delegated individual must report the situation to GACA and wait for GACA determination before the Organization and the GACA-DER or foreign delegated individual completes the project activities. The GACA will acknowledge changes in project scope and authorize or deny GACA-DER or foreign delegated individual involvement by way of written response to the Organization.
- (c) The Certification Plan must be updated to reflect any change in the project scope.

6.2.12 Project Coordination Meetings

- (a) A GACA STC project coordination meeting should take place as early as possible in the project, but only after the GACA has accepted the project. The participants in this meeting generally include the GACA Certification Project Manager, the applicant's



certification engineer and engineering specialists and delegated individuals. The purpose of the project initiation meeting is to:

- (1) Ensure the applicant's understanding of the GACA STC process (this chapter 6);
 - (2) Ensure the GACA's understanding of the nature and scope of the alterations;
 - (3) Discuss the details of the certification plans (including but not limited to certification basis, delegated individuals, compliance checklists, conformity program, test program and schedule); and
 - (4) Identify and discuss any novel or unique design features, materials, processes, and methods of compliance.
- (b) Subsequent meetings are held on an as required basis. They could be to resolve particular problems, prepare complex flight testing, etc. The need for a final meeting is based on the complexity of the alterations and the progress with respect to the schedule. Participants in these subsequent meetings are as required.
- (c) The meetings normally take place at the applicant's facilities. The applicant is responsible for producing the meeting minutes.

6.3 Phase 2 – Developing Data, Ensuring Conformity, Showing Compliance

Phase 2 of the certification process includes the activities performed by the applicant to generate the descriptive data to identify the design change and to show that the changed product complies with all applicable requirements identified in Phase 1 using the means of compliance agreed to with the GACA. In addition, Phase 2 includes the activities performed by the applicant to show that the final altered product conforms to the changed type design by performing ground/flight testing. Finally, Phase 2 includes the development of the operating and maintenance data required to support the in-service use of the changed product.

NOTE 6.8: The activities performed in Phase 2 are often performed in parallel with the activities performed in Phase 3. Phase 2 represents those activities performed by the applicant and Phase 3 represents those activities performed by the GACA and its designees.

IMPORTANT NOTE 6.9: Document Control is critical and the Organization must ensure that it is done in a systematic manner, using a different document revision level and date every time data is re-submitted to the GACA.

6.3.1 Developing Data

6.3.1.1 Descriptive Data

- (a) Descriptive data which completely describes the change in type design must be developed by the Organization during the GACA STC process. Descriptive data includes, but is not limited to:
- (1) Engineering drawings (often through a Master Drawing List (MDL))
 - (2) Engineering Order (EO) or similar



- (b) The descriptive data must fully describe the dimensions, materials, specifications, processes, tolerances, surface finishes, etc that define the critical elements of the type design.

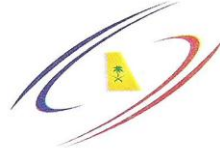
6.3.1.2 Certification data

- (a) Certification data is data used to substantiate that the design as defined by the descriptive data meets the airworthiness requirements as defined in the basis of certification using the means of compliance as identified in the compliance checklist
- (b) Certification data must be submitted by the Organization to the GACA during the GACA STC process for review and acceptance. Certification data will normally refer to the descriptive data. Only the top level descriptive data such as MDL or top EO should be initially submitted with the certification data. Other descriptive data might be requested thereafter by the GACA to assist in the review of the certification data. Certification data includes, but is not limited to:
- Ground/Flight Test plans and reports
 - Analyses (e.g. Electrical Load Analysis (ELA), Structural Analysis, System Safety Analysis, etc.)
- (c) Certification data review and acceptance is often an iterative process involving revisions to the certification documents (and sometimes to the descriptive documents) by the Organization before acceptance by the GACA.
- (d) The submission of certification data needs to be progressive and start as early as possible in the project, starting with the certification plans. Delaying submission of the data to the GACA may result in delays in the GACA review and approval, and in the return to service of the aircraft by the Organization.

6.3.1.3 Required Operating Data

Data required to support the operation of the changed product in service must be developed by the Organization during the GACA STC process. Operating data includes, but is not limited to: Weight and Balance (W&B) change data, Electrical Load change data, MMEL supplement, Aircraft Flight Manual Supplement, and Continued Airworthiness Data.

- (a) Aircraft Flight Manual Supplement (AFMS)
- (1) AFMS is required as per GACA/FAR §23.1581, §25.1581, §27.1581 and §29.1581 when the original AFM is no longer applicable because of the alteration to the aircraft. The Organization should consult FAA Advisory Circulars 23-8() or 25.1581-1() for guidance which are not repeated here. In addition, the following best practices should be used:
- (i). Use recognized formats (follow the format of AFM for the aircraft requiring the new supplement);
 - (ii). Distinguish “approved” from “unapproved” sections (as defined in GACA/FAR XX.1581);
 - (iii). Make reference to “Pilot’s Guides” for equipment operating procedures if these are available instead of repeating this information in the AFMS; and
 - (iv). Use challenge and response type layout in the procedures section.
- (2) AFMS can only be approved by the GACA, specifically by one of the GACA POIs upon written recommendation from an airworthiness engineer. See



Appendix 7 for an example of an AFMS approval page and statement. AFMS are to be recommended for approval by the flight test GACA-DER authorized for the project using GACA form 8110-3.

- (3) AFMS, along with GACA forms 8110-3 as applicable, are to be submitted to the GACA prior to any flight test, at which time they will be preliminarily approved for the purpose of the flight test. At this time, they will not be signed by the GACA as approved. The preliminary approval will be in the form of a letter. Final approval, including signing and dating of the AFMS, will take place upon satisfactory validation of AFMS during flight testing, successful completion of the flight tests, and satisfactory review of all certification data. Copies of the GACA approved AFMS will be provided by the GACA to the Organization at the same time as the GACA STC.

6.3.1.4 Continued Airworthiness Data

Data required to support the continued airworthiness of the changed product in service must be developed by the Organization during the GACA STC process. Continued airworthiness data includes, but is not limited to:

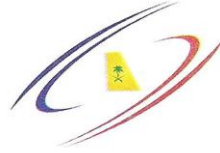
- (a) Instructions for Continued Airworthiness
- (b) Airworthiness Limitations
- (c) Electrical Wiring Interconnection System (EWIS) Instructions
- (d) Maintenance Manual Supplements
- (e) Certification Maintenance Requirements
- (f) Illustrated Parts Catalog supplements
- (g) Wiring diagrams.

6.3.1.5 Instructions for Continued Airworthiness (ICA)

- (a) ICAs are required as per GACA/FAR §23.1529, §25.1529, §27.1529 and §29.1529 (and related appendices) when the original ICAs are no longer applicable or when new information is required for maintenance personnel because of the alteration to the aircraft. The level of detail should reflect the complexity of the system/installation/component being installed and maintained. The appendix to each GACA/FAR mentioned above as well as AC 21-40() provide additional guidance on the preparation of ICAs.
- (b) ICAs must be submitted to the GACA for acceptance (by one of the PMIs upon recommendation from Certification Project Manager, except for the Airworthiness Limitations and the EWIS section which are GACA approved. ICAs are formally indicated as being accepted by the GACA by being listed directly on the GACA STC certificate as required maintenance data.

6.3.1.6 Airworthiness Limitations

- (a) Airworthiness limitations can only be approved by the GACA Director of Airworthiness, upon written recommendation from Certification Project Manager. See appendix 8 for an example of an Airworthiness Limitations approval page and statement.



- (b) Airworthiness limitations are to be recommended for approval by the relevant GACA-DER(s) using GACA form 8110-3. Final approval, including signing and dating of the Airworthiness Limitations will take place upon satisfactory review of all certification data. Copies of the GACA approved Airworthiness Limitations will be provided by the GACA to the Organization at the same time as the GACA STC.

6.3.1.7 EWIS ICA

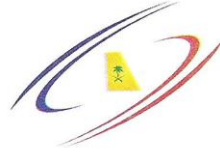
- (a) Guidance on the development of EWIS ICAs can be found in FAA AC 25-27().
- (b) EWIS ICAs are to be recommended for approval by the relevant GACA-DER(s) using GACA form 8110-3.
- (c) EWIS ICAs can only be approved by the GACA Director of Airworthiness, upon written recommendation from Certification Project Manager.

6.3.2 Parts Fabrication

Parts may be fabricated by an Organization (including its approved vendors) that was granted a GACA STC with the intent of installing those parts on an eligible aircraft for which they are responsible for return to service. Fabrication of such a part is authorized in accordance with FAA AC 43-18() and AC 20-154(). Such parts may not be offered for sale as separate items for installation and return to service by another Organization.

6.3.3 Ensuring Conformity "Conformity Inspection Program"

- (a) In accordance with GACA/FAR 21.33, for all STC projects the Organization is responsible for ensuring 100% conformity on all materials, parts, processes, construction and assembly to the type design drawings and specifications.
- (b) The GACA will identify features, attributes, and components critical to the design and certification program and will request GACA conformity on these test articles with special instructions as necessary. GACA conformity is a validation of the organization conformity. Paragraph 6.4.1 describes the GACA conformity verification program in further detail.
- (c) Organizations are encouraged to submit GACA form 8130-9, Statement of Conformity, as early as possible in the program to prevent delays in the type certification approval process. Except for in-process evaluations, such as process review, hidden inspections, etc., a Statement of Conformity should be submitted to the GACA prior to the start of GACA conformity verification inspections. By signing GACA form 8130-9, the Organization signifies to the GACA that the Organization has fabricated, installed and inspected the parts as per its GACA approved procedures to the latest revision of the descriptive data, except for the deviations noted, and that the Organization is ready to receive the GACA for its conformity verification inspection. The Organization or an authorized individual who holds a responsible



position in the manufacturing/maintenance organization should sign the Statement of Conformity. In cases where the conformity inspection is conducted away from the Organization's facility, the Organization may choose to utilize one of the following procedures for signing the Statement of Conformity:

- (1) The Organization may send an authorized representative to the facility to inspect the prototype article and sign the Statement of Conformity; or
- (2) The Organization may delegate, in writing, a representative who holds a responsible position in the organization of the supplier to act as her/his agent. In this case, a copy of the authorization letter will be attached to GACA form 8130-9 when it is submitted.

6.3.4 Showing Compliance

6.3.4.1 Certification Testing Program

- (a) Certification testing is a key activity in alteration projects. Certification testing includes, but is not limited to, structural tests (static, fatigue, vibration, pressurization, bird strike), ground functional tests, electro-magnetic compatibility tests, and flight tests.
- (b) From the Organization's perspective, certification testing needs to be planned, carried out and reported in accordance with a Certification Test Program. The Certification Test Program is to be documented in the Certification Plans and agreed upon between the Organization and GACA as early as possible. The Certification Test Program should address all of the elements discussed in this paragraph.
- (c) The GACA strongly advises all Organizations not to perform any certification testing without prior notification and concurrence (including test plan approval) from GACA.
- (d) From the GACA perspective, normally all certification tests involving ground testing, flight testing, critical systems or structure, subjective pass/fail criteria, complex test apparatus, significant risk, and/or significant cost will be subjected to a GACA conformity verification inspection prior to testing. Depending on complexity, the use of the Type Inspection Authorization (TIA) process might be required.
- (e) Design testing carried out outside of the certification testing program cannot be credited towards certification testing.
- (f) Certification ground and flight testing must be witnessed by GACA or GACA designees.

6.3.4.2 Test Plans

All certification testing must be performed in accordance with a test plan that has been approved by the GACA. Test plans are normally stand-alone documents although it is acceptable that they be part of another document (e.g., Engineering Order) as long as all the required test plan information is clearly identified and



segregated. The test plan must include a description of the test apparatus, test procedure and detailed pass/fail criteria. The test plan should also include instructions for ensuring test safety. All test plans must be recommended for approval by the relevant GACA-DERs or foreign delegated individuals (using GACA form 8110-3 or equivalent). The GACA test plan approval is normally signified by letter from the GACA prior to certification testing actually taking place. In specific instances, GACA-DERs may be authorized to approve test plans on behalf of the GACA.

6.3.4.3 Type Inspection Authorization (TIA)

The TIA details and authorizes the required conformity and airworthiness inspections, and ground and flight tests necessary to fulfill the requirements for the certification process as discussed in paragraph 6.8.1. It may also contain an operational and maintenance requirements section. The TIA is prepared by the GACA-S&ER Certification Project Manager with coordination as required with the appropriate GACA-S&ER inspection and flight test resources, including GACA-DERs and GACA-DARs. Issuance of the TIA will occur when the examination of the technical data required for the certification is completed or has reached a point where the aircraft or component will meet the pertinent regulations. Prior to final TIA approval and GACA-S&ER certification ground and flight tests, the Organization should participate in a flight safety board meeting. GACA-S&ER certification flight testing commences only after the Organization has successfully completed the organization flight tests, the TIA has been issued, and section 18A of the TIA have been completed. See FAA Order 8110.4() and AC 21-40(0) for further details.

(a) GACA- Form 8110-1, TIA

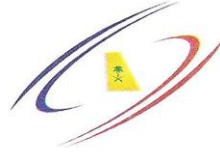
This TIA form is the cover page which provides basic information about the name of the Organization, aircraft type, certification basis, nature of the alteration, certification project number, and internal GACA-S&ER coordination. The second page contains general information, including a description of the alteration and unique features or special interfaces. This section may list the applicable GACA/FAR and/or any GACA-S&ER policy in which compliance will be shown.

(1) TIA Section 18, Part I

This section contains conformity instructions requesting GACA-S&ER inspection to verify that the aircraft or component conforms to the Organization's approved design data. This section may outline any other required ground inspections required by the GACA-S&ER airworthiness engineering. It may also define and specify the type of airworthiness certificate required.

(2) TIA Section 18, Part II

This section contains a set of instructions requesting GACA-S&ER or its GACA-DERs to perform specific flight tests to demonstrate that the aircraft alteration complies with the GACA/FARs. The flight test plan submitted for GACA-S&ER approval is typically referenced or embodied in this section of the TIA. The Flight Test Plan should contain clear, detailed procedures allowing the flight test crew to conduct the flight test and make a determination of pass or fail.



(3) TIA Section 18, Part III

This section typically contains the GACA-S&ER instructions and/or test sets that require the aircraft alteration compliance to operational regulations. This section also is needed when the nature of the alteration may affect the pilot type rating, procedures, pilot training program, Master Minimum Equipment List (MMEL), or the aircraft maintenance procedures.

6.3.4.4 Test Results

- (a) Test results should be reported either as a revision to the test plan or as a stand-alone document. In addition to the test data itself, these results should include interpretation of the data, an assessment of the relationship between the alteration and any snags encountered during the flight(s), and an overall assessment of its success or failure.
- (b) A copy of a test plan with the hand-written data collected during the test is not, by itself, an acceptable test report.

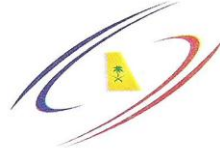
6.3.5 Flight Testing

(a) Fitness for Test Flight

- (1) In some projects, flight testing will be required to show compliance with the applicable requirements. In these cases an Experimental Airworthiness Certificate will be required as per GACA/FAR 21.191. Before making the request for the Experimental Airworthiness Certificate, the Organization is to carry out an assessment of the Fitness for Test Flight.
- (2) Fitness for Test Flight is to include a risk assessment (refer to FAAO 4040.26, Aircraft Certification Service Flight Safety Program) of the test flight to be performed referring to the flight test plan(s) and the engineering documents defining the aircraft configuration for that test, sign-off by all GACA-DERs involved in the project, and an assessment/statement by the Organization Quality Assurance section that the aircraft is fit and safe for the intended flight. All of these activities should normally take place towards the end of the project, once the GACA review of the technical data is completed or has reached a point where it appears that the aircraft being altered will meet the pertinent design requirements. The assessments and statements are to be documented in a letter from the Organization, with the GACA-DER signatures as an appendix. Such a letter supports the request for Experimental Airworthiness Certificate which is to be made using GACA form 201, for a Special Airworthiness Certificate, Experimental, to show compliance with the GACA/FARs. GACA form 201 is to be signed by the owner/operator but submitted by the Organization.

(b) Experimental Airworthiness Certificate

- (1) In lieu of the Standard Certificate of Airworthiness on-board the aircraft. Note that such an Experimental Certificate will not constitute a permit for any ferry flight, which must be addressed separately. The experimental C of A is normally



issued by the GACA Principal Maintenance Inspector in accordance to the requirements of GACA/FAR 21.191.

- (2) When the flight test is to take place outside the KSA airspace, the Organization is responsible for obtaining any additional authorities from the CAA responsible for that airspace. Furthermore, when the test flight will result in the aircraft being operated outside its certified flight envelope (speed, altitude, weight, center of gravity), the GACA will copy that CAA on the covering letter providing the Experimental Certificate to the Organization.
- (3) In order to have GACA Experimental Airworthiness Certificate, the applicant shall submit the following items:
 - (i). Application for Experimental C of A (Form 201)
 - (ii). Proof of Payment for Application Fee (refer to appendix 11)
 - (iii). Risk Assessment
 - (iv). Flight Test Plan(s)
 - (v). Draft Aircraft Flight Manual-Supplement (AFM-S).
 - (vi). Safe for Flight Statements (Fitness for Flight)
 - (vii). Statement of successful completion of all relevant Ground Tests
 - (viii). Certificate Effective Dates
 - (ix). Proposed Airports
 - (x). Operation Limitations anticipated or necessary for the intended flight Tests
 - (xi). Weight & Balance Report/Supplement (If Applicable)
 - (xii). Cabin and/or Systems De-Activation Engineering Order (If Applicable)

6.4 Phase 3 – GACA Verifying Conformity and Finding Compliance

Phase 3 of the certification process includes the activities performed by the GACA and its designees to ensure that the applicant has successfully completed all of their activities required in Phase 2.

NOTE 6.10: The activities performed in Phase 2 are often performed in parallel with the activities performed in Phase 3. Phase 2 represents those activities performed by the applicant and Phase 3 represents those activities performed by the GACA and its designees.

6.4.1 Conformity Verification Procedures

The STC certification process includes the requirement that the authority verify, with a high degree of confidence, the Organization's compliance with the applicable airworthiness and environmental requirements and conformity of the materials, parts, processes, construction and assembly to the type design drawings and specifications.

Prior to any conformity verification inspection by the GACA, the Organization must submit a completed GACA form 8130-9, Statement of Conformity, to the GACA. The GACA Certification Project Manager responsible for the project will then liaise with the GACA inspector assigned to or GACA-DAR authorized for the project to coordinate conformity verification inspection activities. This liaison will be initiated



on GACA form 8120-10, Request for Conformity Verification and shall include the provision of the completed GACA form 8130-9, location and contact information for inspection activity, references to alteration descriptive data, description of specific inspection items being requested.

6.4.1.1 Request for Conformity Verification

GACA form 8120-10, Request for Conformity Verification is the internal GACA document which is used by the GACA Certification Project Manager to request conformity verification inspections by the GACA inspector and/or GACA-DAR. The GACA inspector/GACA-DAR should not conduct a conformity verification inspection without receiving proper documentation from the Certification Project Manager and Organization. GACA personnel eligible to perform conformity verification inspections include GACA airworthiness inspectors, GACA-DAR, and inspectors from foreign CAA with which the GACA has a bilateral agreement that contains the appropriate provisions for that purpose.

6.4.1.2 GACA Conformity Verification Inspection Types and Reasons

(a) To optimize efficiency between the GACA Certification Project Manager and the GACA inspectors or GACA-DARs, GACA conformity verification inspections have been broken down into types and codes. These will be used to identify what conformity verification inspection activities need to be carried out on a given project.

GACA Conformity Verification Inspections	
Types	Reason Codes
Parts/Assemblies	1,2,3,5,6
Processes	1,2,3,6
Installations	1,2,3,4,5,6
Certification Test	1,5,6
Software	See FAAO 8110.4(),

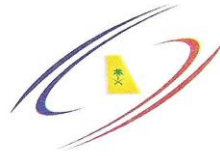
(b) The reason codes for performing GACA conformity verification inspections have the following meanings:

(1) Conformance to type design:

- (i). Ensuring conformity to descriptive data
- (ii). Ensuring continuity between certification test articles and production articles

(2) Effectiveness of configuration definition data:

- (i). ensuring configuration definition data is capable of producing parts that have consistent (i.e. repeatable) qualities affecting airworthiness
- (ii). absence of ambiguity
- (iii). information on fits, tolerances, finishes, etc.
- (iv). material and hardware specifications



- (v). test specifications
- (vi). drawing change control (e.g. revision status)
- (3) Workmanship:
 - (i). ensuring the workmanship contribute to the quality of the product
 - (ii). ensuring the workmanship can be duplicated under production conditions
 - (iii). ensuring criteria have been established to identify workmanship practices
- (4) Compatibility
 - (i). ensuring no interference or adverse interactions with existing aircraft systems
 - (ii). ensuring no interference or adverse interactions with previously installed modifications and/or repairs
- (5) Identification of unsafe and/or undesirable design features
 - (i). ensuring adequate drainage
 - (ii). ensuring adequate ventilation
 - (iii). ensuring adequate protection of structure and systems
 - (iv). ensuring adequate accessibility provisions
 - (v). ensuring appropriate use of hardware
 - (vi). ensuring smoothness of operation of mechanical systems
 - (vii). ensuring adequate padding of projecting objects that could injure
- (6) Calibration of measurement equipment

6.4.1.3 Conformity Verification Inspection Record

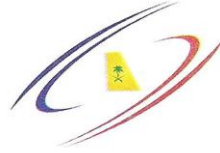
The GACA inspector/GACA-DAR must document conformity verification inspection activities including findings of non-conformance on GACA form 8100-1 for all conformity verification requests submitted by the GACA Certification Project Manager. If the GACA inspector/GACA-DAR finds discrepancies, he/she may be justified in requesting a complete re-inspection by the Organization.

6.4.1.4 Disposition of Discrepancies

Any non-conformity found as a result of the GACA conformity verification inspection require GACA Certification Project Manager or authorized GACA-DER disposition on GACA form 8100-1. The Organization is responsible for the rectification of all non-conformances identified by the GACA.

6.4.2 Compliance Inspections

- (a) An engineering compliance inspection should be done by GACA airworthiness engineers or designees for any aspect of product design and installation where compliance with the certification requirements cannot be determined through the review of drawings or reports.
- (b) An engineering compliance inspection is performed to verify compliance to the airworthiness requirements and it provides an opportunity to review an installation and its relationship to other installations on a product. The most common situations where compliance inspections are performed are outlined below:



- (1) Cabin interiors to ensure compliance with the many occupant safety and crashworthiness requirements.
- (2) Electrical wiring to ensure compliance with EWIS requirements.
- (3) Control systems to ensure compliance with ease of control, interferences, etc.
- (4) Fire protection measures to ensure compliance with separation and isolation requirements
- (5) System routing of hydraulic and electrical components to ensure proper separation and support.

GACA Form 8130-9, Statement of Conformity should be submitted to the GACA before conducting the engineering compliance inspection.

6.4.3 Test Witnessing

- (a) Normally, all certification tests involving flight critical systems or structure, subjective pass/fail criteria, complex test apparatus, significant risk to personnel, and/or significant cost will be witnessed by the GACA. GACA personnel eligible to witness certification tests include GACA airworthiness engineers, GACA inspectors, GACA-DER (when specifically authorized by the GACA) and foreign CAA employees as agreed through bilateral agreements or working arrangements between the GACA and that CAA. The GACA may permit responsible individuals at an Organization to witness simple certification tests on a case-by-case basis. This could include Organization individuals from the Quality Assurance section or pilots from the Organization or other.
- (b) Except for flight test GACA-DER, GACA personnel or designees should not participate in tests. Their task is rather to observe and ensure that the test is carried out as per the approved test plan. Note that flight test pilots who actually fly the aircraft must hold a GACA license.

6.4.4 Reports

Compliance Inspection, Ground Test and Flight Test Reports must be prepared to document the results upon satisfactory completion of all inspections and tests. These results must be reported by the authorized individuals who performed the inspections and tests. A report that is prepared by a GACA-DER/DAR, must be submitted to the GACA for review and approval.

6.4.5 Findings of Compliance

Findings of Compliance against specific applicable requirements are to be made by the individuals listed in the compliance checklist. Such findings of compliance are to be made in a form and manner as described in the relevant paragraph of chapter 4. All Statements of Compliance made by GACA DER must be submitted to the GACA by the Organization.



6.5 Phase 4 – STC Issuance

6.5.1 GACA Certification Project Manager's Recommendation for GACA STC Issuance:

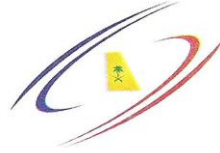
For projects involving more than one engineering discipline, it is important that the GACA airworthiness engineer responsible for the project consults with the appropriate airworthiness engineers in all affected engineering disciplines within the GACA. Once he has reviewed all the engineering and certification data and is satisfied that compliance has been shown against all the applicable requirements for the project and that no feature or characteristic makes it unsafe for its intended use, he will make a recommendation to the Director of Airworthiness by internal memorandum for the issuance of the GACA STC.

6.5.2 Approval of certain required operating data:

- (a) According to regulation, certain required operating documents developed by the applicant must be approved by the GACA. These include the following:
 1. Approved sections of the Flight Manual Supplement
 2. Airworthiness Limitations
 3. Certification Maintenance Requirements
 4. EWIS Instructions for Continued Airworthiness
 5. MEL Supplement
- (b) The GACA Certification Project Manager will coordinate with the applicable divisions and approval authorities within GACA to obtain the required approvals. The approved documents will not be released to the applicant until the STC has been issued.

6.5.3 Issuance of the GACA STC Certificate:

- (a) The GACA STC will be approved by the GACA authorized individual and will specify the holder, the regulations, the aircraft make and model, the description of the type design change (including identification of the MDL, top EO or other similar engineering document describing the change), the limitations (including serial number applicability) and conditions (including reference to any AFMS or MMS). In addition, the GACA STC will state the certification basis for the design change.
- (b) The GACA STC number will be based on the project authorization number (i.e., project authorization number GACA/008-23 will result in GACA STC no. 008-023). Appendix 9 provides an example of a GACA STC.
- (c) The original copy of the GACA STC, along with any GACA approved operating data (e.g. AFMS, Airworthiness Limitations, etc.) will then be sent to the holder. The holder must ensure that the original or a copy of it is put into the aircraft records. A copy of the GACA STC will be kept in the aircraft file as well as in the airworthiness engineering project file at the GACA.
- (d) The issuance of the GACA STC only signifies that the engineering data has been approved for installation. However, the STC does not constitute closure of the alteration project as it does not approve the aircraft for return to service. This is to be done in accordance with chapter 5 of this AG-7.



6.5.4 Closure and Filing of Project Docket:

- (a) The signing of block 7 for the return of the aircraft to service constitutes project closure. An Air Carrier may provide an alternate form provided it is approved by the GACA and is described in their Manual. Of course, continued airworthiness still needs to be addressed thereafter; see chapter 9 of this AG-7.
- (b) The issuance of the GACA STC marks the end of the GACA STC project. At this point the assigned GACA Certification Project Manager will ensure that all relevant certification documents and project correspondence are contained in the project docket and the docket is stored for safe keeping in the GACA records system in accordance with established GACA processes.
- (c) The GACA utilizes a document checklist to ensure that all relevant certification documents are contained in the project docket. See Appendix 12 for more details.

6.5.5 Data retention:

- (a) The GACA is to keep an airworthiness engineering project file containing, at the minimum, the records showing engineering decisions or actions taken by the GACA and all associated documents.
- (b) The Organization is to keep all of the descriptive data, certification data and required operating data developed as part of Phase 2.
- (c) These data records are permanent and may not be destroyed. They must be kept until the aircraft is retired from service. The data must be made available to the GACA when requested during regulatory activities (e.g., audit, design review). The data may be kept as hard copies or electronically.

6.6 Post Certification Activities

(a) Further changes to the Approved Data:

- (1) Any further changes to the Approved Data after the GACA STC has been issued must be assessed as a new alteration. If the change is classified as minor, then the new alteration must be done in accordance with GACA acceptable data.
- (2) If the change is classified as major and the Organization is the GACA STC holder, then an amended GACA STC will be issued and refer to the new data. The same GACA STC process is to be used to get an amended GACA STC, although due regards and credits is to be given for all previous applicable submissions.
- (3) If the change is classified as major and the Organization is not the GACA STC holder, then a new GACA STC is required, using the full GACA STC process.

(b) Transfer of an STC:

Refer to FAA AC 21-40() for details.



7 CHAPTER 7: GACA REPAIR DESIGN APPROVAL (RDA) PROCEDURES

7.1 General

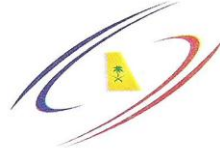
The GACA RDA is the instrument used to approve major repairs. The GACA RDA process essentially follows the same steps as the GACA STC process. Accordingly, the same kind of documentation for major repairs is to be presented as for major alterations. Therefore, all the relevant guidelines provided in chapter 6 are also to be used for a GACA RDA, replacing the words "alteration" and "STC" by "repair" and "RDA" respectively. There are a few specific provisions for the RDA process and they are indicated in the paragraphs below in this chapter.

7.2 Specific provisions for the GACA RDA process

- (a) There will not be a number assigned to the RDA the same way there is one for the STC. However, a project authorization number is still to be issued and used to track the project.
- (b) For the basis of certification, the regulatory basis is not required to be the amendment in effect at the time of the application, but rather the amendment in the original basis of certification. Operational requirements may impose additional requirements, such as DTA of Part 26. These requirements should also be complied with.
- (c) It is understood that in most cases the need will be minimized for GACA test witnessing and approval of the AFMS. Regardless, the need for these activities or documents must be assessed by the Organization and reviewed by the GACA.
- (d) It is very possible that Airworthiness Limitations will result as a consequence of the major repair (e.g., additional structural inspection requirements).
- (e) In addition to the information identified in paragraph 5.2, Block 8 of the GACA form 8320-1 is also to identify any limitations or conditions related to the major repair, as well as the certification basis used if different than the one used for the type certificate.
- (f) Of course, paragraph 6.5.3, STC issuance, is never applicable to GACA RDAs. Instead, paragraph below describes the particular steps for the recording of the GACA RDA that are to be used.
- (g) Repairs affecting Fatigue Critical Structure may be subject to a three stage approval process as described in FAA AC 120-93() appendix 5.

7.3 Issuance of the GACA RDA

- (a) All GACA RDA projects must be recommended for approval by a GACA Certification Project Manager. Once the Certification Project Manager responsible for the project has reviewed all the certification data and is satisfied that compliance has been shown against all the applicable requirements for the project, he will write a memorandum to the Director of Airworthiness. The recommendation for approval should indicate that the major repair has been found to comply with all applicable



airworthiness requirements. For projects involving more than one engineering discipline it is important that the airworthiness engineer responsible for the project has consulted with the appropriate airworthiness engineers in all affected engineering disciplines.

- (b) The RDA is a GACA statement and signature by the GACA authorized individual in block 3 of the same GACA form 8320-1 that is being used to record the major repair and return that aircraft to service. An example of an RDA is presented at Appendix 10.
- (c) The Organization is first to complete blocks 1, 2, 4, 5, 6 and 8 of the GACA form 8320-1. It is to enter the GACA project number in both blocks 3 and block 8 (see appendix 10) to ensure traceability when the two-sided GACA form 8320-1 is photocopied or faxed. It is also to ensure that both the descriptive and certification data (including GACA forms 8110-3) is listed in block 8 and is in agreement (including revision level). A disagreement between the two that constitutes a major deviation results in unapproved data that must go through the approval process again. A disagreement between the two that constitutes a minor deviation must be identified and briefly justified in block 8. Such a minor deviation must be performed in accordance with Acceptable Data.
- (d) Then, the Organization is to send a copy by facsimile or email it to the GACA. The GACA will stamp and sign block 3 after it is satisfied that blocks 8 and 6 have been properly filled out and that the aircraft is in compliance with all applicable regulations. This copy with the original GACA stamp and signature will then be sent back by mail to the Organization for its aircraft records, although a copy can be sent back by facsimile or email in advance. The GACA will also keep a copy of the RDA in its aircraft file.
- (e) After, and only after, the Organization has received the original or the facsimile copy of the RDA can it sign block 7 and return the aircraft to service as per chapter 5. It is acceptable to the GACA for the aircraft to be returned to service on the basis of a facsimile copy of the GACA form 8320-1 but the original is to be inserted in the aircraft file upon receipt; it is not necessary to sign off block 7 on the original if the aircraft was released by signing block 7 of the facsimile copy.



8 CHAPTER 8: FOREIGN INSTALLATION DATA APPROVALS USING AN AIRCRAFT REGISTERED IN THE KSA AS THE PROTOTYPE

8.1 General

- (a) The provisions in chapter 4 address existing foreign approvals (e.g. an FAA STC that has already been issued). However, foreign CAAs periodically initiate projects for STC (or equivalent foreign installation data approvals) which use, as the prototype, an aircraft that is not on their registry. When such an aircraft is registered in the KSA, the provisions herein apply.

If the project concerns an FAA STC, the procedures described in this chapter apply.

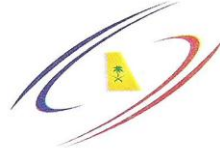
- (b) If the project is initiated by an EASA DOA, the EASA STC validation procedure detailed in the GACA/EASA working arrangement will be used along with paragraphs 8.3 – 8.5 of this Chapter as applicable.
- (c) The provisions of this chapter do not apply to projects on aircraft that are to be imported into the KSA but that are not yet registered in the KSA. For importation requirements, see AG-3.

8.2 Procedure for an FAA STC project

- (a) The GACA philosophy regarding FAA STC projects using an aircraft registered in the KSA is to minimize its involvement in the STC process. However, because of its responsibility as the CAA of the State of Registry for the aircraft being used as the prototype, the GACA must understand the nature of the alteration and might therefore need to participate in some of the activities of the FAA STC process to the extent required to secure that understanding on a case-by-case basis. This could include participation in meetings, requests for clarifications following review of design or certification documents, and participation in certification inspections and tests as an observer.
- (b) It is to note that the GACA cost recovery policies and procedures also apply for the FAA STC activities for which the GACA staff must travel. The Organization – not the FAA STC applicant - will be responsible to the GACA for the expenses and charges, and associated terms and conditions, as detailed in appendix 4.
- (c) As a minimum, the activities described in the following paragraphs will involve the GACA. This information below assumes that the FAA will follow its process described in FAAO 8110.4() and AC 21-40().

8.2.1 Notification by the Organization

The Organization should notify the GACA as soon as possible of their intent to work with the FAA for an FAA STC using an aircraft registered in the KSA as a prototype. Early notification will allow the GACA to plan properly and prevent the Organization



expending resources on an FAA STC project that, for some reason, the GACA concludes that it cannot support.

Note 8.1: Only GACA Approved Repair Station Facilities may perform actual work on Saudi registered aircraft. Refer to GACA AG-5.

8.2.2 Notification by the FAA

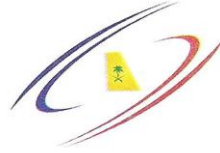
The FAA STC process using foreign registered aircraft as prototypes requires the FAA to officially advise the CAA of the State of Registry of the up-coming project and seek concurrence. Therefore, the manager of the FAA ACO concerned will send such a notification in writing to the GACA Director of Airworthiness, normally during the FAA undue burden process before the actual FAA STC project is officially initiated. The FAA notification will usually contain the following information:

- (1) FAA STC applicant name and normal place of business;
- (2) Brief description of the alteration project;
- (3) Aircraft type, serial number and KSA registration marks;
- (4) Organization that will be responsible for performing the alteration on the aircraft;
- (5) Location of the aircraft during the FAA STC project;
- (6) Starting date and duration of the FAA STC project;
- (7) Whether flight testing will be conducted;
- (8) Concurrent activities on the aircraft;
- (9) Request for GACA concurrence for the use an aircraft registered in the KSA;
- (10) Request for GACA concurrence for the use of FAA Designees if applicable. Also, identification of FAA Designees that are also employed by the FAA STC applicant to allow the GACA to better identify potential conflicts of interest;
- (11) Request for any specific information required in support of the FAA undue burden process;
- (12) Invitation for GACA participation; and
- (13) Identification of the FAA ACO project manager, including their contact coordinates.

8.2.3 GACA response to the FAA notification

The GACA will respond to the FAA notification in a timely manner so as to not delay the FAA undue burden process and subsequent FAA STC project. As a minimum, the GACA response will contain the following information:

- (1) Responses to the FAA requests;
- (2) Identification of any additional requirements;
- (3) Request for copies of specific design and certification documents as they become available (i.e., formally submitted to or by the FAA). As a minimum, these will consist in the certification plan (including schedule) and, if applicable, any TIA, exemptions, special conditions and/or Issue Papers;



- (4) Emphasize on the criticality of timely STC issuance if the prototype aircraft is to immediately be used for revenue service after the certification inspection and testing; and
- (5) Identification of the GACA Certification Project Manager for the project, including telephone number, fax number and e-mail address.

8.2.4 FAA STC Project Initiation Meeting

Normally, a project initiation meeting will take place early in the project. The GACA Certification Project Manager will attend this meeting. Attendance to subsequent meetings is likely to be limited to critical design review meetings, as decided on a case-by-case basis.

8.3 Performance of work on the aircraft

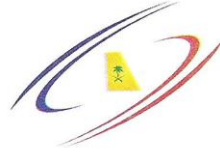
Only a GACA approved repair station is permitted to work on a Saudi registered aircraft for the incorporation of any major alteration or repair.

8.4 Flight Testing

- (a) If the foreign certificate projects includes flight testing as means of compliance a GACA Special Airworthiness Certificate – Experimental, must be issued because the GACA standard Airworthiness Certificate is not valid during the certification process. In these situations the GACA must get involved because only it, as the CAA of the State of Registry, can legally issue that Special Airworthiness Certificate.
- (b) The procedure to request and issue a GACA Special Airworthiness Certificate – Experimental, is as per paragraph 6.3.4. The request and the supporting documents (including for FAA STC projects the FAA Type Inspection Authorization) and the risk assessment are to be submitted to the GACA by the Organization in conjunction with the aircraft owner. After satisfactory review, the GACA will issue the GACA Special Airworthiness Certificate – Experimental after which the test flight(s) may proceed.
- (c) Note that all non-GACA flight test pilots who will fly the Saudi registered aircraft for compliance flight testing must hold a GACA flight crew license.
- (d) Note that if the flight testing takes place outside of the KSA, the Special Airworthiness Certificate must be validated before flight by the CAA of the territory over which the aircraft will fly. A special permit will be required for flying over other countries.

8.5 Return of aircraft to service prior to foreign STC issuance

- (a) If the Organization wishes to return the aircraft to service prior to the issuance of the foreign STC, the Organization may use one of the following options:
 - (1) Return the aircraft to its original configuration, exactly as it was prior to the foreign STC project;



(2) Receive temporary authorization from the GACA to release the aircraft to service pending the foreign STC issuance. In order to receive temporary GACA authorization the Organization/ the CAA must show to the GACA that compliance has been found with all applicable design requirements. Any foreign STC project where the foreign CAA has retained findings of compliance for design requirements other than FAR XX.1529 [Instructions for Continued Airworthiness] and XX.1581 [Aircraft Flight Manual] will limit the feasibility of this option. The following documents must be provided to the GACA:

- (i). STC compliance checklist showing all applicable design requirements and the authority to make the findings of compliance for each;
- (ii). Applicable Airworthiness Limitations; and
- (iii). Applicable AFMS.

GACA will review the documents and, if satisfied, will issue a letter to the Organization providing provisional approval of the alteration data and allowing the aircraft to be returned to service. Normally, the GACA will request that the foreign STC applicant obtain a letter from their CAA to formally:

- (i). specify the reference, including proper revision level, to the top document or drawing defining the alteration;
- (ii). state that compliance has been found against all applicable regulations (design requirements); and
- (iii). state that only administrative actions are required on their part to actually issue the foreign STC itself.

(3) Deactivate the system but leave the provisions installed until the foreign STC is issued. In this situation the GACA will issue a letter of authorization to allow the aircraft to be returned to service with the provisions installed and the system deactivated. In order for GACA to issue a letter of authorization, the Organization must submit the following documents to GACA:

- (i). the certification plan and checklist showing all applicable design requirements and outlining any designees authority to make the findings of compliance
- (ii). deactivation instructions approved by the relevant foreign designees
- (iii). GACA form 8130-9 signed by the authorized person in the Organization and listing all the installation and deactivation data
- (iv). Airworthiness Limitations (if any); and
- (v). AFMS.

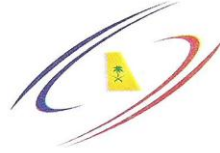
(b) To help alleviate delays in the issuance of the foreign STC, the Organization and the foreign STC applicant should ensure that adequate milestones (including early submission of certification data by the foreign STC applicant to the foreign CAA) are



included in the schedule contained in the certification plan, and respected by all stakeholders.



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9 CHAPTER 9: CONTINUED AIRWORTHINESS

9.1 Responsibilities

The responsibility for continued airworthiness for alterations and repairs approved by way of GACA STC or RDA rests with the Organization that was granted the STC or RDA, and to the aircraft owner/operator, as follows:

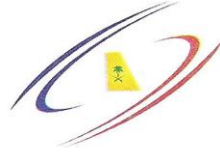
- (a) Report deficiencies as per GACA/FAR 21.3 or GACA/FAR 121.703, 121.704, 125.409, 125.410, 135.415, 135.416, 145.63, 145.79;
- (b) Correct deficiencies as per GACA/FAR 21.99 and GACA/FAR 91.403;
- (c) Develop and maintain instructions for continued airworthiness as per FAAO 8110.54A;
- (d) Maintain the aircraft in airworthy conditions as per GACA/FAR 91.403;
- (e) Perform maintenance and alteration in accordance with GACA/FAR Parts 43 and 91 as required by GACA/FAR 21.181;
- (f) Keep records as per GACA/FAR Parts 43, 91, 121, 125 and 135; and
- (g) Allow GACA inspections as per GACA/FAR 21.49, 21.181, 119.59, 125.45 and 145.23

9.2 Reporting Format

GACA form 8330-2, Malfunction or Defect Report can be used to report these conditions, however, the GACA will accept any format of form provided that the required information contained within GACA form 8330-2 is provided. Air Carriers (GACA/FARs 121 and 135) report to the GACA IAW 121.703, 121.704, 135.415 and 135.416. GACA/FAR Part 125 holder reports IAW 125.409 and 125.410.



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10 CHAPTER 10: APPENDICES



10.1 Appendix 1 - Related Forms

10.1.1 GACA Form 201 Application and/or Renewal for Airworthiness Certificate

السلامة والتراخيص الاقتصادية Safety & Economic Regulation		الهيئة العامة للطيران المدني General Authority of Civil Aviation	
APPLICATION FOR ISSUE / RENEWAL OF AIRWORTHINESS CERTIFICATE		INSTRUCTIONS <i>Print or type. Submit original only to an authorized GACA Representative. If additional space is required use an attachment.</i>	
I. AIRCRAFT DESCRIPTION			
1. REGISTRATION MARK:	2. AIRCRAFT BUILDER'S NAME: (Make)	3. AIRCRAFT MODEL DESIGNATION:	4. YR MFG: 5. GACA CODING:
8. AIRCRAFT SERIAL NO.:	7. ENGINE BUILDER'S NAME: (Make)	8. ENGINE MODEL DESIGNATION:	9. APU MAKE/MODEL:
10. NUMBER OF ENGINES: (Quantity)	11. PROPELLER BUILDER'S NAME: (Make)	12. PROPELLER MODEL DESIGNATION:	13. AIRCRAFT IS: [] NEW [] USED
II. CERTIFICATION REQUESTED			
APPLICATION IS HEREBY MADE FOR: (Check applicable items)			
STANDARD AIRWORTHINESS CERTIFICATE: (Indicate category) [] Normal [] Utility [] Acrobatic [] Transport [] Commuter [] Balloon [] Other			
SPECIAL AIRWORTHINESS CERTIFICATE: (Check appropriate items)			
LIMITED [] PRIMARY [] LIGHT SPORT (Indicate Class) [] Airplane [] Power Parachute [] Weight Shift-Control [] Glider [] Lighter than Air			
PROVISIONAL AW CERTIFICATE (Indicate Class)		CLASS I CLASS II	
RESTRICTED (Indicate operation(s) to be conducted)		AGRICULTURE & PEST CONTROL AERIAL SURVEYING AERIAL ADVERTISING FOREST: (wild life conservation) PATROLLING WEATHER CONTROL OTHER (Specify)	
EXPERIMENTAL (Indicate operation(s) to be conducted)		RESEARCH & DEVELOPMENT EXHIBITION RACING CREW TRAINING MKT. SURVEY AMATEUR BUILT TO SHOW COMPLIANCE WITH GACA REGULATIONS OPERATING, KIT BUILT OPERATING LIGHT SPORT Existing aircraft without an airworthiness Certificate and do not meet GACAR 103.1 Operating Light sport, Kit Built Operating Light Sport, issued special Airworthiness Certificate under 21.190 UN MANNED AIRCRAFT Market Survey Crew Training Research and Development	
MULTIPLE AIRWORTHINESS CERTIFICATE: (Check appropriate "Restricted Operation" and "Standard" or "Limited" as applicable above)			
III. OWNER'S CERTIFICATION			
A. REGISTERED OWNER: (As shown on Certificate of Aircraft Registration)		IF DEALER, CHECK HERE <input type="checkbox"/>	
NAME:		ADDRESS:	
Email:			
B. AIRCRAFT CERTIFICATION BASIS: (Check applicable blocks and complete items as indicated)			
AIRCRAFT SPECIFICATION OR TYPE CERTIFICATE DATA SHEET: (Give No. and revision No.)		AIRWORTHINESS DIRECTIVES: (Check if all applicable AD's complied with and give latest AD number)	
AIRCRAFT NOISE CERTIFICATION:		SUPPLEMENTAL TYPE CERTIFICATE: (List number of each STC incorporated)	
C. AIRCRAFT OPERATION AND MAINTENANCE RECORDS:			
CHECK IF RECORDS ARE IN COMPLIANCE WITH GACARs:		TOTAL AIRFRAME HOURS (Enter for used aircraft only)	EXPERIMENTAL ONLY: (Enter hours flown since last certificate issued or renewed)
D. CERTIFICATION - I hereby certify that I am the owner (or his agent) of the aircraft described above, that the aircraft is registered in the Kingdom of Saudi Arabia in accordance with GACA Regulations, and that the aircraft has been inspected and is airworthy and eligible for the airworthiness certificate requested:			
DATE OF APPLICATION:	TITLE:	NAME: (Print or type)	SIGNATURE:
IV. INSPECTION AGENCY VERIFICATION			
A. THE AIRCRAFT DESCRIBED ABOVE HAS BEEN INSPECTED AND FOUND AIRWORTHY BY:			
GACA CERTIFICATE HOLDER: (Give Certificate No.)	CERTIFICATED MECHANIC: (Give Certificate No.)	CERTIFICATED REPAIR STATION: (Give Certificate No.)	
AIRCRAFT MANUFACTURER: (Give name of firm.)			
DATE:	TITLE:	NAME: (Print or type)	SIGNATURE:
V. GACA REPRESENTATIVE CERTIFICATION			
I find that the aircraft described in Section I meets the requirements for the certification requests:			
DATE:	TITLE:	NAME:	SIGNATURE:



10.1.2 GACA Form 1001 Petition for Regulatory Exemption



PETITION FOR REGULATORY EXEMPTION		
INSTRUCTIONS: <i>Print or type all entries except signature.</i>		
1. Name & Organization:	2. Address:	
3. Telephone Number:	4. Fax No.:	
5. Affected Certificate or License No.:	6. Email:	
7. Identify the specific regulation(s) which you are seeking to be exempted from:		
8. Identify the extent of relief which you are seeking:		
9. Specify the duration which you need the exemption for:		
10. Explain reason(s) for the requested exemption: <i>(Please use additional sheets if necessary)</i>		
11. Explain the reasons why granting the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to that provided by the rule from which you seek the exemption: <i>Please use additional sheets if necessary.</i>		
12. Do you want to exercise the privileges of your exemption outside the kingdom of Saudi Arabia	YES	NO
13. If you want to exercise the privileges of your exemption outside the Kingdom of Saudi Arabia, what are the reason(s) you need to do so: <i>Please use additional sheets if necessary.</i>		
14. Explain the reasons why granting your request would be in the best interest of the Kingdom of Saudi Arabia – that is, how would it benefit the public as a whole: <i>Please use additional sheets if necessary.</i>		
15. Any additional information, views or arguments available to support your request: <i>Please use additional sheets if necessary.</i>		
APPLICANT:		
16. Name and Title:	17. Date	18. Signature



10.1.4 GACA Form 8110-1 Type Inspection Authorization (TIA)

السلامة والتراخيص الاقتصادية Safety & Economic Regulation		الهيئة العامة للطيران المدني General Authority of Civil Aviation						
TYPE INSPECTION AUTHORIZATION			PAGE ____ OF ____ PAGES					
			PROJECT NO.:					
			DATE:					
NAME OF APPLICANT:		ADDRESS :						
1. INSPECTION AUTHORIZATION FOR								
AIRPLANE	OTHER (specify)	NEW MODEL: (Give model no.)						
ENGINE		ALTERED MODEL: (Give name of original Manu. and Mod. No)						
PROPELLER		ORIGINAL T.C. DATA SHEET NO.:						
ROTORCRAFT								
2. CERTIFICATION BASIS:								
3. CATEGORY - FOR AIRCRAFT ONLY (Check all applicable items)								
NORMAL	UTILITY	ACROBATIC	TRANSPORT					
			RESTRICTED					
OTHER (specify)								
4. DESCRIPTION OF ALTERATION:								
5. DESIGN SPEEDS - KNOTS/MPH: SEE PAGE		6. MAXIMUM MACH NO (DESIGN): SEE PAGE						
7. DESIGN WEIGHTS: SEE PAGE		8. MAXIMUM OPERATING ALT: (Feet) SEE PAGE						
9. MAXIMUM CABIN DIFF: (psi) SEE PAGE		10. CG. LIMITS: SEE PAGE						
11. CARGO AND BAGGAGE COMPARTMENTS - LOCATION AND MAXIMUM LOADS: SEE PAGE		12. STRUCTURAL/MANEUVER LIMITS: SEE PAGE						
13. OPERATING LIMITATIONS								
ENGINE MAKE AND MODEL: (FOR TURBINE ENGINE SEE PAGE ____)		ENGINE DATA SHEET NO.:						
ITEM	TAKEOFF (specify) (minutes)	LOW RATIO SUPERCHARGER		HIGH RATIO SUPERCHARGER		Max. Allowable Temp.		° F
		SEA LEVEL	ALT HEIGHT feet	ALT (MIN.) feet	ALT (MAX.) feet	Cylinder Head (or coolant outlet)	Washer	
IN Hg						Cylinder Base	Bayonet	
RPM						Oil Inlet		
HP						Minimum Carburetor Heat Rise at %MC Power		
14. PROPELLER								
MAKE AND MODEL:				DATA SHEET NO.:		DIAMETER:		
HUB MODEL NO.:		BLADE MODEL NO.:		LIMITATIONS: SEE PAGE				
15. ROTORCRAFT			MAXIMUM	MINIMUM	16. INSPECTION REPORT			
POWER ON ROTOR LIMITS - RPM					100 HOUR INSPECTION COMPLETED			YES
POWER OFF ROTOR LIMITS - RPM								NO
17. EQUIPMENT LIST				18. TYPE INSPECTION REPORT				
IS EQUIPMENT LIST CORRECT AS TO WEIGHT AND ARM OF EACH ITEM?				COMPLETE APPLICABLE PORTIONS OF TYPE INSPECTION REPORT, PART 1				
				COMPLETE APPLICABLE PORTIONS OF TYPE INSPECTION REPORT, PART 2				
EQUIPMENT	YES	NO	MFGR. REPORT NO.	SEE ATTACHED PAGES FOR SPECIAL TESTS (AIRWORTHINESS/FLT. OPERATIONS)				
LIST ATTACHED				SEE ATTACHED PAGES FOR INSTRUCTIONS				
ORIGINATED BY:								
PROJECT MANAGER:		AIRWORTHINESS	INITIALS	FLIGHT OPERATIONS	INITIALS	INITIALS		
		Engineering						
		Inspection						
DATE RISK ASSESSMENT COMPLETED:				AIRWORTHINESS/ FLT. OPERATIONS INITIALS:				
DATE:		TITLE:			APPROVAL SIGNATURE:			
		General Manager - Aviation Stds. Standards						

PAGE 1

PAGE 2

TYPE INSPECTION AUTHORIZATION
(NAME OF PROJECT)

PROJECT NUMBER: XXXXXXXX
PAGE XX OF XX



10.1.4 GACA Form 8110-1 Type Inspection Authorization (TIA) Continuation Sheet

GENERAL

General description of the project goes here

TIA RISK ASSESSMENT

The significant risk factors have been identified and appropriate procedures/limitations have been integrated to bring the tests required in this TIA to an acceptable level of risk. A risk assessment has been completed and attached.

Flight Operations Section:

Signature Date

Airworthiness Section:

Signature Date

NOTE:

The attached plan shows suggested approaches for documenting that a risk assessment has been accomplished in accordance with FAA Order 4040.26 for each project prior to the TIA being finalized and signed.

It is anticipated the required risk assessment will be accomplished in a formal meeting with all project team members present and led by the flight test team.

At the very least the risk assessment should encompass the following five items:

1. Identify Hazards
2. Assess Hazards
3. Make Risk Decisions
4. Implement Controls
5. Supervise

These five steps should be adjusted to reflect the scope and complexity of the flight test program while at the same time assuring the safety of the flight test crew and the aircraft as well as property on the ground. The process must be in-depth enough to ensure overall safety of the testing, but not so onerous as to preclude timely, efficient use of the GACA-S&ER flight crew's time.

Ultimately, with the intent of providing for management cognizance of this risk assessment requirement, the Project Manager generating the TIA will be required to ensure that appropriate block(s) of TIA are completed. The second page is suggested for the purpose of documenting significant hazards and that the procedures or other controls have been incorporated to mitigate those hazards to an acceptable level of risk.

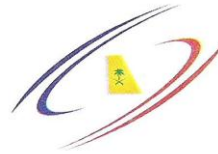
A risk assessment example is also attached.

PAGE 3

TYPE INSPECTION AUTHORIZATION
(NAME OF PROJECT)

PROJECT NUMBER: XXXXXXXX
PAGE XX OF XX

TIA OPERATING LIMITATIONS



10.1.4 GACA Form 8110-1 Type Inspection Authorization (TIA) Continuation Sheet

As required by the TIA testing and the modification or aircraft involved.

Block 18 (Part 1) GACA-S&ER AIRWORTHINESS INSPECTION (Ground Inspection)

Point of contact at conformity site: (First/last name and company affiliation)

Phone number of point of contact: (For person shown above at conformity site)

Location of aircraft/conformity site: (Physical location/address of conformity aircraft)

DER authorized to disposition unsatisfactory conditions (if used): First/last name of DER authorized by the GACA-S&ER with whom the GACA Project Manager can coordinate to resolve unsatisfactory conditions.

Aircraft Make/Model/Serial Number/Registration Number: (List identification information for the test aircraft, if not shown elsewhere in the TIA. Example: Boeing 737-800, S/N 1278, Reg. # HZ-123)

The Airworthiness Section Inspection shall accomplish the following:

A Special Airworthiness Certificate (Experimental): is required is not required.

1. Obtain a completed Statement of Conformity, GACA-S&ER Form 8130-9, from the applicant prior to conducting the conformity inspection. The Statement of Conformity must include certification of compliance with GACA/FAR § 21.33(a).
2. Issue a Special Airworthiness Certificate (Experimental) for the purpose of showing compliance with regulations. Conduct airworthiness certification according to FAA Orders 8130.2 and 8130.29, if applicable. Verify the aircraft is in compliance with all applicable Airworthiness Directives, and that the aircraft is safe to conduct the subject flight tests. (Note: include this instruction only if flight testing is required.)
3. Verify that the weight and balance report for the aircraft is available and accurate and reflects the installation/ modification. Obtain a copy of the current weight and balance report for the Supplemental Type Inspection Report (STIR)/Type Inspection Report (TIR), as applicable. (Note: a copy of the weight and balance report may not be necessary depending on the extent of the installation or modification.)
4. Conduct an inspection of the (insert: installation/aircraft configuration/test set up/other to be verified), in accordance with (insert: type design document), revision (insert: revision level), dated (insert: revision date). Example: "Conduct an installation inspection of the cabin air filtration system on the airplane to verify its installation is in accordance with Jet Aviation Master Drawing List (MDL) No. 13579, revision K, dated 10/13/04." (Note: part or assembly conformities as part of a TIA should be avoided, if possible. The ability to perform conformity after a part or assembly has been installed for a test flight will likely be impaired. These should be accomplished via Request for Conformity forms)
5. Add additional inspections/verifications as needed. List each inspection as a separately numbered instruction. Examples: 6. Verify the aircraft has no instrument or system requiring re-calibration or scheduled check. / 7. Verify the pitot-static system has been leak checked in accordance with Jet Aviation Document No. 98765, revision T, dated 1/13/04."
6. Complete a Supplemental Type Inspection Report, GACA-S&ER Form 8110-26 (or Type Inspection Report, GACA-S&ER Form 8110-5) and Conformity Inspection Verification Record, GACA-S&ER Form 8100-1. Record the Model, Part, Software Version, Hardware Version, Serial and TSO Numbers, as applicable, of all components being evaluated.
7. Obtain copies of GACA-S&ER Form 8130-3, Airworthiness Approval Tags, if applicable.
8. Conduct any other inspections deemed necessary.

PAGE 4

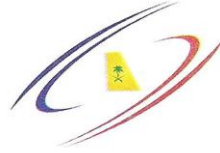
TYPE INSPECTION AUTHORIZATION
(NAME OF PROJECT)

PROJECT NUMBER: XXXXXXXX
PAGE XX OF XX

Block 18 (Part 2) GACA S&ER AIRWORTHINESS / FLIGHT OPERATIONS (Certification Ground Test and Certification Flight Test)

GACA Airworthiness Section Contact: _____ Tel: _____

GACA Flt. Ops. Section Contact: _____ Tel: _____



10.1.4 GACA Form 8110-1 Type Inspection Authorization (TIA) Continuation Sheet

A. The GACA-S&ER Airworthiness Section or delegated GACA DER _____, shall witness the following ground tests:

Identify the specific instructions for ground tests in the Ground Test Plan # _____, dated _____ to be witnessed.

B. The GACA-S&ER Flight Operations or delegated GACA DER Fit. Test Pilot _____, shall accomplish/Witness the following tests:

Identify the specific instructions for flight tests in Flight Test Plan Doc. # _____, dated _____ to be accomplished.

PAGE 5

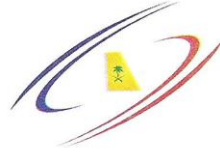
TYPE INSPECTION AUTHORIZATION
(NAME OF PROJECT)

PROJECT NUMBER: XXXXXXXX
PAGE XX OF XX

Block 18 (Special) GACA S&ER FLIGHT OPERATIONS / AIRWORTHINESS Operational and Maintenance Evaluation

The GACA S&ER FLIGHT OPERATIONS / AIRWORTHINESS shall accomplish the following:

Project No.: _____ Date: _____
Name of Applicant: _____
Project: *Installation of the* _____



10.1.4 GACA Form 8110-1 Type Inspection Authorization (TIA) Continuation Sheet

The GACA S&ER Flight Operations / Airworthiness Section(s) will accomplish certain tests in conjunction with this TIA. The test will evaluate and/or determine operational suitability, crew workload, crew training, M MEL impact, and any special or unique features of the installation or modification.

The GACA S&ER Flight Operations / Airworthiness Section(s) has/have identified the following special test set requirements for this TIA:

1. Test # 1
 - a.
 - b.
 - c.
 - d.
2. Test # 2
 - a.
 - b.
 - c.
 - d.
 - e.
3. Conduct any other tests deemed necessary.

NOTE: Applicant should plan an adequate amount of ground and/or flight time for the GACA S&ER Flight Operations / Airworthiness Sections to conduct the above tests and make appropriate findings. The GACA S&ER Flight Operations pilot may need to occupy a required flight crewmember seat on the aircraft to accomplish this evaluation.

Point of Contact:

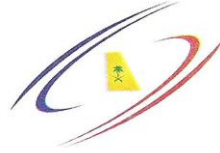
GACA Flt. Ops. Section: _____ Tel: _____

Fax: _____ Email: _____

GACA Airworthiness Section: _____ Tel: _____

Fax: _____ Email: _____

---- END ----



10.1.5 GACA Form 8110-2 STC Certificate



Supplemental Type Certificate

Number _____

This certificate issued to:

certifies that the change in type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part _____ of the GACAR.

Original Product---Type Certificate Number: _____

Make: _____

Model: _____

Description of Type Design Change:

Required Operating and Maintenance Data:

Limitations and Conditions:

Basis of Certification: See continuation sheet.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is established by the President of General Authority of Civil Aviation.

Date of application: _____

Date reissued: _____

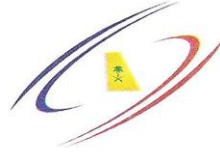
Date of issuance: _____

Date amended: _____

**By direction of the President
General Authority of Civil Aviation**

(Signature)

**Vice President
Safety and Economic Regulation**



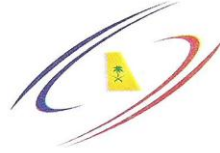
10.1.5 GACA Form 8110-2-1 STC Certificate Continuation Sheet

Supplemental Type Certificate
(Continuation Sheet)

Number _____

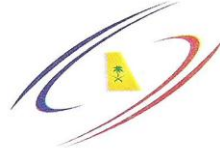
Basis of Certification:

This certificate may be transferred in accordance with GACAR 21.47
Page 2 of 2



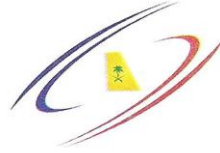
10.1.6 GACA Form 8110-3 Statement of Compliance

السلامة والترخيص الإقتصادي Safety & Economic Regulation		الهيئة العامة للطيران المدني General Authority of Civil Aviation	
STATEMENT OF COMPLIANCE WITH AIRWORTHINESS STANDARDS			1. DATE
AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
2. MAKE:	3. MODEL:	4. TYPE (Airplane, Radio, Helicopter, etc)	5. NAME OF APPLICANT
LIST OF DATA			
6. IDENTIFICATION		7. TITLE	
8. PURPOSE OF DATA:			
9. APPLICABLE REQUIREMENTS: (List specific section)			
10. CERTIFICATION: Under Authority vested by direction of the GACA-S&ER and in accordance with conditions and limitations of appointment under GACA Part 183, data listed above and on attached sheets numbered _____ have been submitted in accordance with established procedures and found to comply with applicable requirements of the GACA Regulations.			
I (We) Therefore:- <input type="checkbox"/> RECOMMEND APPROVAL OF THESE DATA <input type="checkbox"/> APPROVE THESE DATA			
11. SIGNATURES OF DER(S)		12. DESIGNATION NUMBER	13. CLASSIFICATION(S)



10.1.7 GACA Form 8110-12 Application for STC or RDA

السلامة والترخيص الإقتصادي Safety & Economic Regulation			الهيئة العامة للطيران المدني General Authority of Civil Aviation		
APPLICATION FOR SUPPLEMENTAL TYPE CERTIFICATE (STC) AND REPAIR DESIGN APPROVAL (RDA)					
1. NAME AND ADDRESS OF APPLICANT: Email:		2. APPLICATION MADE FOR: <input type="checkbox"/> SUPPLEMENTAL TYPE CERTIFICATE <input type="checkbox"/> REPAIR DESIGN APPROVAL		3. PRODUCT INVOLVED: <input type="checkbox"/> AIRCRAFT <input type="checkbox"/> ENGINE <input type="checkbox"/> PROPELLER	
4. MAKE:		5. MODEL:		6. ELIGIBLE SERIAL NUMBER(S):	
7. BRIEF DESCRIPTION OF MODIFICATION OR REPAIR:					
8. PROPOSED BASIS OF CERTIFICATION:			9. WILL GACA-DERe/DARs OR FOREIGN DELEGATED INDIVIDUALS BE INVOLVED? (Specify)		
10. CERTIFICATION – I certify that the above statements are true. I agree to advise the GACA-S&ER of any cancelled projects or charges in this project scope.					
SIGNATURE OF APPLICANT:			TITLE:		DATE:



10.1.8 GACA Form 8120-10 Request for Conformity Verification

السلامة والتراخيص الاقتصادية Safety & Economic Regulation		الهيئة العامة للطيران المدني General Authority of Civil Aviation	
REQUEST FOR CONFORMITY VERIFICATION			
TO: [] GACA AW Inspector [] DAR [] Foreign Civil Aviation Authority involved		ATTENTION:	
		PROJECT NO.:	
		DATE:	
TYPE OF CONFORMITY REQUESTED (Reference Paragraph 6.8.3 of Airworthiness Guide (AG) -7)			
TYPE		REASON CODE (S)	
<input type="checkbox"/> PART / ASSEMBLY CONFORMITY			
<input type="checkbox"/> PROCESS CONFORMITY			
<input type="checkbox"/> INSTALLATION CONFORMITY			
<input type="checkbox"/> CERTIFICATION TEST APPARATUS CONFORMITY			
<input type="checkbox"/> SOFTWARE			
A CONFORMITY VERIFICATION INSPECTION PERTAINING TO THE SUBJECT IS REQUESTED FOR THE FOLLOWING:			
Applicant: _____			
Company Name: _____			
Company Location: _____			

Time/Date Available: _____		[] Applicant Will Contact GACA-S&ER	
Description Of Item(S) To Be Inspected: _____			

Make / Model: _____		Quantity: _____	
Design Data: (With Revision / Date) _____			

Special Instructions: _____			

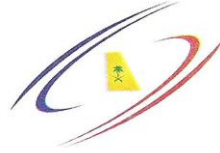
Contact: _____		Tel No.: _____ Fax No.: _____ Email: _____	
GACA Certification Project Manager _____		Tel No.: _____ Fax No.: _____	
Remarks: _____			

[] TIA ISSUED		[] TIA REPORTS ISSUED	
[] CONFORMITY VERIFICATION REPORTR EQUIRED		[] STATEMENT OF CONFORMITY REQUIRED	
NOTE: Please Return The Requested Items To:			




10.1.9 GACA Form 8130-7 Special Airworthiness Certificate

السلامة والتراخيص الاقتصادية Safety & Economic Regulation		الهيئة العامة للطيران المدني General Authority of Civil Aviation	
SPECIAL AIRWORTHINESS CERTIFICATE			
A	CATEGORY / DESIGNATION: <input type="checkbox"/> EXPERIMENTAL <input type="checkbox"/> SPECIAL FLIGHT PERMIT.		
	PURPOSE:		
B	OWNER / OPERATOR: (NAME AND ADDRESS, Including Email)		
C	FLIGHT: FROM:	TO:	
D	REGISTRATION: HZ-	SERIAL NO.:	
	MANUFACTURER/BUILDER:	MODEL:	
E	DATE OF ISSUANCE:	DATE OF EXPIRY:	
	OPERATING LIMITATIONS DATED _____ ARE PART OF THIS CERTIFICATE		
	DIRECTOR OF AIRWORTHINESS (GACA-S&ER):		
NOTE: 1) Any alteration, reproduction or misuse of this certificate may be punishable by a fine or imprisonment or both. 2) This certificate must be displayed in the aircraft in accordance with applicable GACARs.			
A	This airworthiness certificate is issued in accordance with GACARs. Experimental (21.191 / 21.193 / 91.305 / 91.319); Special Flight Permit (21.197 / 21.199)		
B	This airworthiness certificate authorizes the Owner / Operator to conduct the flight specified above. No person may operate the aircraft under this certificate; (1) Carrying persons or property for compensation or hire, and / or (2) Carrying persons not essential to the purpose of the flight.		
C	This airworthiness certificate certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to meet the requirements of the applicable GACARs.		
D	This airworthiness certificate certifies that as of the date of issuance, the aircraft to which issued has been inspected and found to meet the requirements of the applicable GACARs.		
E	This airworthiness certificate is effective for the duration as shown. No person may operate the aircraft; (1) Except in accordance with the applicable GACARs and in accordance with conditions and limitations which may be prescribed by the GACA as part of this certificate (Enter N/A if the limitations stated herein are adequate for the purpose to the flight). (2) Over any foreign country without the special permission of that country and GACA-S&ER.		



10.1.9 GACA Form 8130-7 Special Airworthiness Certificate Continuation Sheet



الهيئة العامة للطيران المدني
General Authority of Civil Aviation

SPECIAL AIRWORTHINESS CERTIFICATE

ATTACHMENT - 1

1. Issuing a Special Airworthiness Certificate in the experimental category.
Once an aircraft has been modified to introduce a change to the type design, the GACA-S&ER will issue the Special Airworthiness Certificate in the experimental category in order to permit flight testing. The GACA Repair Station (R/S) Q.A.Department/Chief Inspector will remove the Standard Airworthiness Certificate and forward it to GACA for subsequent reinstatement. Entries into the Aircraft Maintenance Records (logbook) as described in paragraphs (a) and (b) below will be made by the GACA R/S . These entries will help streamline the reinstatement of the Standard Airworthiness Certificate:

- (a) Explain in detail the reason for issuance of the Special Airworthiness Certificate (e.g. to perform flight testing in order to demonstrate compliance).
- (b) Provide all information to the GACA-S&ER that will help expedite reinstatement of the Standard Airworthiness Certificate (e.g., type of alteration performed).

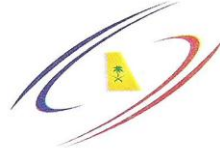
2. Reinstatement of the suspended Standard Airworthiness Certificate after flight testing has been completed and the aircraft either: (1) has been returned to its original configuration or (2) remains in its modified condition and the modification has been approved by the GACA-S&ER.

- (a) GACA-S&ER will require only the documentation and/or inspections that are necessary to confirm what has transpired since the aircraft was modified, up to the point of Standard Airworthiness Certificate reinstatement. These requirements apply unless the GACA-S&ER requires more in-depth inspection.
- (b) GACA R/S Q.A.Department/Chief Inspector will make an entry in the Aircraft Maintenance Records (logbook) thoroughly explaining what has transpired. The following statements are to be entered, along with any other pertinent information:
 - (i) "Inspection for the reinstatement of the original Standard Airworthiness Certificate was performed based on all installations and modifications related to (enter STC number, or other form of project description), performed from (enter date the modification(s) was first installed) to (enter current date)";
 - (ii) "The aircraft conforms to the type design and is in a condition for safe operation"; and
 - (iii) "This certification process does not replace or change the due dates or times of scheduled inspection requirements" (e.g., annual or 100-hour inspections), if applicable.
- (c) Upon receiving a copy of the Aircraft Maintenance Records (logbook), GACA-S&ER will reinstate the suspended Standard Airworthiness Certificate by notifying GACA R/S.



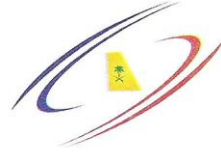
10.1.10 GACA Form 8130-9, Statement of Conformity

السلامة والتراخيص الاقتصادية Safety & Economic Regulation		الهيئة العامة للطيران المدني General Authority of Civil Aviation	
STATEMENT OF CONFORMITY			
SECTION I - AIRCRAFT			
1- MAKE:		2- MODEL:	
3- SERIAL NO.:		4- REGISTRATION NO.:	
SECTION II - ENGINE			
1- MAKE:		2- MODEL:	
SERIAL NO.:			
SECTION III - PROPELLER			
1- MAKE:		2- HUB MODEL:	
3- BLADE MODEL:		4- HUB SERIAL NO.:	
5- BLADE SERIAL NO.:			
SECTION IV - CERTIFICATION			
I HEREBY CERTIFY THAT:			
<input type="checkbox"/> (A) I HAVE COMPLIED WITH SECTION 21.55 (a):			
<input type="checkbox"/> (B) THE AIRCRAFT DESCRIBED ABOVE, PRODUCED UNDER TYPE CERTIFICATE ONLY (GACAR 21 SUBPART F), CONFORMS TO ITS TYPE CERTIFICATE AND IS IN A CONDITION FOR SAFE OPERATION. THE AIRCRAFT WAS FLIGHT TESTED ON _____ (DATE)			
<input type="checkbox"/> (C) THE ENGINE OR PROPELLER DESCRIBED ABOVE, PRESENTED HEREWITH FOR TYPE CERTIFICATION, CONFORMS TO THE TYPE DESIGN THEREOF.			
<input type="checkbox"/> (D) THE ENGINE OR PROPELLER DESCRIBED ABOVE PRODUCED UNDER TYPE CERTIFICATE ONLY (GACAR 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 SUBJECT BY THE MANUFACTURER TO A FINAL OPERATIONAL TEST ON _____ (DATE)			
DEVIATIONS:			
CERTIFIER: Name:		Title:	Signature:
Organization:			Date:



10.1.11 GACA Form 8320-1, Major Repair and Alteration continuation sheet

NOTICE
Weight and balance or operating limitations changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure conformity with the applicable airworthiness requirement
8. DESCRIPTION OF WORK ACCOMPLISHED: <i>(Identify with aircraft registration mark, name of part repaired/altered, work accomplished, reference for approved data used and date work completed. If more space is required, attach additional sheet)</i>
ADDITIONAL SHEETS ATTACHED []



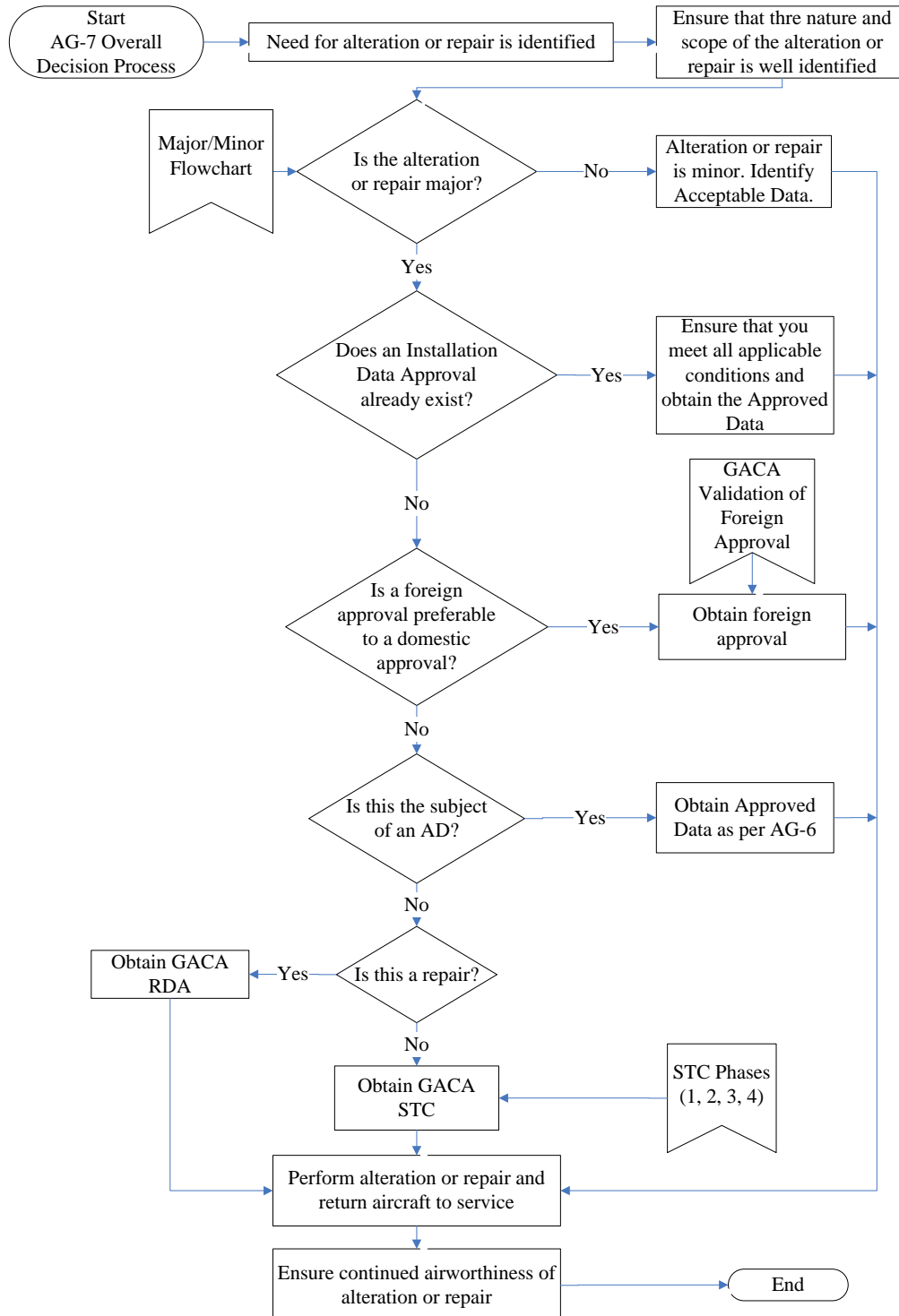
10.1.12 GACA Form 8330-2, Malfunction or Defect Report

السلامة والتراخيص الاقتصادية Safety & Economic Regulation		الهيئة العامة للطيران المدني General Authority of Civil Aviation								
1. REGISTRATION NO.: HZ-	MALFUNCTION OR SERVICE DEFECT REPORT			7. DATE SUBMITTED:	FOR GACA USE ONLY CONTROL NO.:					
2. AIRCRAFT				MAKE	MODEL	SERIAL NO.	8. COMMENTS: (Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)			
3. POWERPLANT										
4. PROPELLER										
5. SPECIFIC PART (of component) CAUSING TROUBLE										
PAERT NAME	PART NUMBER	SERIAL NUMBER	PART/DEFECT LOCATION							
6. APPLIANCE / COMPONENT (Assembly that includes part)				(Continue on reverse)						
COMP/APPL. NAME	MANUFACTURER	MODEL	SERIAL NO.	9. SUBMITTED BY:						
ATA CODE	PART TT	PART TSO	PART CONDITION	A AIRC	B OPER	C MECH	D AIR/TAXI	E MFG	F GACA	G OTHER



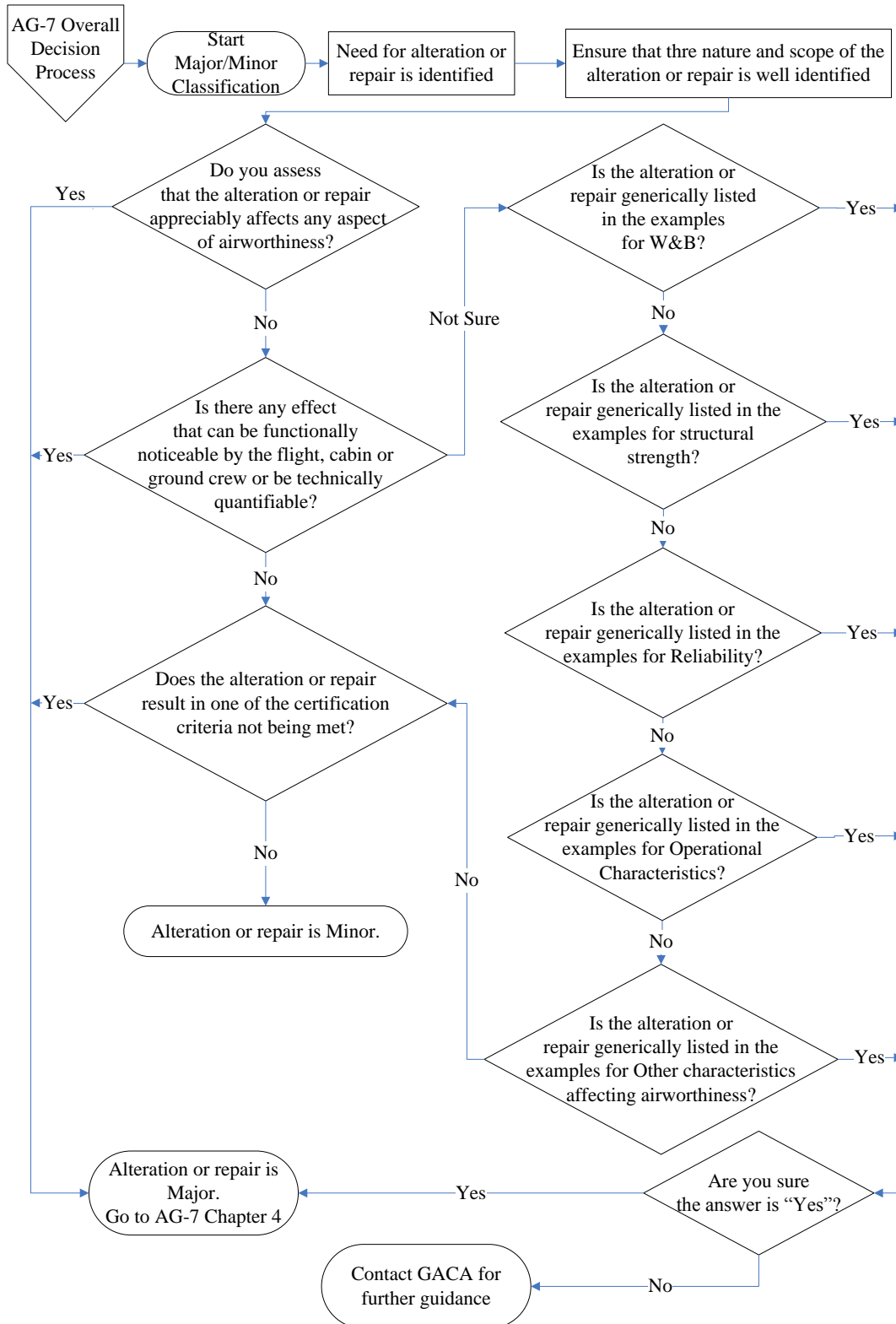
10.2 Appendix 2 – Flowcharts

10.2.1 AG-7 Overall Decision Process



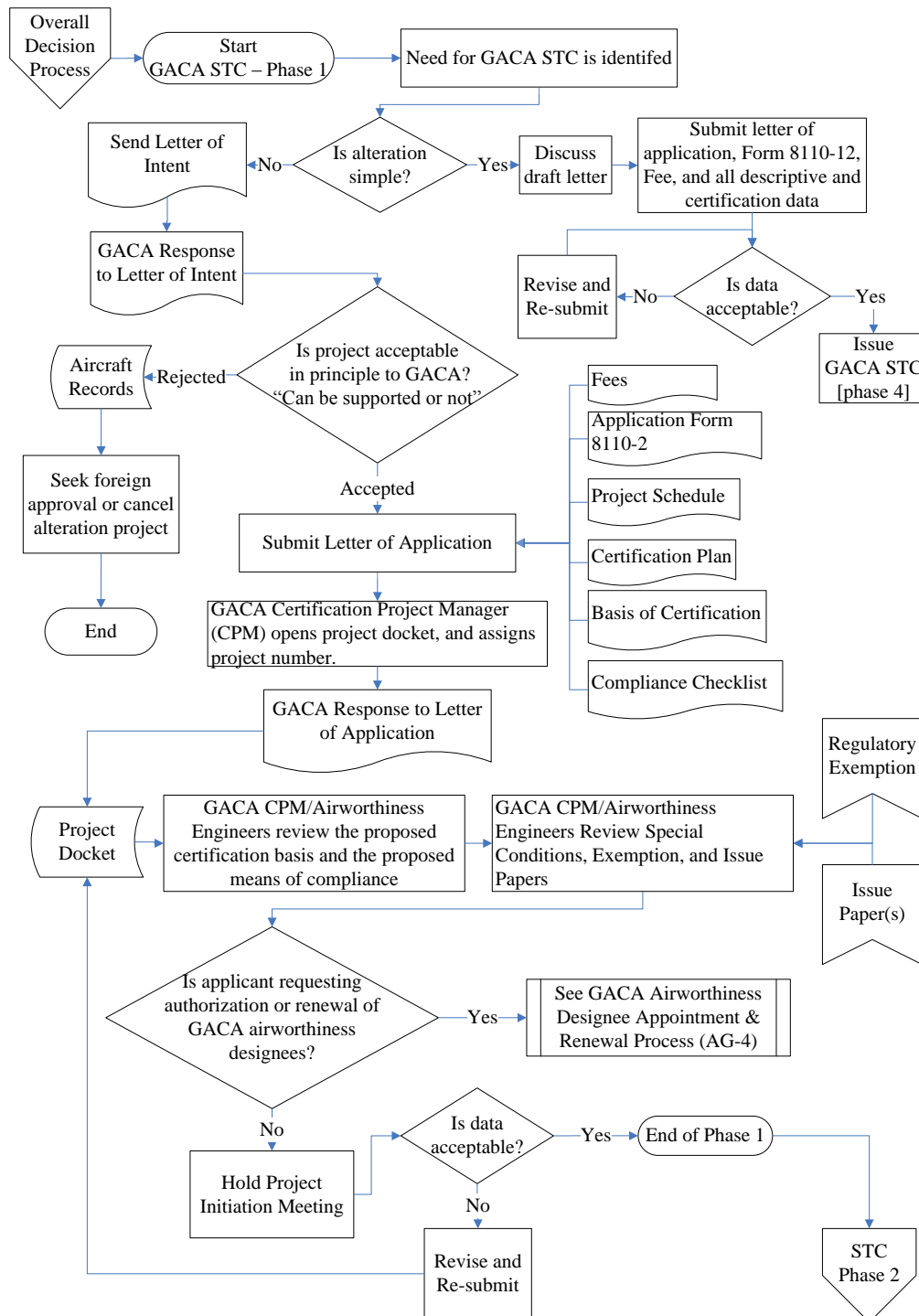


10.2.2 Major/Minor Classification



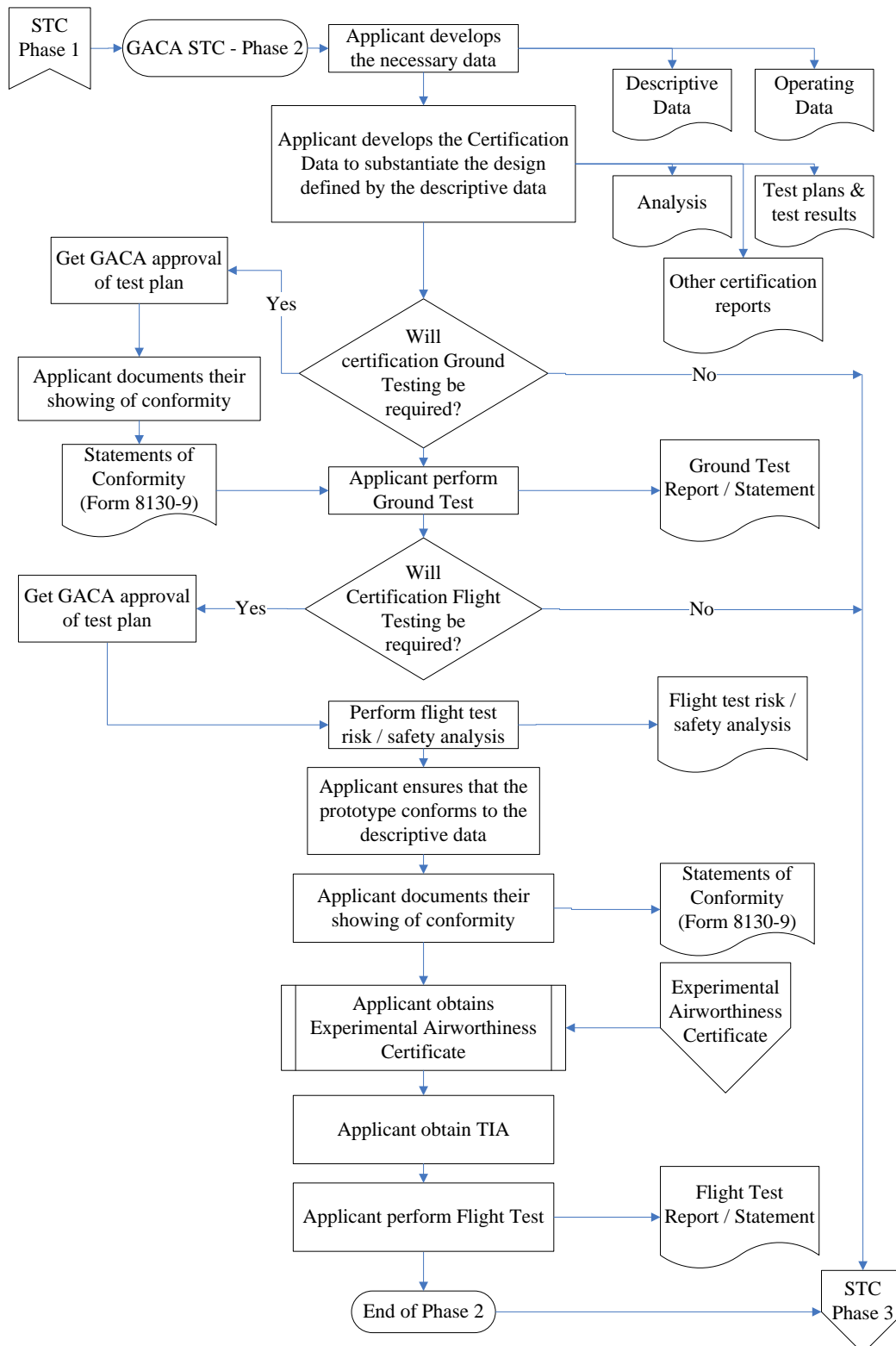


10.2.3 STC Process - Phase 1



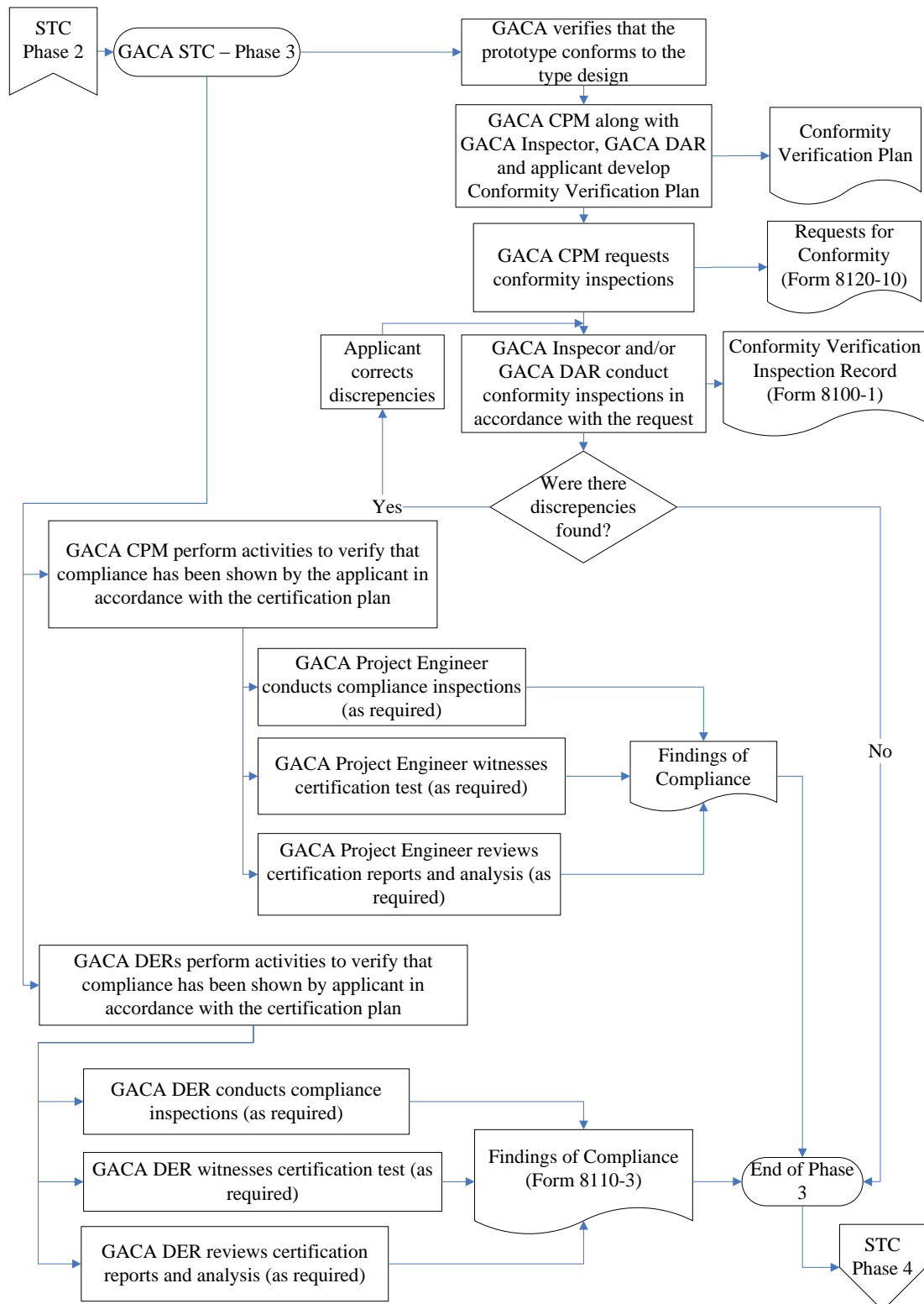


10.2.4 STC Process - Phase 2



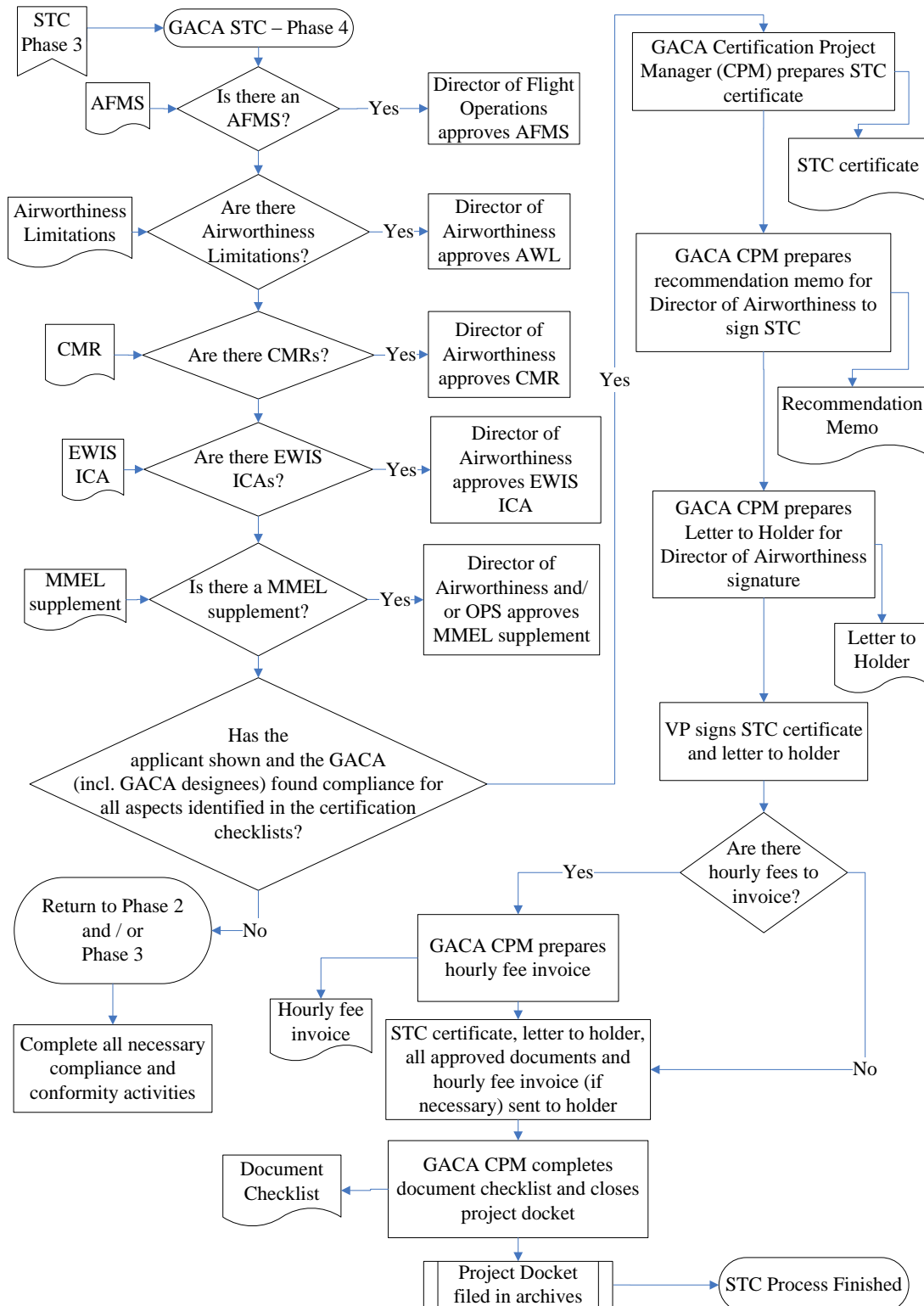


10.2.5 STC Process - Phase 3



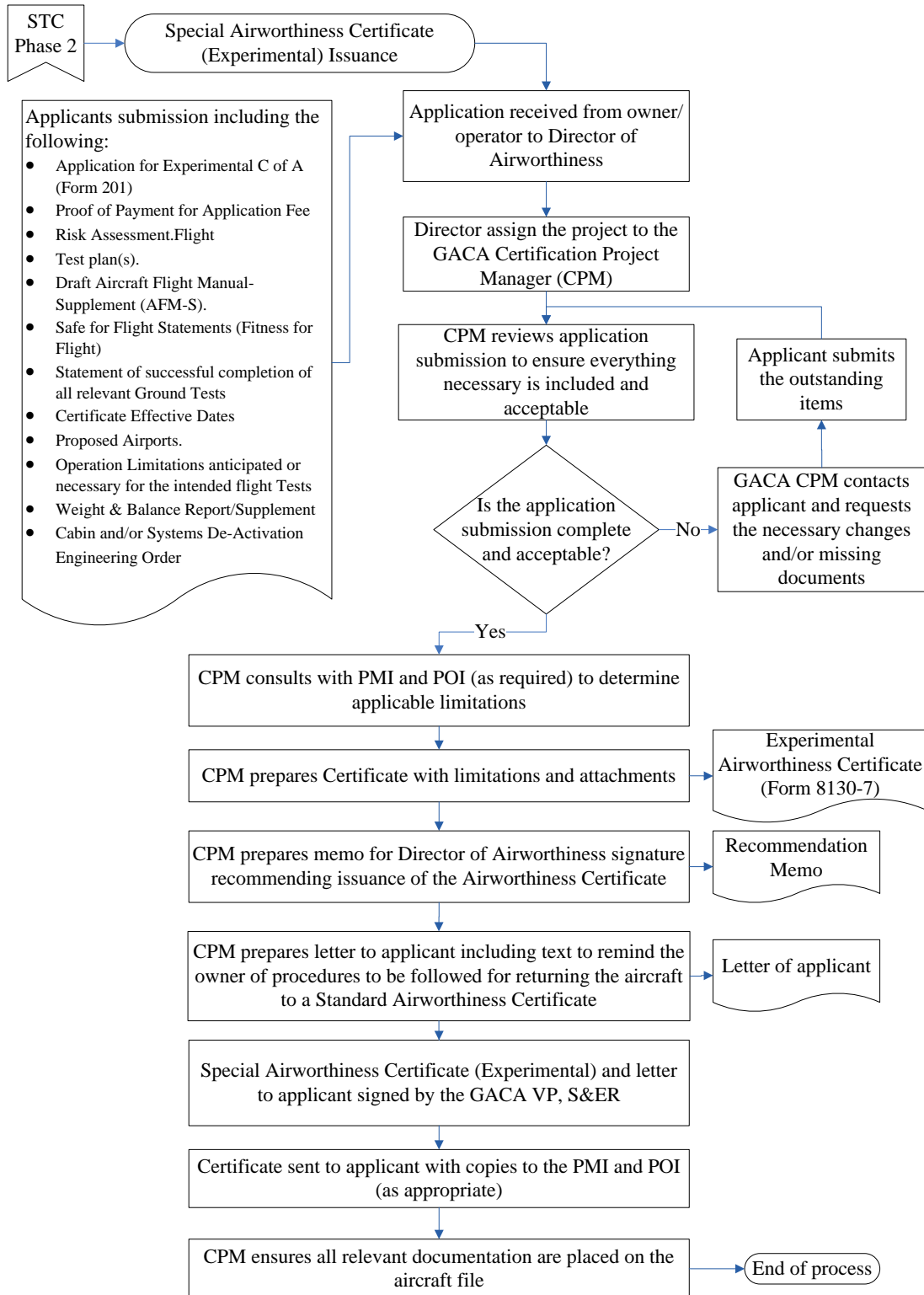


10.2.6 STC Process - Phase 4



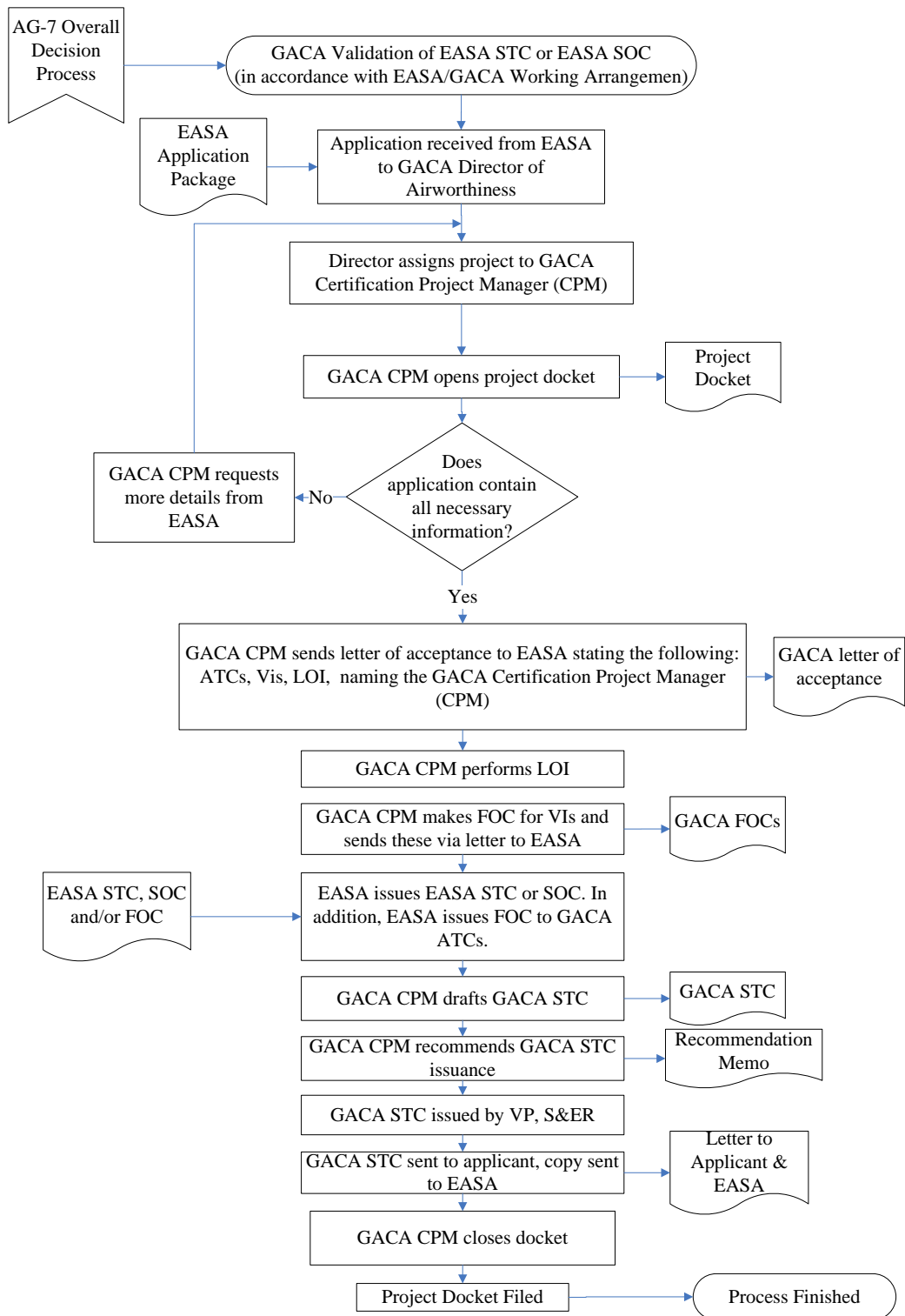


10.2.7 Special C-of-A (Experimental) Process



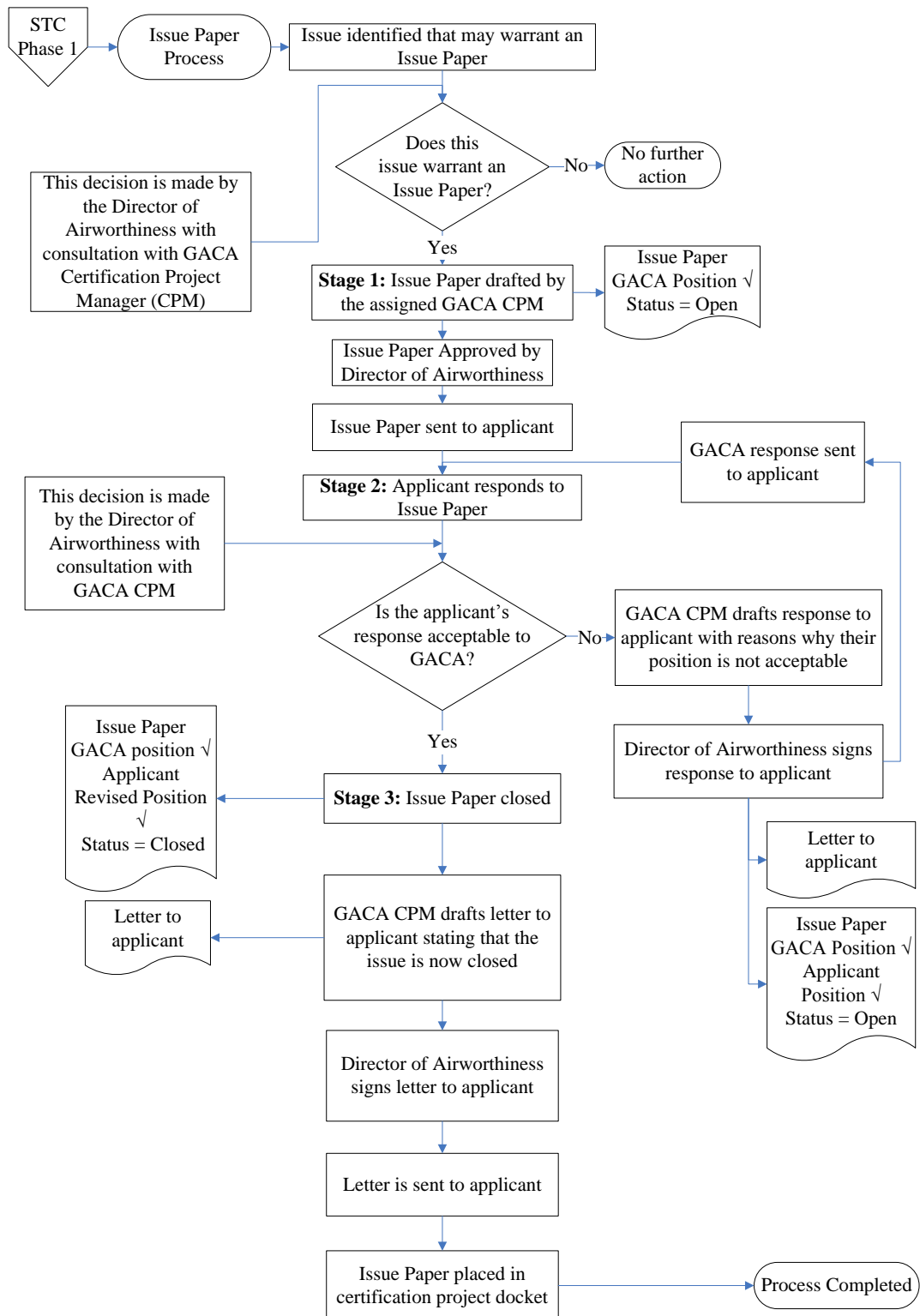


10.2.8 EASA Validation Process



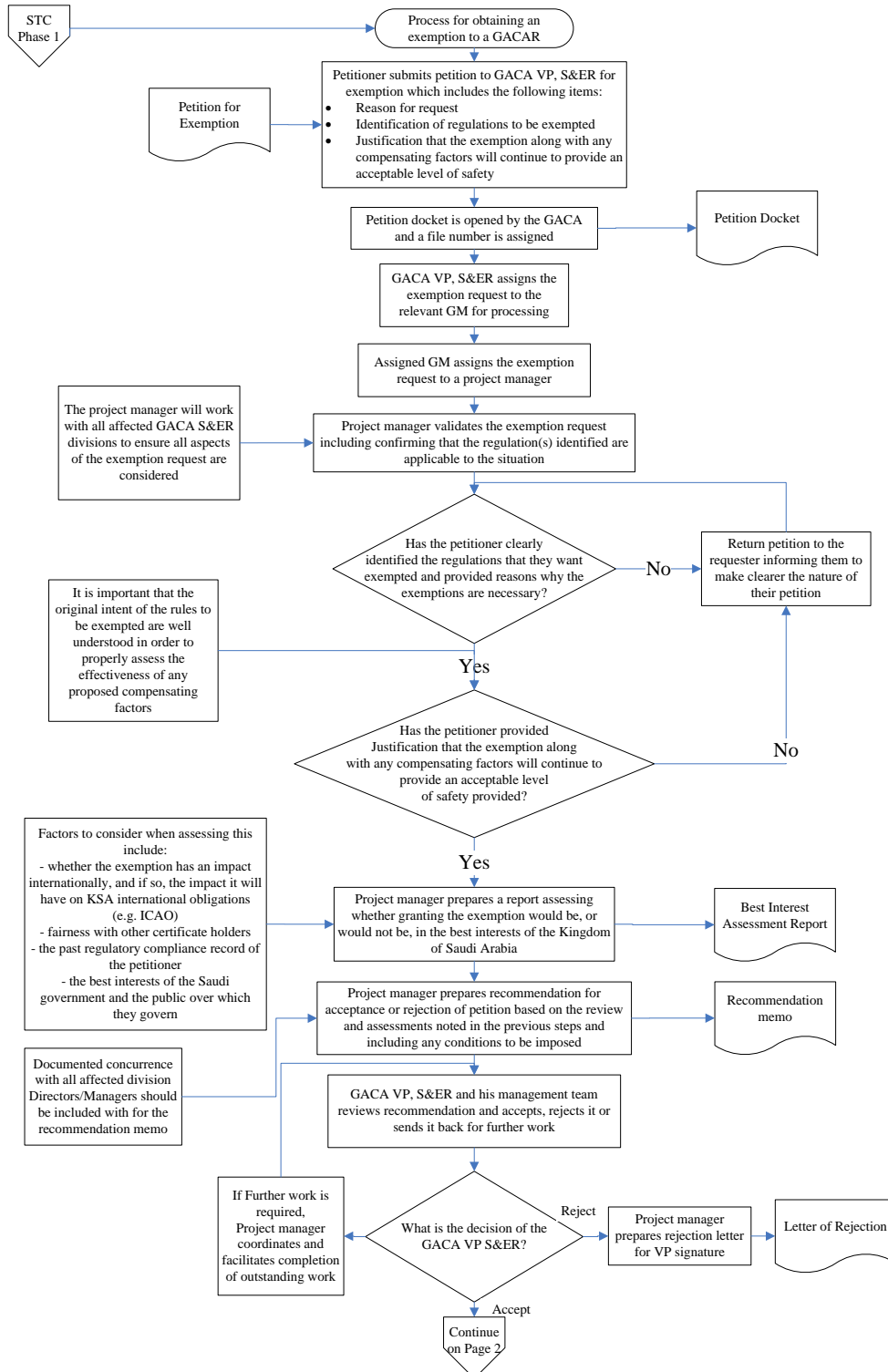


10.2.9 Issue Paper Process



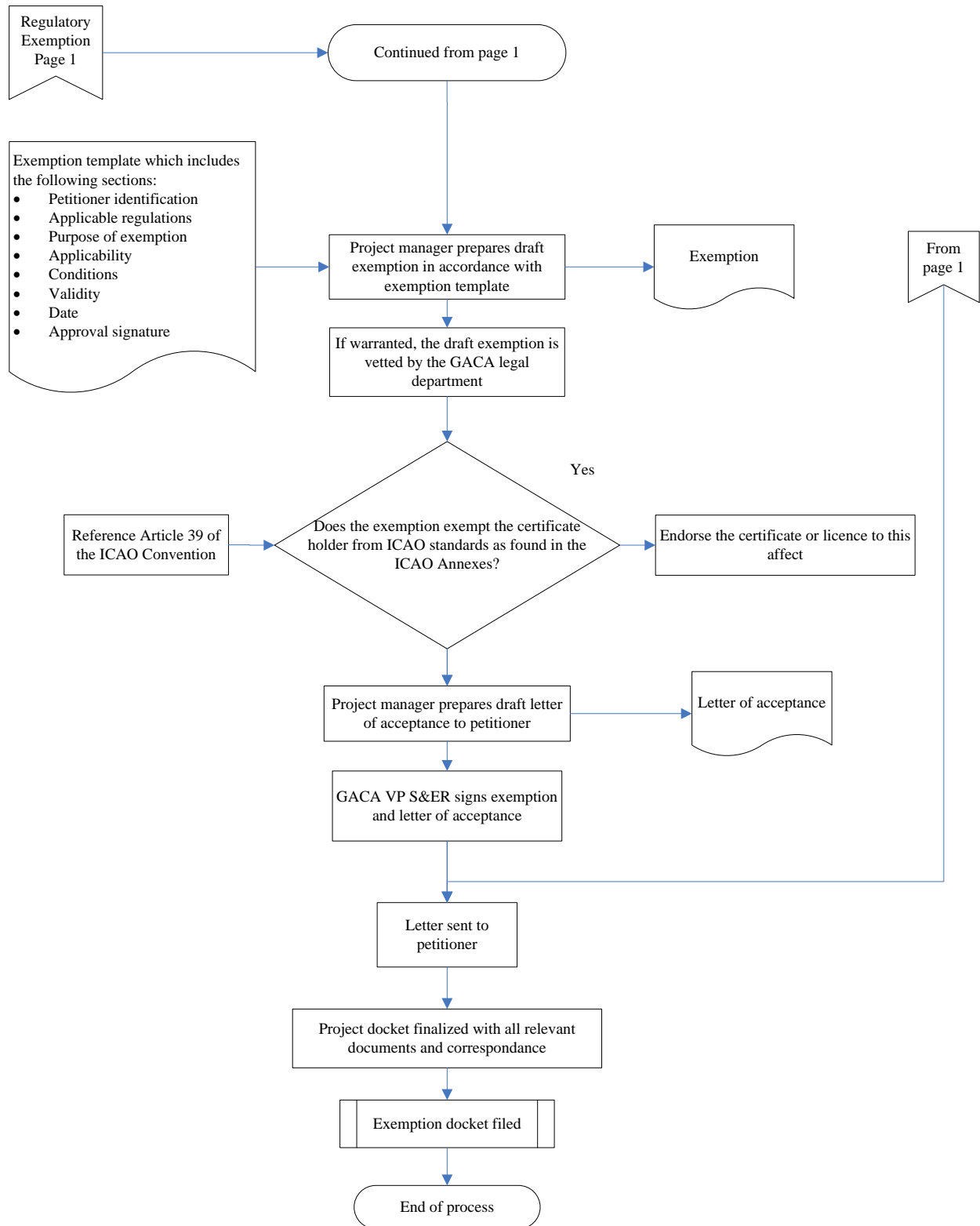


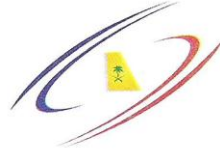
10.2.10 Regulatory Exemption Page 1





10.2.11 Regulatory Exemption Page 2





10.3 Appendix 3 - Types Of Approved Data (Summary)

The following table summarizes the information contained in Chapter 4 of this Airworthiness Guide as it relates to the acceptability of various types of approvals in the context of major alterations and major repairs to aircraft registered in the KSA. The GACA should be consulted when determining the acceptability for any approval types not listed in this table.

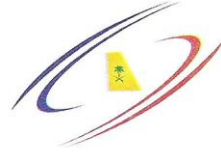
Type of Approval	Installation Approval?	Equipment Approval in support of GACA STC?	Finding of Compliance in support of GACA STC / RDA?
Approvals Issued by Foreign Authorities and its Designees/Approved Organizations			
FAA STC	Yes	N/A	N/A
EASA STC	Yes (when validated by GACA)	N/A	N/A
AD issued by the FAA	Yes	N/A	N/A
AD issued by the CAA of the State-of-Design	Yes	N/A	N/A
FAA PMA	Yes for replacement parts (provided the eligibility list includes the applicable product)	Maybe (provided the installation is similar to that for which the PMA was issued)	N/A
Manufacturer's Major Design Change Documentation (e.g. EASA Major Change Approval, SB)	Yes (when approved by FAA or validated by GACA)	N/A	N/A
Manufacturer's Continued Airworthiness Documentation (e.g. SRM, SB)	Yes (when approved by the CAA of the State-of-Design)	N/A	N/A
Repair design approvals issued by designee working for a US aircraft manufacturer (using FAA form 8100-9 or 8110-3)	Yes	N/A	N/A
Other foreign repair design approvals	Yes (when validated by the GACA or the FAA)	N/A	N/A
FAA AC 43.13-1 & -2	Yes (but only under certain specified conditions)	N/A	N/A
FAA Technical Standard Order (TSO) Authorizations and Letters of TSO design approval	No	Yes	N/A
EASA Technical Standard Order (TSO) Authorizations	No	Yes	N/A
Statements of Compliance made by FAA engineering designee individuals (e.g. DER)	No	No	Maybe (Consult GACA. Usually only permitted for flammability testing)

Table 3. 1 Types of Approved Data (Summary)



Statements of Compliance made by FAA engineering designee organization (e.g. DAS, ODA)	Yes (for repairs only)	No	Maybe (Consult GACA. Usually only permitted for flammability testing)
Statements of Compliance made by a foreign delegated individual other than an FAA designee	Maybe (for repairs only and only if KSA has a bilateral to accept such statements)	No	Maybe (only if KSA has a bilateral to accept such statements)
Statements of Compliance made by a foreign delegated organization other than an FAA designee	Maybe (for repairs only and only if KSA has a bilateral to accept such statements)	No	Maybe (only if KSA has a bilateral to accept such statements or the designee is an EASA DOA)
Approvals Issued by GACA			
GACA STC	Yes	N/A	N/A
GACA RDA	Yes	N/A	N/A
Engineering Data issued by GACA approved Air Carriers	Yes (provided it is GACA approved)	N/A	N/A
AD issued by GACA	Yes	N/A	N/A
Statements of Compliance made by GACA Designated Engineering Representatives	No	No	Yes
Special Cases			
FAA Field Approval	No	N/A	N/A
“No Technical Objection” issued by manufacturer	No	No	No (although GACA may give some credit for such a statement)
Alterations and Repairs classified as “minor with additional showing of compliance” by an EASA approved design organization	Maybe (GACA will accept on a case-by-case basis)	N/A	N/A

Table 3.1: Types of Approved Data (Summary)
Continuation Sheet



10.4 Appendix 4 - Fees and Charges

The applicable expenses, charges, terms and conditions for services in support of GACA STC and GACA RDAs are described in GACA Implementation Regulation for Civil Aviation Tariff Act – Article 10 – Part 4 "Supplementary Type Certificate (STC)" & Part 9 "TDY Allowances (Per/diem).

NOTE: All payments are to be made through Bank Transfer to the credit of GACA Bank Account.

The following table shows some information about the related charges. These information are updated at irregular intervals. As such information may be subject to rapid and recurrent changes, the Organization must use the latest GACA Tariff Act available at GACA web site.

	Service Type	Activity Name	Amount
1	Supplementary Type Certificate (STC) / Repair Design Approval	Application Fee	SAR 2,000
		Hourly Charges (rate per hour)	SAR 400 per hour
2	Travel Expenses	Air Travel/Tickets	At least, Business Class Round Trip Tickets.
		Ground Transportation	Between airport, hotel and facilities.
		Hotel Arrangements	Hotel reservation.
		Daily Rate	SAR 2,000 per day (other than Jeddah)

Table 4. 1 Fees and Charges

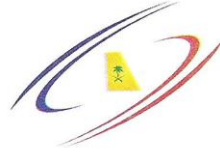
(a) Supplementary Type Certificate (STC) / Repair Design Approval Charges:

A charge will be levied for the issue of a Supplementary Type Certificate (STC) or Repair Design Approval (RDA) as follows":

- (1) Upon submission of the application.
- (2) For each working hour, until the issue of the requested certificate, provided that the required working hours shall be approved by Vice President, Safety & Economic Regulation - GACA.

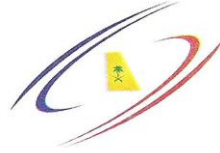
(b) Travel Expenses, Terms and Conditions:

- (1) If there is a need for assignment of GACA-S&ER Engineer/ Inspector/ Specialist to accomplish a task whether inside or outside the Kingdom of Saudi Arabia (outside Jeddah city where the GACA Head-office is located), the Organization is responsible for at least Business Class Round Trip Tickets and must be confirmed in advance of the travel. The tickets must be delivered to the GACA-S&ER building at least one full working day prior to the day of travel. The address of GACA-S&ER building is:



General Authority of Civil Aviation (GACA)
Safety & Economic Regulations (S&ER)
King Abdul Aziz International Airport
Mail Address: P.O. Box 887, Jeddah-21421, Kingdom of Saudi Arabia
Physical Address: King Abdul Aziz International Airport, Safety & Economic
Regulation Building, Jeddah, Kingdom of Saudi Arabia.

- (2) The Organization is responsible for providing ground transportation between airport, hotel and the Organization's facilities; and
- (3) The Organization is responsible for making hotel arrangements.
- (4) The Organization is responsible for paying the daily rate for the Engineer/ Inspector/ Specialist for each travel and certification/inspection day at a location other than Jeddah, KSA. The current daily rate is described in GACA Implementation Regulation for Civil Aviation Tariff Act – Article 10 –Part 9 "TDY Allowances (Per/diem)"/. This fee is charged per calendar day for the entire period of the mission including travel days from and to Jeddah.
- (5) After the return of the completion of the mission, the GACA-S&ER will advise the Organization of the applicable charges. The charges shall be paid by the Organization directly to the GACA Fees and Charges Department, with a copy of the payment sent to the Vice President, S&ER.



10.5 Appendix 5 - Letter of Intent – Sample

LETTER OF INTENT

Mr. Mohamed Jamil

Director of Airworthiness
Safety & Economic Regulations (S&ER)
General Authority of Civil Aviation (GACA)
Fax: +96626855745
P.O. Box 887, Jeddah 21165
Kingdom of Saudi Arabia

Date: dd/mm/yyyy

Our Reference:

Subject: Interior alteration of a B737-700, registration number HZ-999

We would like to inform you of our intent to perform a major alteration to the interior of a Boeing 737-700, serial number 9999999, registration number HZ-999.

The alteration will consist of:

1. changing the seating configuration of the Guest Compartment, including replacement of all seats;
2. dividing the existing Meeting Room in two smaller meeting rooms, including the addition of a door between two passenger compartments;
3. installation of side-facing divans in the hallway; and
4. installing an In-Flight Entertainment (IFE) system, including cockpit master switch.

The aircraft will be located in our facilities in City, Country for the duration of the alteration and the certification activities.

The new seats will be compliant with TSO C39f. The IFE system will be based on an FAA STC, but with major deviations.

The aircraft is scheduled to enter our facilities for various maintenance activities during the first week of July, 20XX, remain for a period of four months and leave during the first week of November, 20XX. Certification tests are planned to take place during the third week of October, 20XX. Submission of certification data will be progressive, and span the month of October, 20XX, with issuance of the GACA STC at the end of October 20XX.

We plan to use Mr. M. Khan, GACA/DER-01999D, for the structural and interior aspects. We are still in the process of identifying a GACA/DER for the electrical aspects.

Please advise of acceptability of the project as described herein.

Mr. Bob Certification

Company XYZ

cc: Mr. Khalid A. Fly, I Own HZ-999 Co



10.7 Appendix 7 - AFMS Approval Page – Sample

 شركة السلام للطائرات ALSALAM AIRCRAFT CO. PO BOX 8012 RIYADH 11482 KINGDOM OF SAUDI ARABIA		
AAC-AFM-2009-002		
AIRPLANE FLIGHT MANUAL SUPPLEMENT		
IN FLIGHT TELEPHONE SYSTEM INSTALLATION		
For Lockheed 382G Serial Number: 4954 Registration Number: HZ-117		
THIS SUPPLEMENT MUST BE ATTACHED TO THE APPROVED AIRPLANE FLIGHT MANUAL AFM 382/E/G WHEN THE SYSTEMS LISTED ON THIS DOCUMENT ARE INSTALLED ON THE AIRCRAFT		
The information contained herein supplements or supersedes the basic Airplane Flight Manual only in those areas listed herein. For Limitations, Procedures, and performance information not contained in this document, consult the basic Airplane Flight Manual.		
GACA APPROVED:		
 _____ General Authority of Civil Aviation Date: 09-3-10		
AAC-AFM-2009-002 GACA Approved	Revision: IR	16-Jan-2010
Page 1		



10.8 Appendix 8 - Airworthiness Limitation Approval Page - Sample



ENGINEERING

ALSALAM AIRCRAFT
COMPANY LTD.

Page : 11 of 12
Revision : 3
Date : 30-Jan-2010
AAC-ICA-301-001

5.0.0 AIRWORTHINESS LIMITATIONS

This section constitutes Part Airworthiness Limitations which apply to the antenna installation only.

Perform NDT Eddy Current Inspection to find surface cracks, porosity and corrosion on the Antenna Installation at intervals not exceeding 4000 flight cycles.

The Airworthiness Limitations section is GACA-approved and specifies maintenance required under GACA/FAR 43.16 and 91.403, unless an alternative program has been GACA approved.

GACA APPROVED:

Director of Airworthiness

Date: 24/03/2010



10.9 Appendix 9 - GACA STC – Sample

Kingdom of Saudi Arabia

General Authority of Civil Aviation

Supplemental Type Certificate

Number GACA/008-024

This certificate issued to AISalam Aircraft Company Limited
P.O. Box 8012
Riyadh, 11482
Kingdom of Saudi Arabia

certifies that the change in type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 25 of the GACA/FAR.

Original Product Type: Certificate: FAA TCDS A1SO
Make: Lockheed
Model: 382G

Description of Type Design Change: Installation of an In-Flight Telephone System in accordance with AISalam Aircraft Company Ltd. Master Data List No. AAC-MDL-2009-003, Rev. 5 dated 15 February 2010.

Required Operating and Maintenance Data:

1. Airplane Flight Manual Supplement Document No. AAC-AFM-2009-002 dated 16 January 2010, or later GACA approved revision.
2. Instructions for Continued Airworthiness Document No. AAC-ICA-301-001, Rev. 3 dated 30 January 2010, or later GACA accepted revision [Note: This document contains Airworthiness Limitations].

Limitations and Conditions: (1) Compatibility of this design change with previously approved modifications must be determined by the installer. (2) This STC is applicable to aircraft S/N 4954 only.


Basis of Certification:

See continuation sheet.

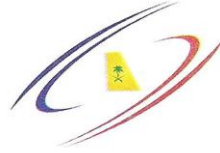
This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is established by the President of General Authority of Civil Aviation.

Date of application: 1 February 2009 Date reissued:
Date of issuance: 24 March 2010 Date amended:

By direction of the President of
General Authority of Civil Aviation


24 MAR. 2010

Capt. Mohammed Ali Jamjoom
Vice President
Safety and Economic Regulation



10.9 Appendix 9 GACA STC – SAMPLE “Continuation Sheet”

Kingdom of Saudi Arabia
General Authority of Civil Aviation

Supplemental Type Certificate
(Continuation Sheet)

Number GACA/008-024

Basis of Certification:

In accordance with the provisions of GACA/FAR 21.101(b)(1), the certification basis for systems changed or affected by this design change is that incorporated by reference in FAA TCDS A150.

Additionally, GACA/FAR 26.11 applies.

- END -



10.10 Appendix 10 -GACA RDA – Sample

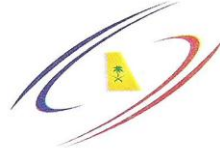
KINGDOM OF SAUDI ARABIA Ministry of Defence and Aviation Presidency of Civil Aviation Aviation Standards and Safety				المملكة العربية السعودية وزارة الدفاع والطيران رئاسة المطبوعات والقياسات إدارة سلامة الطيران والمقاييس	
MAJOR REPAIR AND ALTERATION (AIRFRAME, POWERPLANT, PROPELLER OR APPLIANCE)				FOR PCA USE ONLY	
				OFFICE IDENTIFICATION:	
				INSTRUCTIONS: <i>Print or type all entries</i>	
1. AIRCRAFT	MAKE:	Boeing	MODEL:	727-264	
	SERIAL NO.:	20896	NATIONALITY AND REGISTRATION MARK:	HZ-SNA	
2. OWNER	NAME: <i>(As shown on Registration Certificate)</i>	SNAS TRDG/DHL AVIATION		ADDRESS: <i>(As shown on Registration Certificate)</i>	
				PO Box 7977, Jeddah 21472, KSA	
Project # GACA/SNAS-053			<p>The data provided ONLY complies with the applicable airworthiness requirements and is approved for the aircraft <u>HZ-SNA</u></p> <p>Director of Airworthiness (GACA-ASSD) Signature: <u>محمد جميل</u> Date: <u>23/10/2011</u> Kingdom of Saudi Arabia General Authority of Civil Aviation</p>		
4. UNIT IDENTIFICATION				5. TYPE	
UNIT	MAKE	MODEL	SERIAL NUMBER	REPAIR	ALTERATION
AIRFRAME	<i>(As described in item 1 above)</i>	<i>(As described in item 1 above)</i>	<i>(As described in item 1 above)</i>	X	
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE:				
	MANUFACTURER:				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS:		B. KIND OF AGENCY:		C. CERTIFICATE NUMBER	
MNG TECHNIC Aircraft Maintenance Service Inc. Anatürk Havalimani B Kapısı Teknik Hangar Binasi 34149 Yesilköy İstanbul / Turkey		<input type="checkbox"/> PCA CERTIFICATED MECHANIC <input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC <input checked="" type="checkbox"/> CERTIFICATED REPAIR STATION <input type="checkbox"/> MANUFACTURER		AMO-321F	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 and described on the reverse or attachments hereto have been made in accordance with the PCA requirements and that the information furnished is correct to the best of my knowledge.					
DATE:	19-Oct-11	NAME AND SIGNATURE OF AUTHORIZED INDIVIDUAL:			
		TAHSIN MEYDAN			
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given to persons specified below, the unit identified in item 4 was inspected in 3 manner prescribed by the PCA Administrator, and is: <input type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED by:					
PCA ASSD INSPECTOR		MANUFACTURER	OTHER: <i>(Specify)</i>		
PCA ASSD DESIGNEE	X	REPAIR STATION			
DATE OF APPROVAL OR REJECTION:		CERTIFICATE OR DESIGNATION NO.:	NAME AND SIGNATURE OF AUTHORIZED INDIVIDUAL:		
		AMO -321F			

PCA-ASSD 6320-1



10.10 Appendix 10 GACA RDA – Sample “Continuation Sheet”

NOTICE	
WEIGHT AND BALANCE OR OPERATING LIMITATIONS CHANGES SHALL BE ENTERED IN THE APPROPRIATE AIRCRAFT RECORD. AN ALTERATION MUST BE COMPATIBLE WITH ALL PREVIOUS ALTERATIONS TO ASSURE CONFORMITY WITH THE APPLICABLE AIRWORTHINESS REQUIREMENT.	
6. DESCRIPTION OF WORK ACCOMPLISHED: <i>(Identify with aircraft registration mark, name of part repaired/alterd, work accomplished, reference for approved data used and date work completed. If more space is required, attach additional sheet.)</i>	
19-Oct-11 HZ-SNA S/N 20896 TAT: 77,658 TC: 55,783	
GACA-S&ER Project Authorization number GACA/SNAS-053	
This record documents a Repair Design Approval for a Major Repair to the Fuselage skin at Body Station 220/BL0 area.	
1) Fuselage belly Skin cut out performed from BS 219.8 to BS 227.8 at BL0.	
2) Corrosion removed and NDT inspected IAW repair DWG 53-11447-1 instructions, dated 08-Aug-11.	
3) Filler and doubler fabricated, finished and installed IAW repair DWG 53-11447-1, dated 08-Aug-11.	
Drawings: As listed above.	
Conformity Verification Inspection Record: 8100-1, dated 19-Oct-2011	
Approval documents: (2 ea) 8110-3, dated 16-Oct-2011, approving Flight Vehicles Consulting Inc, Drawing No. 53-11447-1-SA Rev "New", dated 08-Aug-11, and Report No. 57-11447-1-SA, Rev "B", dated, 16-Oct-11, and Report No. 57-11447-ICA, Rev "B", dated 16-Oct-11.	
Strength Evaluation: Strength Evaluation has been carried out and a Damage Tolerance Inspection (DTI), has been determined to ensure continued Airworthiness of the aircraft in accordance with the damage tolerance requirements of 14 CFR Part 25 § 25.571 (a) (b) Amdt 25-45. The DTI initial threshold is 14,000 flight cycles with repeat inspections thereafter at 14,000 flight cycles. This inspection requirement must be incorporated into the aircraft approved maintenance program prior to the initial inspection threshold. The Strength Evaluation and DTI data are documented on Flight Vehicles Consulting reports 53-11447-1-SA, REV. B, dated 16-Oct-11, 53-11447-ICA, REV. B, dated: 16-Oct-11. The reports are approved on GACA forms 8110-3, dated 16-Oct-11, by FAA/DFR Edward Kats GACA/DFR-10009F-1.	
Additional details are on file at this station under WO:42848 Item:0029.	
Weight and balance is not affected by this repair.	
-----End-----	
ADDITIONAL SHEETS ARE ATTACHED <input type="checkbox"/>	



10.11 Appendix 11 - Simple Alteration Certification Documentation

10.11.1 Document 1: Example of a Letter from the Applicant

Director of Airworthiness
Safety & Economic Regulation (S&ER),
General Authority of Civil Aviation
P.O. Box 887 Jeddah 21165
Kingdom of Saudi Arabia

01 August 2013

Subject: Installation of a wide magazine rack in passenger cabin of a B737-700, registration number HZ-999

We would like to inform you of our intent to perform a major alteration to the interior of a Boeing 737-700, serial number 9999999, registration number HZ-999. This letter is to serve as the application letter as well as to submit all the required descriptive and certification data.

The alteration consists of the installation of a wide magazine rack in the passenger cabin area against a wall of a passageway. The rack is designed and manufactured by us. There are no novel or unusual design features. Detail and installation drawings are under Engineering Order No. XYZEO123, rev. 1, dated February 22, 2013. The aircraft will be located in our facilities in City, Country for the duration of the alteration and the certification activities, while it is undergoing a C check. Return to service is scheduled for May 5, 2013. We have hired the services of Mr. M. Khan, GACA/DER-01999F-2, for the structural and interior aspects.

The Basis of Certification will be unchanged from that of the Type Certificate, namely GACA/FAR part 25 at amendment 25-77; none of the exceptions, elections to comply with later amendments, special conditions, equivalent safety findings or exemptions affect the certification of this alteration. The applicable design requirements, means of compliance, form or proof, and certification substantiation are as follows:

1. Structure, design and construction: 25.301, 25.303, 25.305(a)(b)(c), 25.307(a), 25.561(c), 25.601, 25.603, 25.605(a), 25.609(a), 25.613(a)(b), 25.789(a): by design review and analysis (GACA/DER report No. MK987, rev.0, February 27, 2003).
2. Personnel accommodations 25.785(k): by review of design, there are no sharp edges and all corners are covered with plastic caps.
3. Emergency provisions: 25.813(a)(d): by design review, passageways is still unobstructed and is at least 36 inches wide.
4. Fire protection: 25.853(a)(d): by review of design, metallic material complies and plastic caps are too small to contribute significantly. Finishing paint batch used complies, see burn test reports attached.

All findings of compliance are made by GACA/DER-01999F-2 as per PCA-ASSD form 8110-3. Conformity is to be as per our Inspection Procedure Manual and we suggest that a PCA conformity verification program is not necessary given the simplicity of the alteration. No test program is required.

Attached are the following documents:

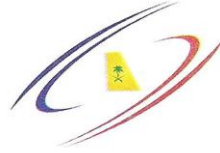
1. PCA-ASSD form 8110-12
2. Engineering Order No. XYZEO123, rev. 1, dated February 22, 2013
3. GACA/DER report No. MK987, rev.0, February 27, 2013
4. PCA-ASSD form 8110-3 dated February 28, 2013
5. Idontburn, Inc. burn test report No. IDB765 dated November 14, 2012 with FAA 8110-3.

We hope all the information submitted meet the requirement of AG-7 Issue 2 and will allow issuance of GACA STC.

Regards,

Mr. Ahmed Ali
Certification Company XYZ

cc: Mr. Khalid A. Fly, I Own HZ-999 Co.



10.11.2 Document 2: Memorandum Recommending Approval (STC) – Sample

MEMORANDUM

To: Director of Airworthiness

From: Abdulrahman Rashad, Airworthiness Engineer

Date: February 25, 2013

Subject: Certification Project Manager's recommendation for a GACA STC for the alteration of a Bell 407, HZ-SAM under project AWR/02/999

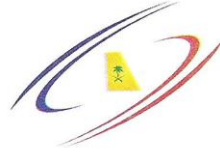
I have reviewed the documentation associated with subject project. I have found that this major alteration complies with all applicable airworthiness requirements as defined in the Bell 407 FAA type certificate number H2SW. My finding of compliance is based in part on the findings made by the two GACA-DERs associated with this project.

I therefore recommend that this project be granted a GACA STC (Attached).

Regards,

Abdulrahman Rashad, Airworthiness Engineer, GACA-S&ER

Attachment 1



10.11.3 Document 3: Memorandum Recommending Approval (RDA) – Sample

MEMORANDUM

To: Director of Airworthiness

From: Ghassan Qawas, Airworthiness Engineer

Date: February 25, 2013

Subject: Airworthiness engineer's recommendation for a GACA RDA for repair of a Bell 407, HZ- SAM under project GACA/AMO-099

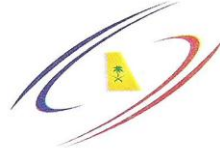
I have reviewed the documentation associated with subject project. I have found that this major repair complies with all applicable airworthiness requirements as defined in the Bell 407 FAA type certificate number H2SW. My finding of compliance is based in part on the findings made by the two GACA-DERs associated with this project.

I therefore recommend that this project be granted a GACA RDA. GACA-S&ER form 8320-1 is attached.

Regards,

Ghassan Qawas, Airworthiness Engineer, GACA S&ER

Attachment 1



10.11.4 Document 4: Sample of a letter from GACA

Mr. Ahmed Ali
Certification
Company XYZ

02 August 2013

Subject: GACA STC for Installation of a wide magazine rack in passenger cabin of a B737-700, registration number HZ-999

Ref: your letter dated 01 August 2013

Dear Mr. Ali,

The GACA has reviewed the submission in above reference letter. The GACA accepts the project and has assigned the project number GACA/03-123. The GACA also authorizes GACA-DER-01999F-2 for this project. The GACA also accepts the certification information contained in above reference letter and agrees that no GACA-S&ER conformity verification inspection is required. The GACA-S&ER concludes that compliance with all applicable airworthiness requirements has been found.

Consequently, please find attached GACA STC No. 03-123, approving the data for subject major alteration.

You are reminded to ensure the procedures in GACA-S&ER Airworthiness Guide (AG) No. 7 with respect to filing of STC in aircraft records, data retention and project closure is completed.

As the GACA STC holder, you are also reminded of your continuing airworthiness responsibilities, as per the GACA/FARs and chapter 9 of GACA-S&ER AG-7.

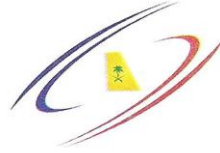
If you have any questions, please do not hesitate to contact this office.

Regards,

Mohamed Jamil

Director of Airworthiness
GACA-S&ER

Cc: Mr. Khalid A. Fly, I Own HZ-999 Co.



10.11.5 Document 5, Additional Guidelines

When the Organization wants to combine the letter of application with the submission of all descriptive and certification data, the following guidelines can help streamline the process:

- (a) Discuss the issue with the GACA-S&ER Certification Project Manager prior to drafting the letter.
- (b) Request feedback on the draft of such a letter.
- (c) Expanding all the resources for certification without the full certainty of GACA acceptance (e.g., hiring the services of a GACA-S&ER before he is approved for the project) is a business decision and proper risk management should be exercised. However, since such an approach is prone to be used for simple cases only, the risk is minimized.
- (d) This approach is not to be used when any of the following conditions are met:
 - (1) There are novel or unusual design features
 - (2) There are novel applications of existing technology or product
 - (3) Means of compliance are new or different than that in advisory material
 - (4) There are more than two engineering specialties involved
 - (5) There are more than one independent alteration package or the alteration package affects more than one area or system
 - (6) Specialized analyses (e.g., Damage Tolerance Analysis) are required
 - (7) Conformity verification by the GACA is required
 - (8) New tests are required to show compliance
 - (9) AFMS or ICAs are required
 - (10) Organization has doubts on applicability of data to the aircraft, GACA acceptance, proper GACA-DER scope of authority, etc.



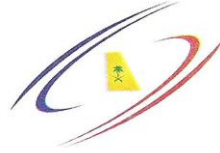
10.12 Appendix 12 - Project Docket Checklist

Project Docket Checklist

GACA/XXX-xxx "HZ-XXX Installation of xxxxx"

Yes/ SAT	NO/ UNSAT	Document Title / Type	Document Ref.	Rev. Status/ Date	(GACA 8110-3) *	Comments
PHASE 1 – PROJECT INITIATION DOCUMENTS						
APPLICANT DOCUMENTS						
		1 Letter of Intent				
		2 FAA/EASA Notification				
		3 Letter of Application				
		4 Proof of Payment (GACA Invoice)				
		5 Application Form (Form 8110-12)				
		6 Petition for Exemption (Form 1001)				
		7 Certification Plan				
		8 Compliance Checklist				
		9 § 21.101(b) proposal with substantiating analysis				
GACA DOCUMENTS						
		10 Letter of Intent Acceptance				
		11 Project Acceptance Letter				
		12 Project Authorization Number (GACA/XXX-xxx)				
		13 GACA Finance Dep Payment Confirmation				
		14 GACA Response to FAA/EASA Letter				
		15 Issue Paper(s)				
		16 Exemption(s)				
		17 Special Condition(s)				
		18 Finding of Equivalent Safety				
PHASE 2 – APPLICANT'S DATA						
DESCRIPTIVE DATA						
		19 Master Data List (MDL) / Reports				
		20 Master Drawing List - Mechanical				
		21 Master Drawing List - Electrical				
		22 Electrical Load Statement				
		23 Wiring Diagrams as per EDL				
		24 Electrical Item List				
		25 Engineering Order (EO) Includes Mod Sheets				
		26 Weight & Balance Report / Change Data				
CERTIFICATION DATA						
		27 Statement of Conformity (Form 8130-9)				
		28 Flammability Test Plan/Report				
		29 Ground Test Plan/Report				
		30 Electrical Bonding Test Plan/Report				
		31 EMI Test Plan/Report (Ground)				
		32 EMI Test Plan/Report (Flight)				
		33 Flight Test Plan/Report				
		34 Structural Analysis Report				
		35 Damage Tolerance Analysis Report				
		36 System Safety Analysis				
		37 Equipment Qualifications (TC/TSO/PMA)				
FLIGHT TESTING						
		38 Application for Experimental C of A (Form 201)				
		39 Proof of Payment for Application Fee				
		40 Risk Assessment.				
		41 Flight Test plan(s).				
		42 Draft Aircraft Flight Manual-Supplement (AFM-S).				
		43 Safe for Flight Statements (Fitness for Flight)				
		44 Statement of successful completion of all relevant Ground Tests				
		45 Certificate Effective Dates				
		46 Proposed Airports.				
		47 Operation Limitations anticipated or necessary for the intended flight Tests				
		48 Weight & Balance Report/Supplement				
		49 Cabin and/or Systems De-Activation Engineering Order				
REQUIRED OPERATING & MAINTENANCE DATA						
		50 Aircraft Flight Manual - Supplement (AFMS)				
		51 Instruction for Continued Airworthiness (ICA)				
		52 Airworthiness Limitation - Supplement				
		53 EWIS ICA				
		54 CMR				
		55 MMEL-Supplement				
		56 Equipment List - Supplement				
		57 Electrical Items List - Supplement				
RETURN TO SERVICE						
		58 Major Repair & Alteration (Form 8320-1)				

10.12 Appendix 12 - Project Docket Checklist "Continuation Sheet"



PHASE 3 – GACA CONFORMITY & COMPLIANCE VERIFICATION DATA					
CONFORMITY VERIFICATION					
		59 Request for Conformity (Form 8120-10)			
		60 Conformity Inspection Record (Form 8100-1)			
		61 GACA Engineering Compliance Inspections			
		62 Statements of Compliance (Form 8110-3)			
		63 Foreign CAA Statements of Compliance			
		64 EASA STC			
PHASE 4 – CERTIFICATE & APPROVAL ISSUANCE and OTHER GACA DOCUMENTS					
CERTIFICATES					
		65 Recommendation for STC issuance Memo			
		66 STC (Form 8110-2)			
		67 Experimental C of A (Form 8130-7)			
APPROVALS					
		68 Recommendation for AFMS Approval Memo			
		69 AFMS Approval Page			
		70 Recommendation for AWL, CMR, EWIS ICA Approval Memo			
		71 AWL Approval Page			
		72 EWIS ICA Approval Page			
		73 CMR Approval Page			
		74 Recommendation for MMEL Supplement Approval Memo			
		75 MMEL Supplement Approval Page			
		76 Complete STC Data Package on CD-ROM to be provided by Applicant			
LETTERS					
		77 Letter to Holder			
		78 Letter to Foreign CAA			
		79 Hourly Fee Invoice			

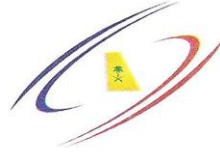
Notes:

* Statement of Compliance (GACA 8110-3): write the DER Certificate No., Specialty Chart, & Approval Date. If more than one DER Approval is required, add second line on the same cell. (use Alt+Enter).

DER Specialty Charts: Chart A - Structural, Chart B - Powerplant Installations, Chart C1 - Mechanical Systems and Equipment, Chart C2 - Electrical Systems and Equipment, Chart D - Radio, Chart E - Engines, Chart F - Propellers, Chart G - Flight Analyst, Chart H - Flight Test Pilot, Chart I - Acoustical.

** Statement of Conformity (GACA 8130-9): write the DAR Certificate No., Category, and Approval Date.

DAR Category: ((F=Manufacturing, T=Maintenance, D=Dual).



10.13 Reference Documents

10.13.1 Primary Regulations

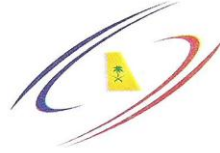
- (a) GACAR Section 6 and 8 along with GACA/FAR Parts 1, 21, 23, 25, 26, 27, 29, 33, 39, 43, 45, 91, 119, 121, 125, 135, 145 and 183 which are incorporated by reference.
- (b) Implementation Regulation of the Civil Aviation Tariff Act.
- (c) Kingdom Civil Aviation Law
- (d) GACA Regulatory Circulars.
 - GACA Circular No. R-7-2009 – Procedures for Petitioning for Regulatory Exemptions.
 - GACA Circular No. R-10-2010 – Service Difficulty Reporting to the Organization Responsible for the Type Design.
 - GACA Circular No. R-14-2010 – Continuing Airworthiness Responsibility for Holders of GACA Supplemental Type Certificate and Repair Design Approvals.
 - GACA Circular No. R-16-2010 – Responsibility of Holders of GACA Supplemental Type Certificates and GACA Repair Design Approvals – Requirement to retain information related to their design approvals.
 - GACA Circular No. R-17-2010 – GACA Compliance Enforcement Policy.
 - GACA Circular No. R-18-2010 – GACA Appeals Policy.
 - GACA Circular No. R-23A-2012 – Importing Aviation Products to the Kingdom of Saudi Arabia.
 - GACA Circular No. R-24-2012 – Signs and Placards Language Requirements.

10.13.2 Bilateral Airworthiness Agreements Related to Certification of Aeronautical Products

- (a) Working Arrangement between the European Aviation Safety Agency and the General Authority of Civil Aviation of the KSA regarding approvals of changes in type design and of repair designs. Dated March 2008.

10.13.3 GACA Guidance Documentation:

- (a) GACA Airworthiness Guide (AG) -2
- (b) GACA Airworthiness Guide (AG) -3, Importation Requirements.
- (c) GACA Airworthiness Guide (AG) -4, GACA Designated Engineering Representative (DER) Guidance Handbook.
- (d) GACA Airworthiness Guide (AG) -5, AMOs.
- (e) GACA Airworthiness Guide (AG) -6, Airworthiness Directive Policies and Procedures.
- (f) GACA Airworthiness Guide (AG) -9, GACA Designated Airworthiness Representative (DAR) Guidance Handbook.



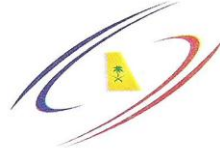
10.13.4 FAA Guidance Documentation:

10.13.4.1 Referenced in GACA AG-7:

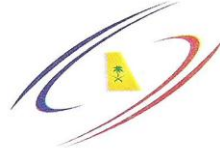
- (a) AC 21-40 (), Application Guide for Obtaining a Supplemental Type Certificate.
- (b) AC 21.101-1 (), Establishing the Certification Basis of Changed Aeronautical Products.

10.13.4.2 Additional FAA Guidance Material concerning the certification

- (a) AC 23-8(), Flight Test Guide for Certification of Part 23 Airplanes.
- (b) AC 23-13() Fatigue, Fail-Safe, and Damage Tolerance Evaluation of Metallic Structure for Normal, Utility, Acrobatic, and Commuter Category Airplanes.
- (c) AC 23-15() Small Airplane Certification Compliance Program
- (d) AC 23-17() Systems and Equipment Guide for Certification of Part 23 Airplanes and Airships
- (e) AC 23-19() - Airframe Guide for Certification of Part 23 Airplanes
- (f) AC 23-21() Airworthiness Compliance Checklists Used to Substantiate Major Alterations for Small Airplanes
- (g) AC 23-23() Standardization Guide for Integrated Cockpits in Part 23 Airplanes
- (h) AC 23-24() Airworthiness Compliance Checklists for Common Part 23 Supplemental Type Certificate (STC) Projects
- (i) AC 23.562-1() Dynamic Testing of Part 23 Airplane Seat/Restraint Systems and Occupant Protection
- (j) AC 23.1309-1() System Safety Analysis and Assessment for Part 23 Airplanes
- (k) AC 23.1311-1() Installation of Electronic Display in Part 23 Airplanes
- (l) AC 25-7() Flight Test Guide for Certification of Transport Category Airplanes
- (m) AC 25-9() Smoke Detection, Penetration, and Evacuation Tests and Related Flight Manual Emergency Procedures
- (n) AC 25-10 () Guidance for Installation of Miscellaneous, Nonrequired Electrical Equipment
- (o) AC 25-11() Electronic Flight Deck Displays
- (p) AC 25-16() Electrical Fault and Fire Prevention and Protection
- (q) AC 25-17() Transport Airplane Cabin Interiors Crashworthiness Handbook
- (r) AC 25-19() Certification Maintenance Requirements
- (s) AC 25-21() Certification of Transport Airplane Structure
- (t) AC 25-22() Certification of Transport Airplane Mechanical Systems
- (u) AC 25-23() Airworthiness Criteria for The Installation Approval of A Terrain Awareness And Warning System (Taws) for Part 25 Airplanes
- (v) AC 25-26() Development of Standard Wiring Practices Documentation
- (w) AC 25-27() Development of Transport Category Airplane Electrical Wiring Interconnection systems instructions for Continued Airworthiness Using And Enhanced Zonal Analysis Procedure
- (x) AC 25.571-1() Damage Tolerance and Fatigue Evaluation of Structure
- (y) AC 25.775-1() Windows and Windshields
- (z) AC 25.783-1() Fuselage Doors and Hatches
- (aa) AC 25.803-1() Emergency Evacuation Demonstrations
- (bb) AC 25.853-1() Flammability Requirements for Aircraft Seat Cushions
- (cc) AC 25.869-1() Fire Protection Systems



- (dd) AC 25.899-1() Electrical Bonding and Protection Against Static Electricity
- (ee) AC 25.1309-1() System Design and Analysis
- (ff) AC 25.1353-1() Electrical Equipment and Installations
- (gg) AC 25.1357-1() Circuit Protective Devices
- (hh) AC 25.1360-1() Protection Against Injury
- (ii) AC 25.1365-1() Electrical Appliances, Motors, and Transformers
- (jj) AC 25.1529-1() Instructions for Continued Airworthiness of Structural Repairs on Transport Airplanes
- (kk) AC 25.1701-1() Certification of Electrical Wiring Interconnection Systems on Transport Category Airplanes
- (ll) AC 25-1581-1(), Airplane Flight Manual.
- (mm) AC 26-1() Continued Airworthiness and Safety Improvements
- (nn) AC 43.9-1(), Maintenance Records.
- (oo) AC 43.13-1() and -2(), Acceptable Methods, Techniques, and Practices.
- (pp) AC 43-18(), Fabrication of Aircraft Parts by Maintenance Personnel.
- (qq) AC 45-2() Application for U.S. Airworthiness Certificate, FAA Form 8130-6
- (rr) AC 91.21-1() Use of Portable Electronic Devices Aboard Aircraft
- (ss) AC 91-56() Continuing Structural Integrity Program for Airplanes
- (tt) AC 120-27() Aircraft Weight And Balance Control
- (uu) AC 120-76() Guidelines for The Certification, Airworthiness, and Operational Use of Portable Electronic Flight Bags
- (vv) AC 120-77() Maintenance and Alteration Data
- (ww) AC 120-84() Aging Airplane Inspections and Records Reviews
- (xx) AC 120-87() Use of Child Restraint Systems on Aircraft
- (yy) AC 120-93() Damage Tolerance Inspections for Repairs And Alterations
- (zz) AC 120-94() Aircraft Electrical Wiring Interconnection Systems Training Program
- (aaa) AC 120-100() Basics of Aviation Fatigue
- (bbb) AC 120-102() Incorporation of Electrical Wiring Interconnection Systems Instructions for Continued Airworthiness into an Operator's Maintenance Program
- (ccc) AC 120-103() Fatigue Risk Management Systems for Aviation Safety
- (ddd) AC 120-104() Establishing and Implementing Limit of Validity to Prevent Widespread Fatigue Damage
- (eee) FAAO 4040.26(), Aircraft Certification Service Flight Safety Program.
- (fff) FAAO 8000.50(), Repair Station Production of Replacement or Modification Parts.
- (ggg) FAAO 8110.37(), Designated Engineering Representative (DER) Guidance Handbook.
- (hhh) FAAO 8110.4(), Type Certification.
- (iii) FAAO 8110.21() STC Approvals, "One Aircraft Only"
- (jjj) FAAO 8110.41() Flight Test Pilot Training, Responsibilities, and Procedures
- (kkk) FAAO 8110.45() Use of Data Approved by Designated Engineering Representative to Support Major Alterations
- (lll) FAAO 8110.48() How to Establish the Certification Basis for Changed Aeronautical Products
- (mmm) FAAO 8110.54(), Instructions for Continued Airworthiness, Responsibilities, Requirements, and Content.
- (nnn) FAAO 8110.56() Restricted Category Type Certification
- (ooo) FAAO 8110.104() Responsibilities and Requirements for Implementing Part 26 Safety Initiatives



- (ppp)FAAO 8110.105() Simple and Complex Electronic Hardware Approval Guidance
- (qqq)FAAO 8110.113() Approval of Flammability Test Data in Support of Major Repairs or Major Alterations
- (rrr) FAAO 8110.118() Commercial Parts
- (sss) FAAO 8130-2(), Airworthiness Certification of Aircraft & Related Parts.
- (ttt) FAAO 8130.29() Issuance of a Special Airworthiness Certificate for Show Compliance and/or Research and Development Flight Testing
- (uuu)FAAO 8310.6() Airworthiness Compliance Check Sheets Handbook
- (vvv)FAAO 8900.1(), Flight Standards Information Management System.
- (www) FAA and Industry Guide to Product Certification (“the CPI Guide”)

10.13.5 Related Forms:

- (a) GACA form 0201, Application and/or Renewal for Airworthiness Certificate.
- (b) GACA form 1001, Petition for Regulatory Exemption
- (c) GACA form 8100-1, Conformity Inspection Record.
- (d) GACA form 8110-1, Type Inspection Authorization (TIA)
- (e) GACA form 8110-2, STC Certificate.
- (f) GACA form 8110-3, Statement of Compliance.
- (g) GACA form 8110-12, Application for STC or RDA.
- (h) GACA form 8120-10, Request for Conformity.
- (i) GACA form 8130-7, Special Airworthiness Certificate.
- (j) GACA form 8130-9, Statement of Conformity.
- (k) GACA form 8320-1, Major Repair and Alteration.
- (l) GACA form 8330-2, Malfunction or Defect Report