GMR AIR CARGO AND AEROSPACE ENGINEERING LIMITED

EN 9110:2018

QUALITY MANAGEMENT SYSTEM MANUAL

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GMR Aero Technic QUALITY DEPARTMENT		
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The QMS Manual contains the following parts. Each Part will be preceded by a Table of Content for that part. The Manual will be indexed in way that each Part will be divided into numbered sections. The section may be divided into sub-sections and sub-sections into paragraphs. Further, paragraphs may be divided into sub-paragraphs.

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Whenever there is a revision to the QMS Manual, the revision shall be approved by Quality Manager through the approval of revised LEP. The Quality Manager is responsible for monitoring any amendment in the QMS Manual. The amendments to the manual will be incorporated only after approval by Quality Manager.

The Header of this manual has been organized as stated below;

The abbreviated term of “GACAEL” for GMR AIR CARGO AND AEROSPACE ENGINEERING LIMITED along with GATL Logo is reflected in LH side.

GACAEL	NAME OF THE EXPOSTION	DOCUMENT NUMBER	
GMR Aero Technic	PART NAME	ISSUE NUMBER	REVISION NUMBER
	CHAPTER NAME	PART	DATE OF REVISION

The Footer of this exposition has been organized as stated below;

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The highlights of **Revisions** are as follows:

List / Amendment Number	Issue/Amendment Date	Change Description
Issue Initial, Rev 1	04 March 2016	Amendment as per AS9110 Stage 1 Audit findings.
Issue 1, Rev 0	11 April 2016	Amendment as per AS9110 Stage 2 Audit findings.
Issue 1, Rev 1	07 January 2017	Amendment as per Company policy
Issue 2, Rev 0	07 November 2017	To Align QMS to the requirements of AS9110 C standard.
Issue 3, Rev 0	01 December 2018	Change of Scope
Issue 3, Rev 1	16 February 2019	Change of nomenclature from AS9110 Rev C to AS / EN 9110: 2018
Issue 4, Rev 0	30 December 2019	1. Headers & Footers of all pages have been revised due change in company Name and 4.3.1 2. change in QMS format. 3. Change of Management Representative
Issue 5, Rev 0	02 March 2020	1. Change in Management Review Inputs and output to align with EN 9110 standard requirement. 2. Para 10.1 is revised to align with EN 9110 standard requirement. 3. Following are the changes as suggested by the auditors in line with the EN 9110 requirements: - a) Scope statement has been added to para 4.3.1 b) Exclusion of Clause 8.3 is replaced with not applicable along with justification in para 4.3.6. 4. Few typographical errors have been corrected and cosmetic changes has been done and non-relevant references has been removed.
Issue 5, Rev 1	01January 2021	1. Para 4.3.1 is revised for the Maintenance scope to be in line with latest revision of DGCA approved Maintenance Organization Exposition. 2. Para 9.1.1 is revised to include Monitoring of EN9110:2018 standard for any amendments 3. Appendix-B 11.2 is revised for the Organization Chart inline with latest revision of DGCA approved Maintenance Organization Exposition. 4. Appendix-C 11.3 is revised to include the reference of Quality Department Manual (QDM) Part 3.5 for administration of Audit Report and Non-Conformance Report (NCR).

Issue 5, Rev 2	10 February 2022	1. Para 4.3.1 is revised for the Maintenance scope to be in line with latest revision of DGCA approved Maintenance Organization Exposition. 2. Minor correction in cross reference between EN9110C & MOE 3. Para 9.1.1 is revised on review of the data related to fortnight-monitoring of EN9110 standard for last 2 years, it has been safely verified that there is no risk involved in increasing the time period between 02 consecutive monitoring. Thus, Manager-audit & surveillance will monitor the EN9110:2018 standard for any revision or amendments on Monthly basis. The record of revision monitoring will be maintained in a form (GAT/QA/165). 4. Appendix-B 11.2 is revised for the organization chart in line with Post Holder Form 4 5. No. of Regulatory authority and regulatory approval has been updated. 6. Quality and safety objective targets have been revised as per revised KPI of relevant department.

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Prepared by	Reviewed by	Approved by
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The manual holder shall enter the appropriate data in the revision sheet below after updating the manual. The conformation of revisions and compliance has to be signed under "Initials" column.

ISSUE	ISSUE DATE	REV NO	REV DATE	INSERTED BY	INSERTED DATE	INITIALS
Initial	01-Feb-16	0	01-Feb-16	Suneel Ekheliker	01-FEB-16	Sd/-
Initial	01-Feb-16	1	04- MAR-16	Suneel Ekheliker	04-MAR-16	Sd/-
1	11-APR-16	0	11-APR-16	Suneel Ekheliker	11-APR-16	Sd/-
1	11-APR-16	1	07-JAN-17	Suneel Ekheliker	07-JAN-17	Sd/-
2	01-DEC-17	0	01-DEC-17	Aboo Backar	01-DEC-17	Sd/-
3	01-DEC-18	0	01-DEC-18	Aboo Backar	01-DEC-18	Sd/-
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4	30-DEC-19	0	30-DEC-19	K J Srivastava	30-DEC-19	Sd/-
5	02-MAR-20	0	02-MAR-20	K J Srivastava	02-MAR-20	Sd/-
5	02-MAR-20	1	01-JAN-21	K J Srivastava	01-JAN-21	Sd/-
5	02-MAR-20	2	10-FEB-22	Chinmay Mukhopadhyay	10-FEB-22	Mukhopadhyay

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Control Copy No.	Manual Holder	Format Type	
		Hard Copy	Soft Copy (CD)
01	GM Quality & Safety and MR	X	-
02	Company Intranet	-	X

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Part-1

SCOPE AND APPLICATION

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1.1 Scope of QMS Manual and Certification

1.1.1 Introduction

The Maintenance, Repair and Overhauling ("MRO") Business of erstwhile GMR Aero Technic Limited ("GAT") has been merged with two other companies and the newly merged company is named as "GMR Air Cargo and Aerospace Engineering Limited ("GACAEL")". GACAEL will continue to use and carry out the MRO business under "GMR Aero Technic Limited" Logo.

1.1.2 Business Objectives, Mission, Vision:

i. To cater to the maintenance needs of the aircraft operators

ii. To become a leader in the airframe maintenance, repair & overhaul business in the region.

iii. Provide one shop stop solution to all the Airlines/ aircraft operators

1.1.3 Future Business Plans & Expansion:

i. GACAEL has plans to step up marketing efforts to penetrate into the international MRO market to generate more business & revenues.

ii. Perform base maintenance on Wide Body aircraft such as A330, B777.

iii. Maintenance of Defence Aircraft.

iv. GACAEL intends to become an Authorized Service Facility (ASF) for aircraft manufacturers like Boeing, Airbus, ATR, Bombardier etc.

1.1.4 HR Policy

i. Communicate values and expectations of how things are done in GACAEL.

ii. Keep the organization in compliance with legislation and provide protection against employment claims.

iii. Document and implement best practices appropriate to the organization.

iv. Support consistent treatment of staff with fairness and transparency.

v. Help management to make decisions that are consistent, uniform and predictable.

vi. Protect individuals and the organization from the pressures of expediency.

1.1.5 Financial Resources

As this company is wholly owned by GHIAL as mentioned above, the financial resource management is done in association with our parent company (GHIAL).

Part-2

NORMATIVE REFERENCES

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2.1	Normative References	1

2.1 NORMATIVE REFERENCES

Following documents in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For further updated references, the latest issue and revision of the referenced document applies.

i. CAR 145 and its revisions

ii. EASA Part 145 and its revisions

iii. EN 9110:2018

iv. EASA MOE and its revisions

v. DGCA MOE and its revisions

Part-3

TERMS, DEFINITIONS & ABBREVIATIONS

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3.1 TERMS & DEFINITIONS

i. Airworthy:

Airworthy is defined as the state of an article or product conforming to its type design and being in a condition for safe operation.

ii. Article:

Material, part, component, assembly, appliance, propeller, aircraft engine, airframe, or aircraft which is listed by the design organization as eligible for installation in product or included in the design data approved by the authority.

iii. Certified Person:

Person qualified by an external/internal competent body to carry out tasks (e.g., licensed maintenance personnel) and special tasks (e.g., non-destructive testing certified personnel)

iv. Certifying Staff:

Person authorized by the maintenance organization to sign the release certificate for an article or product after maintenance.

v. Competent Authority:

The aviation authority (civil or military) having jurisdiction over the type certificate holder, manufacturer, aircraft owner/operator, maintenance, or continuing airworthiness management organization**.**

vi. Critical Items:

Those items (e.g., functions, parts, software, characteristics, processes) having significant effect on the product realization and use of the product; including safety, performance, form, fit, function, produce ability, service life, etc.; that require specific actions to ensure they are adequately managed. Examples of critical items include safety critical items, fracture critical items, mission critical items, airworthiness limitations items, key characteristics, and maintenance tasks critical for safety.

vii. Counterfeit Part:

An article produced or altered to imitate or resemble an “approved article” without authority or right to do so, with the intent to mislead or defraud by passing the imitation as original or genuine.
NOTE: Commonly referred to within the industry as a “bogus part”.

viii. Customer supplied product:

Any type of service or material supplied to be utilized in the modification of customer-owned property.

ix. Customer owned property:

Any type of instrumentation, accessories, manuals, or shipping containers that belongs to a customer is known as customer owned property.

x. Dismantling:

The action to disassemble a product or a component by removing all or some of its constituent parts with the intent to salvage is known as dismantling.

xi. Human Factors:

It is the study of human behaviour (physically and psychologically) in relation to particular environment, products or services and the potential effect on safety. Recognition that personnel performing tasks are affected by physical fitness, physiological characteristics, personality, stress, fatigue, distraction, communication, and attitude in order to ensure a safe interface between personnel and all other environmental elements such as other personnel, equipment, facilities, organizations, procedures, and data.

xii. Key Characteristics:

An attribute or feature whose variation has a significant effect on product fit, form, function, performance, or service life, that requires specific actions for the purpose of controlling variation.

xiii. Life Limited Parts:

Any part for which a mandatory replacement limit is specified in the type design is known as a life limited part.

xiv. Maintenance:

Performance of tasks required to ensure the continuing airworthiness of an article, including any one or combination of overhaul, inspection, testing, replacement, defect rectification, and the embodiment of a modification or repair.

xv. Maintenance Data:

The methods, techniques, and practices (“how-to” instructions) used to accomplish maintenance services. Maintenance data includes, but is not limited to, Aircraft Maintenance Manuals (AMMs), Structural Repair Manuals (SRMs), Component Maintenance Manuals (CMMs), overhaul manuals, repair manuals, other Instructions for Continued Airworthiness (ICA), service letters, service bulletins, airworthiness directives, or type certificate holder engineering orders/instructions.

xvi. Process Approach:

Understanding and managing interrelated processes as a system contributes to the organization’s effectiveness and efficiency in achieving its intended results.
The process approach involves a systematic definition and management of processes, and their interactions, so as to achieve the intended results in accordance with the quality policy and strategic direction of the organization. Management of the processes and the system as a whole can be achieved using the PDCA cycle with an overall focus on risk-based thinking aimed at taking advantage of opportunities and preventing undesirable results.

The application of the process approach in a quality management system enables:

1. Understanding and consistency in meeting requirements;
2. The consideration of processes in terms of added value;
3. The achievement of effective process performance;
4. Improvement of processes based on evaluation of data and information.

Figure 1 gives a schematic representation of any process and shows the interaction of its elements. The monitoring and measuring check points, which are necessary for control, are specific to each process, and will vary depending on the related risks.

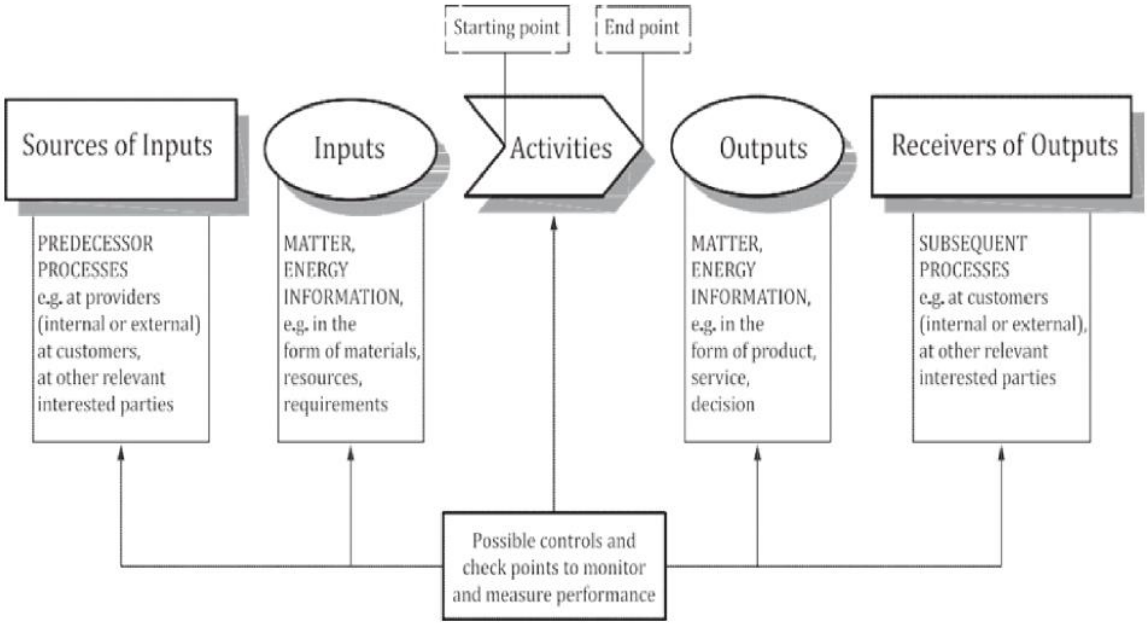
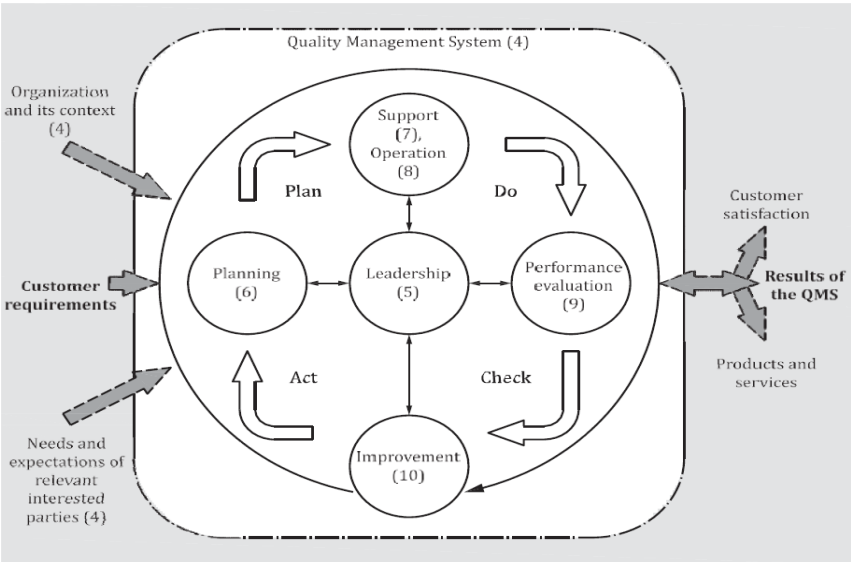


Figure 1 – Schematic representation of the elements of a single process

xvii. Product Safety:

The state in which a product is able to perform to its designed or intended purpose without causing unacceptable risk of harm to persons or damage to property.

xviii. PDCA CYCLE:



xix. Qualified Personnel:

Person meeting training, knowledge and skills requirement to perform tasks requiring such level of recognition are known as qualified personnel.

xx. Quality records:

Documentation of those activities wherein records of said activities must be maintained to demonstrate evidence of conformity to this quality system as specified in the procedure or work instruction level documents, where applicable.

xxi. Release Certificate:

Document attesting that a product is released for use (release/return to service) and certifying that the activities performed, and the results achieved, conform to established organization, regulatory, and customer requirements with no known nonconformities that would endanger flight safety.

xxii. Risk:

It is an undesirable situation or circumstances that have both, a likelihood of occurring and potentially negative consequences.

xxiii. Risk based Thinking:

Opportunities can arise as a result of a situation favourable to achieving an intended result, for example, a set of circumstances that allow the organization to attract customers, develop new products and services, reduce waste, or improve productivity. Actions to address opportunities can also include consideration of associated risks. Risk is the effect of uncertainty and any such uncertainty can have positive or negative effects. A positive deviation arising from a risk can provide an opportunity, but not all positive effects of risk result in opportunities.

xxiv. Safety Policy:

Top management formally expresses its commitment to product safety. This policy reflects the organization's philosophy of safety management and outlines the methods and processes that the organization will use to achieve desired safety outcomes.

xxv. Special Requirements:

Those requirements identified by the customer or determined by the organization, which have high risks to being achieved, thus requiring their inclusion in the risk management process. Factors used in the determination of special requirements include product or process complexity, past experience and product or process maturity. Examples of special requirements include performance requirements imposed by the customer that are at the limit of the industry’s capability or requirements determined by the organization to be at the limit of its technical or process capabilities.

xxvi. Suspected Unapproved Parts:

A part for which there is objective and credible evidence indicating that the part is likely an unapproved or counterfeit part**.**

NOTE: This includes articles shipped to an end user by an external provider who does not have direct delivery authorization from the approved production organization; new articles that do not conform to the approved design/data; articles that have not been manufactured or maintained by an approved source; articles that have been intentionally misrepresented, including counterfeit parts; and articles with incomplete or inappropriate documentation.

xxvii. Technical Data:

Data that is necessary to ensure that the article or product can be maintained in a condition such that continuing airworthiness of the aircraft and related operational and emergency equipment is assured. Technical data shall be acceptable to the competent authority or approved by the authority, if applicable.

xxviii. Unapproved Part:

A part that was not produced or maintained in accordance with approved or acceptable data and applicable statutory, regulatory, and customer requirements is termed as an unapproved part.

3.2 ABBREVIATIONS

AS	:	Aerospace Standard
ADs	:	Airworthiness Directives
AQMS	:	Aerospace Quality Management System
BD	:	Business Development
BMM	:	Base Maintenance Manager
CAR	:	Civil Aviation Requirements
CS	:	Customer Satisfaction
DGCA	:	Director General Of Civil Aviation, India
DP	:	Documented Procedure
EASA	:	European Aviation Safety Agency
EN	:	European Norm
FOD	:	Foreign Object Damage
FPI	:	Fluorescent Penetrant Inspection
FBO	:	Fixed Base Operation
GACAEL	:	GMR Air Cargo and Aerospace Engineering Limited
GRN	:	Goods Receipt Number
IRC	:	Inspection Report Card
KPI	:	Key Performance Indicator
LMM	:	Line Maintenance Manager
MRO	:	Maintenance, Repair and Overhaul
MOE	:	Maintenance Organization Exposition
M & M	:	Monitoring and Measurement
MPI	:	Magnetic Particle Inspection
MR	:	Management Representative
NCP	:	Non-Conformity Product
NDT	:	Non Destructive Test
NG	:	New Generation
OTD	:	On Time Delivery
PMS	:	Performance Monitoring System
QM	:	Quality Manager
QMS	:	Quality Management system
SBs	:	Service Bulletins
SPOG	:	Sealant, Paint, Oil, Grease
TAT	:	Turn Around Time

Part-4

CONTEXT OF THE ORGANISATION

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4.1 UNDERSTANDING THE ORGANIZATION AND ITS CONTEXT

GACAEL has determined the following external and internal issues that are relevant to the purpose and strategic direction and which affect the ability of the organisation to achieve the intended result(s) of its quality management system

4.1.1

a) External issues include:

1. Regulatory approvals issued to GACAEL by DGCA India and Foreign aviation regulatory authorities.
2. Competition from other Aircraft MRO situated in Asia Pacific region as identified by Business development department of GACAEL.
3. Cultural and socio-economic issues prevailing in the operational site at GACAEL Hyderabad, India.
4. Existing differences in technological development related to aircraft, their maintenance and compliance to newer standards and regulations.

b) Internal issues include:

1. Effectiveness of the GACAEL QMS process to achieve the results.
2. Knowledge levels, retention and enhancement of the personnel working in GACAEL.
3. Adherence to GACAEL values and beliefs and its effectiveness.
4. Performance of GACAEL in the International Aircraft MRO market.

The above internal and external issues and the associated risks and opportunities are discussed, verified and reviewed by the top management during Management review meetings.

4.2 UNDERSTANDING THE NEEDS AND EXPECTATIONS OF INTERESTED PARTIES

a) Interested parties relevant to GACAEL QMS are as follows:

1. All customers who send their aircraft for maintenance to GACAEL.
2. All regulatory and statutory bodies who have issued approvals to the organization.
3. All banks and financial institutions that have financed the operations of GACAEL
4. Suppliers of aircraft spares, materials and consumables.
5. Contracted and sub contracted organizations.
6. Stake holders and members of the board of GACAEL.

b) The relevant requirements of the aforementioned interested parties are managed and ensured by various departments such as Business Development, Base Maintenance, Human Resource, Purchase and Stores. It is the primary responsibility of the Quality department to establish systems and to ensure adherence to the requirements by all departments in meeting, monitoring and reviewing the requirements of the aforementioned interested parties.

4.3 SCOPE OF THE QUALITY MANAGEMENT SYSTEM

4.3.1 GMR Air Cargo and Aerospace Engineering Limited (GACAEL) has developed and implemented a Quality Management System in order to document the company's best business practices, satisfy regulatory requirements and expectations of its customers and stakeholders to the best possible extent, and to improve the overall management of the company.

Scope: Maintenance, Repair and Overhaul of Aircraft including parts procurement and Storage to support MRO activities.

The scope covers following aircraft, components and services:

a) Airbus 319/320/321 Series fitted with IAE V2500/ CFM- 56 Engines covering all MPD tasks up to 80,000 Flight Hours; 44,700 Flight Landings and 13 Years.

b) ATR 42 Series fitted with P&W 120 series Engines covering all MPD tasks up to 4C checks; 12,000 Flight Hours; 70,000 Flight Landings and 12 Years.

c) ATR 72 Series fitted with P&W 120 series Engines covering all MPD tasks up to 4C checks; 70,000 Flight Landings; 46,000 Flight Hours and 12 Years.

d) Bombardier DHC-8-400 Aircraft fitted with P&W PW150 Series Engines covering all MPD tasks up to and including 24,000 Flight Hours; 40,000 Flight Cycles and 180 Months

e) Boeing 737-600/700/800/900/900ER series fitted with CFM-56 Engines covering all MPD tasks.

f) Boeing 737-7/8/9 Series aircraft fitted with CFM Leap – 1B Base maintenance covering all MPD task up to and including 7500 Flight Hours, 6600 Flight Cycles/03 Years

g) Airbus 319/320/321 Series fitted with IAE PW 1100 Engine covering all MPD tasks up to and including 36,000 Flight Hours; 26,000 Flight Cycles and 08 Years.

h) Airbus 319/320/321 fitted with Leap 1A Engines covering all MPD tasks up to 36,000 Flight Hours; 26,000 Flight Cycle and 08 Years.

i) Dassault Aviation Falcon 900EX EASy fitted with Honeywell TFE731-Painting and weighing.

j) Components other than complete engines or APU are:
   i. C1 Air-conditioning
   ii. C4 Doors – Hatches
   iii. C5 Electrical Power
   iv. C6 Equipment
   v. C8 Flight Controls
   vi. C15 Oxygen
   vii. C17 Pneumatic & Vacuum
   viii. C18 Protection ice/ rain/fire
   ix. C20 Structural

k) Specialised services include Non-Destructive Inspection by Radiography Inspection, Ultrasonic Inspection, Eddy Current Inspection, Magnetic Particle Inspection, Fluorescent Penetrant Inspection and Infrared- Thermal (Thermography) Testing IRT.

l) Painting of aircraft and components.

4.3.2 This manual describes the Quality Management System, delineates authorities, inter relationships and responsibilities of the personnel responsible for performing within the system. The manual also provides procedures or references for all activities comprising the Quality Management System to ensure compliance to the necessary requirements of the standard.

4.3.3 The manual is used internally to guide the company's employees through the various requirements of the EN 9110:2018 standard that must be met and maintained in order to ensure customer satisfaction, continuous improvement and provide the necessary instructions that create an empowered work force.

4.3.4 The manual is used externally to introduce the Quality Management System to our customers and other external organizations or individuals. The manual is used to familiarize them with the controls that have been implemented and to assure them that the integrity of the Quality Management System is maintained and remains focused on customer satisfaction and continuous improvement.

4.3.5 This manual is divided into ten sections that correlate to the Quality Management System sections of the ISO 9001:2015 format and EN 9110:2018. Each section begins with a policy statement expressing GACAEL's obligation to implement the basic requirements of the referenced Quality Management System section. Each policy statement is followed by specific information pertaining to the processes and procedures that describe the methods used to implement necessary requirements.

4.3.6 This quality manual describes the quality management system followed at GMR Air Cargo and Aerospace Engineering Limited in accordance with EN 9110:2018, QMS Requirements for Aviation, Space and Defence Organisations / QMS Requirements for Maintenance Organisations. The Quality Management System of GACAEL meets the requirements of the international standard DIN EN 9110:2018 while undertaking Base maintenance repair and overhaul of commercial aircraft and its components at the following location:

GMR AIR CARGO AND AEROSPACE ENGINEERING LIMITED, Plot #1, GMR Aerospace Park,
Hyderabad Aviation SEZ Ltd., Rajiv Gandhi International Airport,
Shamshabad, Hyderabad – 500108
Telangana, INDIA

Not Applicable:

Design & Development (8.3)

Justification:- MRO activity do not involve any design development and all activities are carried out as per customer maintenance input, hence this clause is not applicable.

4.4 QUALITY MANAGEMENT SYSTEM AND ITS PROCESSES

4.4.1

a) At GMR Air Cargo and Aerospace Engineering Limited, a QMS in accordance with EN 9110:2018 has been established, documented, implemented and maintained with evidence of effective continual improvement. GACAEL has obtained approvals, certificates, ratings, licenses and permits as detailed in clause 4.3 of this Manual. All the customer requirements are established, documented, implemented and maintained as addressed in their respective contractual agreements.

b) The QMS addresses customer, statutory, and regulatory requirements
Ref.: Document No. MOE Chapter 1.1, MOE Part 4 and Customer contract available with Business Development.

c) GACAEL has determined various processes as indicated in the process map in Appendix 'A'. These processes are needed for the QMS and its application throughout the organization. The process map also determines their sequences and interactions.

d) Following processes are needed for the quality management system and their application throughout the organisation:

Sl. No	Processes	Process Owner
1	Quality Process	Head-Quality
2	Purchase Process	Head-Purchase
3	Stores Process	Head-Stores
4	Planning Process	Head-Planning
5	Business Development Process	Chief Marketing Officer
6	Technical Publication Process	Tech Pubs in charge
7	Maintenance Process	Base Maintenance Manager
8	Operation Support Services	Manager-OSS
9	Hangar Tool Crib Process	Tool Crib in charge
10	NDT Process	NDT Level 3
11	Paint Shop Process	Shop In charge
12	Composite Shop Process	Shop In charge
13	Structure Shop Process	Shop In charge
14	Flight Control Shop Process	Shop In charge
15	Welding Shop Process	Shop In charge
16	Air-Conditioning Shop Process	Shop In charge
17	Battery Shop Process	Shop In charge
18	Oxygen Shop Process	Shop In charge

e) Main process is formally identified in the Business Process Map. Criteria, methods, availability of resources and information necessary to support the operation and monitoring have been determined to effectively operate and control QMS processes.

f) QMS processes are monitored, measured and analysed. Actions are taken to implement and continually improve to achieve the planned results.

g) The processes are managed in accordance with the procedures mentioned in MOE, its associated documents and EN 9110:2018 Quality Management System manual (as applicable).

h) Outsourced processes are defined in MOE, Chapter 2.1 and the controlled List of outsourced processes is maintained in the Master Vendor List vide Document No: GAT/MT/003.

i) Process Chart is placed at Appendix 'A' and Organisation Chart is placed at Appendix 'B'.

Process plans for all processes are detailed at Appendix 'D', details of the input, output, sequence and interaction of the processes, criteria and methods are elaborated, which include monitoring, measurement and related performance indicators required to ensure the effective operation and control of these processes. The process plan specifies the resources required; the personnel responsible, their duties and responsibilities, KPIs and evaluation of the process to improve its performance.

j) Risks and opportunities associated with each process are documented along with the KPIs of the individual process.

4.4.2 **DOCUMENTATION REQUIREMENTS**

General

The Quality Management System documentation is as defined in the EN 9110:2018 QMS Manual Vide Ref. No: GAT/QA/DOC/EN9110/001

a) Documented information to support operation of its processes

MOE, Quality manual and respective department manuals are established, maintained and include the scope of the QMS. The MOE includes documented procedures or references to them. The Quality manual includes a description of the QMS processes and their interactions as given in Business Process Map.

Following department manuals address the procedures and requirements for their respective processes:

Sl. No	Title of the document	Document Number
1	Maintenance Organisation Exposition – DGCA	GAT/QA/DOC/MOE/001
2	Quality Department Manual	GAT/QA/DOC/MOE/003
3	Maintenance Department Manual	GAT/QA/DOC/MOE/006
4	Operations Support Services Manual	GAT/QA/DOC/MOE/005
5	Planning Department Manual	GAT/QA/DOC/MOE/004
6	Stores Department Manual	GAT/QA/DOC/MOE/007
7	Purchase Department Manual	GAT/QA/DOC/MOE/008
8	NDT Quality Manual	GAT/QA/DOC/MOE/NDT QM/001
9	Procedure for Penetrant Inspection	GAT/NDT/PR/PT/02
	Procedure for TAP Testing	GAT/NDT/PR/TT/07
	Procedure for Magnetic Particle Inspection	GAT/NDT/PR/MT/03
	Procedure for Eddy Current Inspection	GAT/NDT/PR/ET/04
	Procedure for Radio Graphic Testing	GAT/NDT/PR/ RT/01
	Procedure for Infrared/Thermal testing	GAT/NDT/PR/IRT/06
	Procedure for Elasticity Laminate checker	GAT/NDT/PR/ELCH/08
	Procedure For Ultra Sonic Bond Testing	GAT/NDT/PR/BT/09
	Procedure for Ultrasonic Inspection	GAT/NDT/PR/UT/05
10	Safety Management System Manual	GAT/QA/DOC/005
11	Engineering Training Manual	GAT/QA/DOC/007
12	Facilities Equipment Maintenance Manual	GAT/QA/DOC/MOE/014
13	Business Development Department Manual	GAT/QA/DOC/MOE/034
14	Forms & Tags Manual	GAT/QA/DOC/MOE/033
15	Workshop Manual	GAT/QA/DOC/MOE/037
16	Technical Services and Technical Publication Department Manual	GAT/QA/DOC/TSTPDM/038

Documented procedures required by EN 9110:2018 standard (as applicable) are available. List of the procedures is given below:

i) Procedure for Control of Documents: Refer MOE Chapters 1.11 , 2.8 & 2.13

ii) Procedure for Control of Records: Refer MOE Chapter 2.14.

iii) Configuration management is documented vide MOE Chapters 2.11 & 2.12.

iv) Procedure for Internal Audits: Refer MOE Chapters 3.1, 3.2 and 3.3 for quality audit procedure.

v) Procedure for Control of Non-Conforming Product: Refer MOE Chapters 2.18, 2.19 and 2.20.

vi) Procedure for Control of FOD (Prevention, Detection and Removal of Foreign Objects): Refer MOE Chapter 2.7.

vii) Procedures related to QMS requirements are documented in the MOE under Quality System Procedures.

viii) Procedure for Corrective Actions: Refer MOE Chapter 3.3

ix) Procedure for Preventive Actions: Refer MOE Chapter 3.3

b) Documented information is retained as described in MOE 2.17. As per requirements stated in DGCA CAR 145, the documents & maintenance records of aircraft having undergone maintenance are stored with the organisation. The records are stored in a fire proof cabinet and the period of storage is defined in the MOE.

When the retention period for the records is completed, disposal action shall be initiated by the Officer in charge records with the approval of HOD Planning. Prior to that, he shall review the records with HOD Planning, Quality and Stores, and seek recommendation for disposal. Hard copy records will be destroyed by shredding and soft copies i.e. CDs will be suitably disposed of.

It shall be the responsibility of the Stores Manager to ensure that all records are shredded properly. In an unforeseen case, where the organisation is shutting down or is winding up a maintenance location, the MRO will hand over the records to the operator to whom the aircraft belongs. In case the operator is not in existence, then to the successor organisation.

c) Documented information including description and interaction between the processes established for QMS are described in the MOE and associated documents. For example: **-**

i) Establishing and maintaining proficiency of personnel (Refer MOE Chapter 3.14);

ii) Establishing and maintaining rosters for certifying staff/personnel (Refer MOE Chapter 3.5);

iii) Establishing and maintaining the training program (Refer MOE Chapter 3.4);

iv) Establishing and maintaining current approved or accepted technical data (Refer MOE Chapter 2.8);

v) Performing preliminary inspection of all articles that are maintained (Refer MOE Chapters 2.9,2.13 & 2.15);

vi) The acceptance of incoming articles (Refer MOE Chapter 2.2);

vii) Inspecting all articles that have been involved in an accident for hidden damage before maintenance is performed (Refer MOE Chapters 2.9 , 2.15 & 2.18);

viii) Conducting the maintenance process in compliance with customer, statutory, and regulatory requirements (Refer MOE Chapter 2.13);

ix) Performing final inspection and 'return to service' of maintained articles (Refer MOE Chapter 2.16)

x) Governing work performed at another location (Refer MOE Chapter 2.24).

xi) Assignment of the responsibilities and authorities for these processes is described in the MOE 1.4 and respective department manuals

Details of the system used to maintain and retain documented information of the work performed for each product is described in MOE 2.17

Part-5

LEADERSHIP

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5.3	Organisational, Roles, Responsibilities and Authorities	1

5.1 LEADERSHIP AND COMMITMENT

5.1.1 General

a) The duties and responsibilities of GACAEL top management include accountability for the effectiveness of QMS, ensuring Quality & Safety Policy and relevant objectives are established, and are in consonance with the context and strategic direction of the organisation. Promoting the use of process approach and risk based thinking, communicating importance of meeting customer, statutory, and regulatory requirements, establishing a quality & safety policy, establishing corresponding objectives, conducting management reviews, ensuring availability of resources are all documented.

b) Promoting improvements, engaging, directing and supporting persons to contribute to the effectiveness of the QMS are also documented in MOE Chapters 1.1 to 1.4. Ensuring that corrective and preventive actions, particularly those resulting from audits are implemented within stipulated time lines is documented in the duties and responsibilities of top management (Refer MOE Chapter 1.4).

5.1.2 Customer Focus

a) Top management ensures that customer requirements are determined and met as per the contractual agreement made with each customer. Special attention is given to the Conformity of Aircraft maintenance services, On-time delivery (OTD) performance within the applicable scope of the statutory and regulatory requirements.

b) As per DGCA CAR 145, aircraft is released from base maintenance after all tasks as per the work package are completed. In case any task cannot be completed, customer's concurrence is obtained to release the aircraft with incomplete maintenance. The same is recorded in the CRS in the final release of aircraft, in this context, MOE Chapter 2.16 refers.

c) Risks and opportunities that can affect conformity of products and services are determined and necessary actions are taken to mitigate the risks.

d) These are monitored by the top management on regular basis during review meetings held with the process owners where customer related processes, regulatory / customer requirements (including special requirements, if any) and post-delivery activities/ actions are discussed.

e) Actions are initiated by the top management if there is a likelihood of any process not achieving the planned results, with the aim of enhancing customer satisfaction.

f) In order to evaluate customer satisfaction, top management reviews the information related to customer perception during review meetings with business development department. The data for carrying out the review is consolidated by Business development and planning departments to include but not limited to, product conformity, OTD performance, Customer complaints, Corrective action requests etc.

g) Deficiencies identified and analysed by Top Management during the review are documented and action plan for improvement as applicable, consistent with the quality and safety policy of GACAEL is initiated.

h) Actions taken by the process owners as an outcome of the review will be reviewed by Top management during subsequent management review meetings.

5.2 QUALITY AND SAFETY POLICY

5.2.1 Establishing quality and safety policy

a) Top management ensures that the quality and safety policy is appropriate including a commitment to comply with requirements and to continually improve the effectiveness of the QMS. The policy provides a framework to establish and review its quality and safety objectives. The policy is communicated and understood by all in the organisation. The quality and safety policy and objectives are reviewed for suitability during management Review.

b) Documented statement of a quality and safety policy is given in Chapter 1.2 of MOE. The safety policy is also reviewed annually for continuing suitability. Refer: MOE Chapter 1.2 and SMS Manual (Ref. No: GAT/QA/DOC/005).

c) Framework for all processes in the organisation to establish their respective Quality and Safety objectives is based on the Organisation Quality and Safety policy and meeting the following objectives:

i. Compliance to statutory and regulatory requirements.
ii. Compliance to customer requirements.
iii. Product quality and Safety
iv. Human Factors and Personnel Safety

5.2.2 Communicating the Quality and Safety policy

Quality policy is established, available and maintained as documented information. Refer: MOE 1.2.

Quality and safety policy is communicated, understood and applied across the organisation communication also takes place regularly by means of intranet – SAMVAD, Email, meetings and internal notices such as QC and Departmental Circulars. The same is made available to relevant parties, as applicable.

5.2.3 Establishing and Communicating the Quality and Safety Policy

Quality and Safety policy as documented in MOE Chapter 1.2 is communicated to all and is displayed at prominent places, as appropriate. The quality and safety objectives for GACAEL, as identified by Top management, are measureable and consistent with the quality and safety policy. Non punitive action for safety reporting is stated and documented in MOE Chapter 1.2. Annual targets are defined by top management and monitored by Quality and Safety Manager. Same are also discussed during the management reviews. Quality and safety objectives for different process are derived from these objectives and are defined and measured separately by the respective process owners on a quarterly/ half yearly basis. Top management carries out a review of the performance of all processes defined in the quality manual during management review.

5.3 ORGANISATIONAL ROLES, RESPONSIBILITIES AND AUTHORITIES

Responsibilities and authorities are defined and communicated to all in the organisation. As detailed in MOE Chapter 1.4, the nominated post holders are responsible to ensure that the QMS conforms to the standards requirements, ensure that the processes are delivering the intended outputs, report on performance of their respective process and opportunities for improvements to the top management, ensure the promotion of customer focus within their respective departments and ensure that integrity of the QMS is maintained when changes to the QMS are planned and implemented.

5.3.1 Accountable Manager

A manager has been appointed with the overall financial and corporate responsibility for the scope of approval. He has been granted the authority and necessary resources to ensure that all airworthiness activities can be financed and carried out to the applicable standards. (Refer MOE Chapter 1.4.1)

5.3.2 Quality Manager

Top management has appointed the GM- Quality & Safety as Quality Manager and Management Representative, whose responsibility and authority include ensuring that QMS processes are established, implemented, and maintained. The QM has established an independent audit program with a quality feedback reporting system to the Accountable Manager. The QM has direct access to the Accountable Manager to ensure he is informed on quality and compliance matters. QM has the organizational freedom and unrestricted access to the top management for resolution of quality management issues. Further details are documented in MOE Part 1.4.3.

5.3.3 Other Appointed Manager(s)

Top management has appointed managers who are responsible for ensuring that all required operational activities are carried out in accordance with customer and competent authority requirements as specified in MOE Chapter 1.4. All these Managers are responsible to the Accountable Manager as detailed in MOE Chapter 1.5. They are responsible for ensuring that all maintenance required is carried out in accordance with organization, customer, and regulatory requirements. (Refer MOE Chapter 1.4).

Part-6

PLANNING

PART	PART NAME	PAGE
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6.2	Quality objectives and plans to achieve them	1-2
6.3	Planning of changes	1

6.1 ACTIONS TO ADDRESS RISKS AND OPPORTUNITIES

6.1.1 The risks and opportunities and actions taken and/or to be taken to mitigate these risks to the best possible extent, are as brought out at clause 4.1. These are discussed below:

a) Approvals issued to GACAEL by numerous regulatory authorities

1. Risk and Opportunity:

GACAEL is approved by DGCA India and 20 foreign civil aviation authorities; such as European Aviation Safety Agency, Federal Aviation Administration-USA, CAA Oman, CAA Qatar, GACA Saudi Arab etc. It is undoubtedly an achievement and good for business to hold numerous foreign regulatory approvals however, the challenge is that in order to maintain so many different approvals, there is a constant need to keep the requirements & documentation updated and to maintain the currency of the certifying staff to continue to be in consonance with the latest version / updates of each country's regulatory requirement.

2. Mitigation:

A cell is dedicated to check the official websites of various regulatory authorities at regular intervals for updates and to download the relevant subject matter for dissemination to all concerned, either in the form of circulars or as revisions in the respective MOEs. Based on these updates, the training staff is also geared up to incorporate the subject matter in their training modules for imparting the knowledge during recurrent / continuity training sessions.

b) Competition from other Aircraft MRO situated in Asia Pacific region.

1. Risk and Opportunity:

There are numerous aircraft MROs in existence in the Asia Pacific region that are active competitors of GACAEL, these are equally well equipped to undertake maintenance work of aircraft as per respective scope and approval.

2. Mitigation:

The booming aviation market in India has resulted in mass expansion of various domestic airlines resulting in large number of aircraft being inducted by these airlines. Due to the high cost of maintenance of aircraft outside India and due to infrastructural constraints at major hubs such as Delhi, Mumbai and Bangalore, most domestic airlines prefer to get their aircraft maintained in India. Even foreign airlines find it cost effective to get their aircraft maintained in India rather than in other countries hence, despite existing competition, GACAEL continues to be a preferred MRO.

c) Cultural and socio-economic issues prevailing in the operational site at GACAEL, Hyderabad.

1. **Risk and Opportunity:**

   Major multinational IT firms are located in Hyderabad resulting in an upward surge in the number of multinationals and tertiary sector services, making the city a tough one to beat, in terms of IT advancement. Many domestic firms and multinational companies have established their headquarters in this city and have contributed to the steady growth. The city has a strong infrastructural base and has earned a global reputation as a cosmopolitan city known for its assimilative cultural ethos. The untapped intellectual talent in the region is immense, especially in the field of technology and mathematics. Another reason is that labour is especially cheap and abundant, as well as a working environment that is conducive to work. Special economic zones (SEZs), industrial parks, free trade zones, warehousing zones and export-oriented units that are established in and around the city are a huge plus.

2. **Mitigation:**

   In view of the highly literate work force and the availability of SEZs and warehouses, the city is an ideal choice to undertake both manual and technologically complex maintenance work on aircraft.

d) Existing gaps in technological development related to aircraft maintenance

1. **Risk and Opportunities:**

   Due to the absence of any commercial aircraft manufacturer/ OEM in the country, it is often felt that technological developments in the field of aviation are embraced late in our country and that we are the last in the global scenario to even get the information.

2. **Mitigation:**

   This risk is mitigated by continual monitoring OEM websites and by regular interactions with aircraft manufacturers, regulatory agencies and with customer airlines to close any gaps that may develop with respect to technological developments in aircraft maintenance.

e) Effectiveness of the GACAEL QMS process to achieve the results

1. **Risk and Opportunity:**

   The need to achieve desired results as per the QMS is primary to the continuing success and business of the organisation. The requirement of maintaining multiple regulatory approvals is a challenge which can be made possible only with concerted efforts towards achieving the documented objectives.

2. **Mitigation:**

   The QMS team works relentlessly to update and maintain all requirements documented in EASA, FAA and DGCA standards, a dedicated team of experienced staff and auditors is deployed to ensure adherence to the required standards through a well-established QA program and act as a feedback system to the top management to help them review current processes and SOPs and evolve necessary corrective measures. Till date, the desired results have been achieved by the established QMS, this is evident from the fact that all 21 regulatory approvals (as amended) have been maintained and revalidated / renewed successfully.

f) Knowledge levels, retention and enhancement of the personnel working in GACAEL

1. Risk and Opportunities:

In the constantly changing world of aviation, technologies become redundant and processes are frequently revamped to bring them in line with the latest updated version, the biggest challenge that an organisation faces is to capture these updates and disseminate the contents to all concerned personnel in order to enhance their knowledge and skill levels. The second biggest challenge is to retain the “trained and competent” personnel so that the investment made in their training is utilised fully.

2. Mitigation:

Dedicated and regular interactions with OEMs / regulatory authorities and customers ensure availability of latest versions of updates in technology, standards and requirements. These updates are disseminated by means of circulars and Quality Control Instructions and a dedicated team of training staff imparts the subject matter training as a part of continuity / recurrent training. Non retention of trained manpower is an issue that the organisation has to deal with since individual personal aspirations are also required to be respected, particularly if it allows them to grow in their respective career.

6.1.2 The aforementioned risks and opportunities and those identified by each department/process owner in their respective field of work are integrated discussed, evaluated, verified and reviewed by the top management and department heads during the Management review meetings.

6.2 QUALITY AND SAFETY OBJECTIVES AND PLANNING TO ACHIEVE THEM

6.2.1 Quality Objectives

Following are the quality and safety objectives for GACAEL as identified by the Top management which are measureable and consistent with the quality and safety policy. Targets are defined by the top management and monitored during staff and management reviews. Objectives for different processes are derived from these objectives and are defined and measured separately by the respective process owners on a quarterly/ half yearly basis. Top management carries out a review of the performance of all processes defined in the quality manual during management review and updates the objectives, if deemed necessary.

Sl. No	Quality Objectives	Method of Measurement	Target
1	Turnaround time and product realization	Measured in terms of date of delivery agreed in contract verses actual TAT dates	> 90%
2	Customer Satisfaction	Analysis of data collected on customer feedback and complaints	>75%
3	Delivery of Reliable and Quality Product	$\frac{\text{No. of Defect free Aircraft}}{\text{No. of Aircraft serviced}} * 100\%$	95%

Sl. No	Safety Objectives	Method of Measurement	Target
1	Hazard Reports	Number of Hazards reported per year	>10% of Previous year's Target
2	Number of Maintenance errors	Number of Maintenance Errors Reported (attributed to maintenance accomplished in GACAEL) per year	<5

6.2.2 Quality and safety management system planning

a) It is the policy of GACAEL to pursue the highest standards of safety/ quality and health for employees within the work environment. All employees whether in management or not, are expected to support values of ethical and moral behaviour and value everyone within the work environment in their daily working lives.

b) Fundamentally our safety beliefs are:

1. Safety and Quality are the sources of business competitive advantage. The business will strengthen by excelling in making safety and quality an essential and integral part of all activities.

2. All accidents and unwanted dangerous incidents are preventable.

3. Management is accountable for safety and quality performance (including airworthiness) in complying with procedures, quality standards and regulations.

c. Our elements to practicing safety and quality are:

i. To identify and make safety and quality, a prime consideration in the daily performance of work, and management is accountable for safety. All personnel including management shall undergo Human Factors training programme as a mandatory measure and apply Human Factor principles in carrying out their work.

ii. As part of employee evaluation, safety and quality performance shall be recognised and positively acknowledged. All employees will be briefed and trained in the safety and quality requirements so as to ensure understanding of their accountability and responsibility. GACAEL will not punish personnel who voluntarily inform of their mistakes and report a failure. However, willful violations will not be tolerated and offenders will be taken to task.

iii. GACAEL is committed to the safest operating standards possible, to achieve this, GACAEL has developed a Voluntary/Hazard Reporting Form, it is imperative that we have uninhibited reporting of all incidents and occurrences which may compromise the safe conduct of our operations. To this end, every employee is responsible for communicating any information that may affect the integrity of aircraft safety, personnel and or the company. Such communication will be completely free of any form of reprisal. GACAEL will not take disciplinary action against any employee who discloses an incident or occurrence involving safety. This policy shall not apply to information received by the company from a source other than the employee, or which involves an illegal act, or a deliberate or wilful disregard of promulgated regulations or procedures.

iv. All Personnel in GACAEL are trained in Safety Management System as documented in the MOE. All Managers will ensure regular safety audits are conducted and remedial actions carried out within the stipulated time period assigned. These audits will focus on attitudes and behaviour of personnel, the work environment and compliance with safety and quality procedures and regulations.

v. Employees at all levels are encouraged to participate, report maintenance errors and involve in developing safety measures, standards and accidents, and also share the information in detail within a reasonable time frame.

vi. Mandate the need for all personnel to co-operate with internal, external and regulatory auditors in their audits.

vii. Commercial imperatives shall not affect safety and quality standards.

viii. Effective utilisation of available resources and manpower to ensure that maintenance is carried out right the first time and every time.

6.3 Planning Of Changes

Top management ensures that the QMS planning is carried out to meet the requirements without affecting the integrity of QMS, and maintained whenever changes to the system are planned and implemented.

GACAEL QMS controls and documents the changes affecting maintenance process and other related processes, and also the personnel, maintenance equipment, tools, or software programs. Changes to maintenance processes are assessed by the respective process owners and approved by quality process to confirm that the desired effect has been achieved without adverse effects to product conformity. Procedures for the control of production process changes are documented in MOE Chapters 1.11 and 2.8.

Part-7

SUPPORT

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7.1 RESOURCES

7.1.1 Internal and external Resources

Internal and external resources required by GACAEL are determined and provided for by the Top Management for implementing and maintaining the effectiveness of QMS processes with a view to enhance customer satisfaction and compliance to regulations. As a mandatory part of compliance to regulatory requirements, the availability of tools, equipment, maintenance data, facilities, materials, and necessary qualified persons are ensured by respective department heads at the time of accomplishment of tasks in order to ensure safe completion of activities (Refer MOE Chapters 1.6, 1.7, 1.8, 2.1, 2.2 & 2.4).

7.1.2 People

Personnel required for the effective implementation of the QMS and for the operation and control of processes are ensured as documented in MOE Chapter 1.7

7.1.3 Infrastructure

a) The organisation has determined, provided and maintains the infrastructure needed to achieve product / services conformity including buildings, workspace and associated utilities, process equipment and supporting services (Refer MOE Chapter 1.8)

b) Currently there are no approved facilities for performing maintenance, repair, and overhaul activities away from its' current location, however process exists in the MOE (Refer MOE Chapter 2.24) for undertaking maintenance away from base, this requirement is fulfilled when there is a requirement from customer on a “one off” basis

c) Requirements of all support systems such as transportation, communication, security, Housekeeping, Facility management, Fire services and IT functions are available and are maintained by the Human resource and IT processes.

d) Detailed documented procedures regarding housekeeping, environmental control and cleanliness requirements in shops like Composites, Oxygen and battery, bonded stores for storage of aviation spares etc., and FOD control in the maintenance hangars are referred in MOE Chapter 2.7 and in associated documents of the stores, and maintenance process

e) All new products and removed products from aircraft are preserved in the maintenance hangar, workshops and bonded stores under controlled conditions as necessary (Refer MOE Chapters 1.8, 2.3, 2.19 & 2.20 and associated process documents).

7.1.4 Environment for the operation of the processes

The organisation has determined and continuously manages the work environment needed to achieve product conformity to aviation regulatory requirements. We are committed to strictly adhere to our documented values and beliefs of humility, team work & relationships, social responsibility and respect for the individual.

7.1.5 Monitoring and Measuring Resources

7.1.5.1 General

- Operation Support Services process is responsible for the Control of Monitoring and measuring equipment.

- Procedures are documented in the OSS Department Manual to maintain records and necessary documents and to provide evidence of conformity to requirements for the monitoring and measuring equipment (Ref: OSS Manual GAT/QA/DOC/MOE/005).

- Procedures are defined for calibration of monitoring and measuring equipment including equipment type, identification, location, frequency, check method, and acceptance criteria. Refer Calibration Procedure vide MOE Chapter 2.5.

- Procedures exist to ensure that all monitoring and measuring equipment have unique identification number in order to determine their identity and calibration status. They are monitored by the Stores & Tool crib process owner to safeguard and protect them adequately from any adjustments that would invalidate the measurement result.

- Procedures for verification recall of the tools and equipment when they are due for calibration and /or maintenance are documented in Stores Department Manual GAT/QA/DOC/MOE/007.

- Calibration (and/or verification) records are retained as per the procedures documented in Stores Department Manual which also requires that previous results are assessed, recorded, and acted upon when any measuring device/ equipment is found out of conformance.

- Business development, planning and maintenance processes are responsible for monitoring the information related to the customer requirements for Base Maintenance activities.

- Procedures for obtaining/using customer perception data such as Customer complaints, Corrective action request, on time delivery performance, Conformance of Maintenance information which also includes product conformity and on-time delivery (OTD) are documented in Business Development Department Manual (Ref: GAT/QA/DOC/MOE/034).

7.1.5.2 Measurement Traceability

The monitoring and control of all the monitoring and measuring equipment, their calibration and traceability to national and/or international standards is established and implemented. The process for the recall of monitoring and measuring equipment requiring calibration or verification is maintained (Refer MOE chapter 2.6).

7.1.6 Organisational Knowledge

Knowledge necessary for the operation of the processes and to achieve conformity of products and services are detailed in MOE Chapter 3.14, recurrent training, latest Technology training as part of the refresher training is documented in MOE chapter 3.4.5 (syllabus for refresher training for all applicable personnel).

Knowledge from internal sources is available through previous experiences, process improvements and knowledge sharing by senior colleagues.

Knowledge from external sources is obtained from OEM Publications, Regulatory standards & Requirements and Customer feedback. Knowledge Specific to the organisation is available through MOE, Quality Circulars, Department Circulars, Audit Findings and continuity training.

7.2 COMPETENCE

- Personnel competency is based on education, training, skills, and experience. Certifying personnel are identified, qualified and meet the eligibility requirements in accordance with competent regulatory authority requirements, as documented in MOE Chapter 3.14. Personnel performing maintenance repair, and overhaul activities and releases of articles are qualified and certified (Refer MOE Chapters 1.6 and 3.4).

- Process exists for the qualification / experience of non-certificated personnel / support staff undertaking maintenance, repair, and overhaul activities as per procedures documented in MOE Chapter 3.4.

- Competence is determined for all those personnel who are involved in the product realisation process, affecting the product / service quality directly or indirectly as mentioned in MOE Chapter 3.14.

- Relevant training in order to achieve and maintain the necessary competence is provided to these personnel at regular intervals by the training section.

- The effectiveness of the training imparted is evaluated by the respective process owners by evaluating the improvements in performance of the personnel who underwent training, and their awareness of the relevant activities and individual's contribution towards realization of quality objectives of the organisation.

- Training section in Quality process maintains the training records as per procedures detailed in MOE (Refer MOE Chapter 3.4, 3.5 and 3.8).

- A training program exists that ensures personnel are imparted training to remain compliant to procedures, human factors, technical knowledge, regulatory requirements and undergo OJT (Ref: MOE Chapter 3.4 and Engineering Training Manual GAT/QA/DOC/007).

- Recurrent training that covers changes in regulatory requirements, procedures, and maintenance standards is also provided (Ref: MOE Chapter 3.4 and Engineering training manual GAT/QA/DOC/007).

- Maintenance and planning processes address the issues related to continual assessment of the availability of tools, technical data, and qualified personnel and external resources. (Refer MOE Chapters 1.4, 1.5, 2.5, 2.6, 2.8, and 2.28).

7.3 AWARENESS

- All personnel are made aware of the quality policy and quality objectives thru' manuals, circulars and posters displayed at prominent places. Awareness is also provided to all personnel in the organisation by means of training, as documented in MOE Chapters 1.2, 3.4 and 3.14.

- All process owners, in consultation with the quality process are responsible for devising methods for measurement and analysis of their respective processes to ensure that planned results are achieved. Correction and preventive actions will be taken by the respective process owners when planned results are not achieved.

- When determining suitable methods, the process owner will consider the type and extent of monitoring or measurement appropriate to each of their processes in relation to their impact on the conformity to product requirements and on the effectiveness of the quality management system.

- In the event of process non-conformity, the respective process owner will take appropriate action to correct the non-conforming process. He shall also evaluate whether the process nonconformity has resulted in product non-conformity. The product non-conformity should not affect safety or reliability issue, hence he shall determine if the process nonconformity is limited to a specific case or whether it could have affected other processes or products.

- Certifying staff shall sign the release certificate, when it has been verified that all maintenance and inspection / verification operations have been completed as planned, in accordance with customer contract or order requirements, and applicable technical data with no known nonconformities that would endanger flight safety

- Release of product/ aircraft and/ or delivery of services are not performed until all planned activities are accomplished and with Regulatory Authority/ customer approval. Records will indicate the person(s) who are authorizing release of product for delivery to the customer.

- All maintenance activities shall be planned after taking human limitations and their consequences into account. Where required to demonstrate product qualification, planning process shall ensure that records provide evidence that the product meets the defined requirements.

7.4 COMMUNICATION

Communication in GACAEL is held with various parties as mentioned below.

7.4.1 Internal communication

- The organisation has ensured that communication processes are established, and communication takes place on the effectiveness of the QMS by means of intranet – SAMVAD, Email, meetings and internal notices such as QCI and TN.

7.4.2 Customer Communication

- Customer communication with respect to product information, enquiries, contracts, or order handling and customer feedback are managed by Business Development and planning processes as detailed in their process documentation.

- Data regarding Customer feedback and complaints, Defects arising post maintenance, are compiled by Business development, maintenance and Planning processes on a regular basis and presented to top management in the Management review.

- QMS process carries out the investigations of the Defects arising post maintenance and evaluates the reliability of the maintenance process. The output of which is presented to Management during the Management review.

7.5 DOCUMENTED INFORMATION

7.5.1 General

a) Documented procedures required by EN 9110:2018 standard are available. List of the procedures is given below:

i. Procedure for Control of Documents: Refer MOE Chapters 1.11, 2.8 & 2.13

ii. Procedure for Control of Records: Refer MOE Chapter 2.14

iii. Configuration management: Refer MOE Chapters 2.11 & 2.12

iv. Procedure for Internal Audits: Refer MOE Chapters 3.1, 3.2 and 3.3

v. Procedure for Control of Non-Conforming Product. Refer MOE Chapters 2.18, 2.19 and 2.20

vi. Procedure for Control of FOD (Prevention, Detection and Removal of Foreign Objects): Refer MOE Chapter 2.7.

vii. Procedures related to QMS requirements are addressed in the MOE Part 3, Quality System Procedures.

viii. Procedure for Corrective and Preventive Actions: Refer MOE Chapter 3.3

b) The Quality Management System documentation is as defined in MOE Chapter 2.18. Quality and Safety policy & Objectives are documented in MOE Chapter 1.2 and SMS Manual: Ref No. GAT/QA/DOC/005. QMS documentation and changes are made available through intranet to all personnel for their awareness.

c) As per DGCA CAR 145, aircraft is released after base maintenance, after all tasks as per relevant work package are completed. In case any task cannot be completed, customer's concurrence is obtained to release the aircraft with incomplete maintenance. The same is recorded in the CRS in the final release of aircraft (Refer MOE Chapter 2.16).

d) In case of customer complaints after release of aircraft for snags on the aircraft, the aircraft is called back if necessary, and snags rectified. In case of any fault due to wrong procedure followed or improper tool used, customer is informed of the issue of deficiency. They are advised of the consequences and all aircraft released with possible defects are rectified in GACAEL facility based on aircraft location and normal area of operation. This information is also shared with regulator.

7.5.2 Creating And Updating

- Procedures related to QMS requirements are addressed in the MOE Part 3, and for Maintenance documentation and records procedures are documented in MOE Chapters 2.8, 2.9, 2.13, 2.14 & 2.16 which include approval process, review, update and re-approval process, identification of changes and current revision status.
- The above chapters in MOE also include procedures for documents to be made available when needed and to ensure that the records are legible and identifiable. External documents are identified and controlled. Obsolete documents are identified and controlled.
- GACAEL deals with Internal & External documents & records as referenced in clause 4.1 of this Manual.
- Detailed procedures are available in the MOE/ Departmental Manuals for the approval, renewal & revalidation, identification of the revision status, distribution, correct usage and prevention of unintended use of obsolete documents.
- These procedures are documented in MOE Chapters 1.11, 2.8 & 2.13. Detailed Lists of External and Internal Documents are available and maintained by Technical publications.

7.5.3 Control Of Documented Information

Documents are from two different sources, Internal and External. GMR Air Cargo and Aerospace Engineering Limited deals with the following Internal & External documents & records. (Ref: 4.1 of QMS manual.)

Internal documents:

a) Maintenance Organisation Exposition (MOE)

i. DGCA MOE (GAT/QA/DOC/MOE/001)

ii. EASA MOE (GAT/QA/DOC/EASA/001)

b) Departmental Manuals as described in Chapter 0.10 of MOE

External documents:

i. Maintenance data provided by the customer.

ii. Work package provided by the customer.

iii. Industry Standards, laws and regulations.

7.5.3.1 Internal documents are controlled as documented in the Quality Department manual 2.20. Documents required by the QMS are controlled. Records are controlled in accordance with clause 4.4.2, documented procedure exists. Procedures related to QMS requirements (vide clause 4.2 & 4.3) are addressed in MOE, Part 3, Quality System Procedures and for Maintenance documentation and records Procedure (Refer MOE Chapters 2.8, 2.9, 2.13, 2.14 & 2.16) which include approval, review, update, and renewal processes, identification of changes and current revision status.

The above procedures in MOE also include procedures for documents to be made available when needed and to ensure that the records are legible and identifiable.

7.5.3.2 Control of External Origin Documents

a) Documents of external origin, which are important to GACAEL processes and products, are included in document control system. Examples of some external documents that GACAEL controls include:

- Customer Prints,
- Industry Regulations,
- ISO Standards,
- ASTM, EN, MIL, IS, etc. Standards,
- References used for documentation,
- Laboratory methods references,
- Corporate guidance documents, etc.

b) Technical Publication maintains the master list of External Original Documents given by the customers, these external documents are stored electronically in the SAMVAD (intranet) in a clearly designated folder; duly verified as current before being uploaded in the intranet.

c) It is the responsibility of concerned Process Owner or Document User to review and implement these documents for product realization process as defined in Quality Management System Manual.

d) It is the responsibility of the Technical Publication to verify that the External Origin documents remain current at appropriate frequencies.

e) It is the responsibility of the Quality Manager to ensure effective implementation of the document control system for QMS documentation, and also maintain the system for the positive recall of documents and master list of documents.

f) It is the responsibility of the IT-Manager to protect the integrity of the electronically stored documents and data by performance of system backups and ensuring restoration capabilities.

g) External documents are identified and controlled. Obsolete documents are identified and controlled.

Detailed procedures are specified in the MOE/ Department Manuals for the approval, renewal, identification of the revision status, distribution, correct usage and prevention of unintended use of obsolete documents.

Part-8

OPERATIONS

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8.1 OPERATIONAL PLANNING AND CONTROL

a) GACAEL has planned and developed a consistent product realization process. Planning of the product realisation process is in accordance to the DGCA CAR 145 regulatory requirements and EN 9110:2018 standard requirements. Procedures for the same are documented in MOE Chapters 2.22 & 2.28, PDM Part 4 and MDM 4.24 & 4.27.

b) Safety objectives and product requirements are documented in MOE Chapters 1.2 and 2.8.

c) Maintenance, Quality, Stores and Planning procedures documented in the MOE and associated department manuals reflect the Quality objectives and requirements for the product such as:

1. Personnel and Product safety.
2. Reliability, Availability and Maintainability.
3. Effectively conduct the maintenance task and inspect ability.
4. Suitability of parts and materials used in the Product.
5. Prevention, detection and removal of FOD and product contamination.
6. Product obsolescence.
7. Handling Packaging and preservation.
8. Work performed away from fixed location.
9. Recycling or final disposal of the products at the end of its life.

d) Purchase and Stores processes are established to provide the required resources specific to the product.

e) Technical Publication and Technical services processes are established to provide the required documentation and maintenance data specific to the product. Output of the planning processes is in a suitable form that provides the required resources specific to the product, such as issue of task cards, compliance of SBs/ ADS/ modifications/ IRCs.

f) Stores process, Operation support process and workshops support the maintenance process by providing the required resources to support the maintenance of the product, in order to ensure it is airworthy.

g) Planning process in coordination with the Technical services process provide the required inputs to the maintenance process to address the configuration management appropriate to the product.

h) All the processes detailed above associated with the product realization process is planned and managed in a structured and controlled manner to meet requirements at acceptable risk as per procedures detailed in the various chapters of MOE Part 2 and associated process documents, which also include procedures required for verification, validation, monitoring, measurement, inspection and test activities specific to the product and the criteria for product acceptance.

i) GACAEL Maintenance processes/department monitors and measures the Aircraft Base maintenance activities to verify that maintenance requirements have been met. These will be carried out at appropriate stages of the Aircraft base maintenance realization process in accordance with the planned arrangements defined before the start of aircraft base maintenance activity. Evidence of conformity with the acceptance criteria shall be maintained by planning process. (Refer MOE Chapters 2.8, 2.9, 2.13, 2.16 & 2.23).

j) Maintenance process shall provide objective evidence that all instructed maintenance operations have been completed.

k) Measurement requirements for product acceptance are documented and include the following:

1. Criteria for acceptance and/or rejection;
2. Measurement and testing operations are performed, including required inspections by customer and/or authority
3. Records of the measurement results (at a minimum, indication of acceptance or rejection) are maintained
4. Any specific measurement instruments required and any specific instructions associated with their use are available.
5. Identification of inspection and testing operations which need to be verified and/ or witnessed.

l) Critical tasks items have been identified and the planning process ensures that they are controlled and monitored in accordance with the established processes.

m) Sampling inspection by quality process is carried out to verify that the maintenance activity carried out is compatible with the technical data/instructions provided by the design approval holder.

n) The maintenance process identifies defects discovered during maintenance that are outside the scope of the maintenance contract or order and process them in accordance with customer and authority requirements.

o) Safety objectives and requirements for the Aircraft maintenance process are determined and implemented by the maintenance process as per the requirements and procedures documented in MOE Chapters 2.8 and 2.28.

8.1.1 Operational Risk management:

a) The procedures for planning and managing product realisation in structured and controlled manner to meet the requirements at acceptable risks, within resources and schedules constraints are detailed in MOE Chapter 2.28 and Part 4 of Planning Dept. Manual vide Refer: GAT/QA/DOC/MOE/004.

b) Defects when identified during maintenance (that are outside the scope of the contract) are processed as per customer and Regulatory Authority requirements.

c) Where Aircraft is released to customer use, pending completion of all required measurement and monitoring activities, it will be identified on the certificate of release to service and recorded to allow recall and replacement if it is subsequently found that the product does not meet the requirements of the customer.

d) All process owners at their level will establish, implement, and maintain a process for managing risk envisaged while carrying out the various activities related to aircraft/ component maintenance and repair.

e) Risk management includes, as appropriate, responsibilities for risk management, definition of risk criteria, identification, assessment, and communication of risks, identification, implementation, and management of actions to mitigate risks that exceed defined risk limit acceptance, acceptance of remaining risks after implementation of mitigating actions.

f) For split product, the quantity delivered, purchase order number, and both customer and supplier's names are annotated on the copies of the original documents. Certifying statements reference the original manufacturer's traceable documents and applicable requirements that are retained by the organization (applicable where a formal customer agreement is in place).

g) Maintenance and planning processes will ensure that the release of product and delivery of service to the customer will not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the customer.

h) A detailed procedure for categorising risk and laying down the mitigation plans etc. is documented in Chapter 3.6 of SMS Manual Ref. No. GAT/QA/DOC/005.

8.1.2 Configuration Management

At GACAEL, appropriate configuration management process has been established, implemented and maintained, which includes:

a) Configuration management planning: The configuration control of aircraft parts and consumables is being done in two stages. The first stage is the approval of all suppliers. Depending on the type of the spares, all suppliers are classified under three groups from Class 1 to Class 3 with separate norms of approval (Refer MOE Chapter 2.1).
In the second stage, they are subjected to receipt inspection to ensure that the parts purchased & supplied by customers are as per the aircraft manufacturer's technical literature. (Refer MOE Chapter 2.2).

b) Configuration identification of an aircraft depends on the applicable technical literature (also known as manufacturers' data) issued by the aircraft manufacturers, which comes to the organisation through the customer. The customer commits the Rev. No. of the maintenance data to be followed for a particular work package. The maintenance data forwarded by the customer is verified by technical publications and accepted for compliance. Details are documented in MOE Chapter 2.8.

c) Configuration status accounting: The configuration status is accounted by planning through the completion of the entire task cards/ SBs/ ADs/ Modifications/ Non-Routine Cards (NRCs) etc. and transferred in to a tally sheet for monitoring purposes. (Refer MOE Chapters 2.8 & 2.9).

d) Further, the maintenance records are handed over to the customer as specified in MOE Chapter 2.17 for him to ensure that the aircraft has come back to him in the desired/ same configuration.

8.1.3 Product Safety

Product safety is maintained by means of quality and safety audits (inclusive of SMS audits) and training, this is documented in MOE chapters 3.1, 3.2, 3.3 and 3.14.

a) Change controls: During the intervening period of maintenance, if the customer provides any maintenance data updates, the same will be evaluated by planning & provided by technical publications and included in the work package. (Refer MOE Chapters 2.8 & 2.13).

b) Configuration audits:
Quality Monitoring is carried out through audits by the quality department as detailed in MOE Chapters 3.1 to 3.3. The internal audits are carried out as per the annual audit programme specified in MOE Chapters 3.1 & 3.2

c) Prior to the delivery (i.e. issue of CRS) the CRS issuing authorized staff (engineers) will ensure the configuration of the deliverable aircraft as per the procedure documented in MOE Chapter 2.16. In case if configuration is affected due to incomplete work, the same will be indicated on the CRS as per MOE Chapter 2.16.

8.1.4 Prevention of counterfeit parts

Prevention of counterfeit parts is documented in Stores Department Manual Ref No. GAT/QA/DOC/MOE/007

8.1.5 Prevention of suspected unapproved parts

Prevention of suspected unapproved parts is achieved by providing training to the stores inspectors and the process of prevention is defined in Stores Department Manual Ref No. GAT/QA/DOC/MOE/007

8.1.6 Installation of approved parts

At GACAEL, majority of the parts installed on aircraft are supplied by the customer duly approved by the OEM, and the procedure is defined in MOE Chapters 2.1, 2.2 and 2.3.

8.2 REQUIREMENTS FOR PRODUCTS AND SERVICES

8.2.1 Customer Communication:

Customer communication in GACAEL with respect to Product information, Enquiries, contracts, or order handling and customer feedback are managed by business Development and planning processes as detailed in their process documentation.

Data regarding Customer feedback and complaints, Defects arising post maintenance, are compiled by Business development and Planning processes on regular basis and presented to the management in the Management review.

QMS process carries out the investigations of the Defects arising post maintenance and evaluates the reliability of the maintenance process. The output of which is presented to Management during the Management review.

8.2.2 Determining the requirements for product and services.

During the aircraft pre induction meetings chaired by planning, requirements stipulated by the Customer, and requirements not stated by the customer but which are necessary for the specified maintenance, GACAEL requirements related to the product which include delivery and post-delivery activities, applicable statutory and regulatory requirements and any other additional necessary requirements which are specified by the customer are discussed and minutes circulated to all concerned process owners as per the requirements detailed in MOE Chapter 2.28, and in the Planning Department Manual vide ref: GAT/QA/DOC/MOE/004.

8.2.3 Review of requirements related to products and services

8.2.3.1

- Ability to meet the requirements for products and services
- Business process reviews all the contracts in association with planning and maintenance process before they are executed by GACAEL. Records of all such reviews are maintained by the Business process. Review of the contracts will also include the review of special requirements, scope of work, technical data, delivery schedules, sub-contracting activity and the related risks associated (like new technology, short Delivery timeframe etc.)
- Contract process includes provision for disposition of out of scope defects during maintenance. Procedures for the same are detailed in the MOE Chapters 2.9 and 2.28.
- All the product requirements prior to commencement of aircraft maintenance check are reviewed. Customer supplied work package and aircraft data/ documentation is also reviewed by the planning and tech publication process owners to ensure the following:

a) Product requirements are defined

b) Differing contract requirements are resolved

c) Organization has the ability to meet the requirements

d) Contractual requirements are being reviewed for special product requirements

e) Special product requirements are determined.

f) Risks have been identified.

8.2.3.2 Retention of documented information

Whenever Documents and product requirements are changed or amended during the contract process, respective process owners and personnel are made aware of these changes by business development process.

8.2.4 Changes to requirements for Products and Services:

Documentation changes are made, if any and are brought to the notice of applicable personnel as documented in MOE Chapter 2.8.

8.3 DESIGN AND DEVELOPMENT OF PRODUCTS AND SERVICES

---NOT APPLICABLE----

8.4 CONTROL OF EXTERNALLY PROVIDED PROCESSES, PRODUCTS AND SERVICES

8.4.1 General

GACAEL ensures that the purchased products conform to specified requirements, evidence of responsibility is maintained for product conformity for all purchased products (including product from customer directed suppliers). Suppliers would need to have the required approvals and certificates for supply of four groups of all aircraft related products to GACAEL. Purchasing process satisfy applicable authority requirements for the use of non- certificated suppliers. Procedures for the purchasing process are documented in MOE Chapter 2.1 and in Purchase Department Manual Part 2 Chapter 2. Criteria for selection, evaluation, and re-evaluation of vendors have been established. Records of evaluations and actions arising from the evaluations are maintained by purchase process. Ref: GAT/QA/DOC/MOE/008

8.4.1.1 Review of external providers' performance

a) Registration of approved suppliers including scope (Class 1 to 3 items) of approval is available as Master Vendor List, document reference GAT/MT/003.

b) Supplier performance is periodically evaluated and the outcome of the performance and evaluation is documented and reviewed by respective users and purchase department.

c) Process for dealing with suppliers who do not comply with the laid down requirements is documented in MOE Chapter 2.1.

d) The organization and all suppliers use customer approved special process sources.

e) The process, responsibilities, and authority for the approval status decision, changes, and conditions for controlled use are determined by GM (Quality).

f) All suppliers are selected based on their evaluation by the purchase manager using Supplier Approval Questionnaire Form No. GAT/MT/001 and Vendor Master Transcript (VMT) Form No. GAT/MT/002. Reference: Purchase Manual part 3.4.

g) Vendors listed in IPC published by Aircraft/engine manufacturers or Other OEMs are evaluated using equivalent data provided by the vendor/OEM.

8.4.2 Type and extent of Control

a) The process, responsibilities, and authority for the approval status decision, changes, and conditions for controlled use are determined by GM (Quality).

b) The external service providers are subjected to a quality system assessment to ensure that the service provider holds the required approvals to meet regulatory and customer requirements.

c) Management of risk while selecting and using suppliers is determined and being managed as per the procedures documented in MOE Chapters 2.1 to 2.4 and in Purchase Department Manual 3.4

d) Supplier performance is periodically evaluated and the outcome of the performance and evaluation are documented and reviewed by the users, quality and purchase departments.

8.4.2.1 Verification activities

i. Procedures for verification of purchased products are documented in the Stores Department Manual Ref: GAT/QA/DOC/MOE/007.

ii. Procedures for conducting internal audits at planned intervals to ensure conformity to planned arrangements are defined in MOE Chapter 3.1. During these planned audits, auditors will ensure that all processes conform to the planned arrangements and requirements of regulatory, customer's contractual requirements and EN 9110:2018 standard, and that they are effectively implemented and maintained.

iii. Process owners of the organisations being audited shall ensure that root cause is established and necessary corrective and preventive actions are taken without undue delay to eliminate detected nonconformities. Follow-up activities will include the verification of the actions taken and the reporting of verification results to the top management.

iv. Activities have been established and implemented to ensure that the Purchased / Loaned / customer supplied items / components meet purchase requirements. Ref. MOE Chapter 2.2

8.4.3 Information for external service providers

During the Purchasing process following minimum information will be included in the Purchase Order, purchasing information includes (where appropriate):

a) Product, procedures, processes and equipment approvals

b) Personnel qualifications and competence

c) QMS requirements

d) Revision status of relevant technical data

e) Requirements for design, test, inspection, verification, use of statistical techniques and related instructions for acceptance (including critical items and key characteristics).

f) Requirements for test specimens

g) Requirements for the suppliers to NOTE

i. GACAEL shall not accept any nonconforming product.

ii. Receive/Send nonconforming product disposition approvals form.

iii. Notify any changes to product, processes, suppliers, and facilities before supply

iv. Flow down to the supply chain the applicable requirements including customer requirements for all outsourced processes.

h) Records retention requirements.

i) Right of access to the supplier's premises by GACAEL, its customers and regulatory authorities to the applicable areas of facilities and to documented information and records.

j) Specific authority approval requirements.

k) Requirements for certificate of conformity and test reports.

l) Records retention requirements.

m) Format and content of the release documentation package.

n) Conditions where defects and un-airworthy conditions must be reported and disposition thereof.

o) Appropriate measures are in place to prevent the purchase of counterfeit and suspected unapproved parts. (Refer MOE Chapter 2.1).

8.5 PRODUCTION AND SERVICE PROVISION

8.5.1 Control of production and service provision

At GACAEL – Production and service provisions are planned and achieved under controlled conditions as described in the Aircraft Maintenance manuals and associated technical data. Planning and maintenance process ensure the following Control of production and service provision.

a) Availability Aircraft Maintenance Manuals and Aircraft maintenance data. (Refer MOE Chapter 2.8).

b) Availability of necessary work instructions, task cards. (Refer MOE Chapter 2.13).

c) Use of suitable equipment/Special tools and testers. (Refer MOE Chapter 2.6).

d) Availability and use of monitoring and measurement (M&M) equipment. (Refer MOE Chapter 2.5).

e) Process of monitoring the tools, equipment, aircraft/ component release to service, delivery, and post-delivery activities. (Refer MOE Chapters 2.4, 2.5, 2.6 & 2.16).

f) Accountability for all Aircraft / component while performing maintenance activities in the GACAEL premises. (Refer MOE Chapter 2.13).

g) Procedures to ensure that all operations have been completed as per approved technical instructions/ data issued by the customer and control of the work undertaken external to the organization. (Refer MOE Chapters 2.13 & 2.16).

h) Foreign Object Debris/Damage (FOD) prevention procedures to be followed during maintenance and storage of components. (Refer MOE Chapter 2.7).

i) Compliance with standards, quality plans, manufacturers' recommendations, customer specifications, and/ or documented procedures. (Refer MOE Chapters 2.8, 2.9 & 2.13).

j) Documents related to approved maintenance/ repair process capabilities and/or current ratings and procedures to ensure that maintenance operations do not adversely affect areas outside the scope of the planned maintenance. (Refer MOE Chapters 2.8, 2.9, 2.15, 2.16 & 2.23).

k) Selection and usage of equipment and tools, as recommended by the manufacturer or their equivalent. (Refer MOE Chapters 2.4 & 2.6).

l) Procedures related to use of material on aircraft as recommended by the Aircraft manufacturer or customer. (Refer MOE Chapters 2.1 & 2.2).

m) Planning, establishing, implementing and managing appropriate process to manage critical tasks including process control where key characteristics have been identified. (Refer MOE Chapters 2.22 & 2.28).

n) Procedures for identifying in-process inspections/verification points for special processes. (Refer MOE Chapters 2.23 & 2.24).

8.5.1.1 Control of equipment, tools and software programs

At GACAEL the Operational support services and IT department are responsible for the maintenance of equipment, tools, and programs used to automate and control/monitor technical data prior to use. Maintenance equipment and tools are inspected periodically and their calibration programs are maintained as per the procedures documented in OSS Manual Ref: OSS - GAT/QA/DOC/MOE/005.
Storage requirements for production equipment and tooling are documented in MOE Chapters 2.4, 2.5, and 2.6.

8.5.1.2 Validation and control of Special Processes

Special processes carried out at GACAEL are Welding, Heat Treatment of Aluminium and steel parts, Painting of Aircraft, NDT inspection like - FPI, MPI, Eddy Current and Ultrasonic Inspections. Personnel undertaking these specialist activities are duly qualified, trained and authorised by the Quality Manager. The equipment and facilities are approved by regulatory authority as per scope of work and shop capability. NDT shop and personnel are periodically audited by independent responsible Level 3 personnel to ensure compliance to competence requirements as per EN 4179 standard. Electroplating process like anodising and cadmium plating are outsourced processes and are carried out as per the approved quality plans.
Procedures for all of these special processes are as defined in the Manufacturer's instructions and aircraft maintenance data which are validated prior to use to achieve planned results. Detailed procedures are documented in Workshop Manual GAT/QA/DOC/MOE/037.

8.5.1.3 Not Applicable as per standard

8.5.1.4 Evaluation of New Capability.

Process and procedures in case of first application of maintenance processes or new repair, the customer supplied data, documents and tooling required for the above are evaluated, verified, and documented, including the personnel who will perform the maintenance in compliance with established regulatory requirements.
Detailed procedures are documented in MOE Chapter 2.9, and Planning Department Manual Ref: GAT/QA/DOC/MOE/004.

8.5.2 Identification and Traceability

- Stores and Maintenance process are basically responsible for the Identification and Traceability of Products identified and ensures that the Product configuration is maintained throughout the maintenance process.
  -
- Quality process ensures that required controls are in place for acceptance, authority media used (stamps, signatures, passwords) at GACAEL and the records maintained. In GACAEL all certifying and support staff are identified and authorised through individual stamp and the detailed procedure is defined in Chapter 2.6 of Quality Department Manual Ref: GAT/QA/DOC/MOE/003

- Procedures for the identification and traceability of products along with positive identification of the certifying and support staff undertaking the maintenance work are documented in the respective department manuals of Stores, Maintenance and Quality:

i. Stores Process – GAT/QA/DOC/MOE/007

ii. Maintenance Process - GAT/QA/DOC/MOE/006

iii. Quality Process - GAT/QA/DOC/MOE/003

8.5.3 Property belonging to customer or external providers

Customer property is adequately controlled through proper identification, verification, protection, and safeguarding. Lost, damaged, or product unsuitable for use is reported to the customer and appropriate records are maintained. Customer property normally held by the organisation is aircraft, aircraft documents, spares/consumables, test equipment, work package, Maintenance data, etc., which are accounted for and maintained by designated departments after verification and acceptance including appropriate release documents.

Procedures for the same are documented in the Stores and Maintenance Department Manual. Ref: Stores Department Manual Chapter 2.5 and Maintenance Department Manual - GAT/QA/DOC/MOE/006.

8.5.4 Preservation of Products

- Aircraft and other products are preserved during internal processing and delivery. Preservation also includes identification, tagging, handling, packaging, storage, and protection. Procedures for preservation and controls applied to the constituent parts are segregation of serviceable and unserviceable aircraft components in adequately earmarked racks, segregation of aircraft and non-aircraft parts, segregation of quarantined and rejected aircraft parts/ components. Details are documented in the MOE Chapters 2.2, 2.3, 2.19 & 2.20 and Stores Process Manual Ref: GAT/QA/DOC/MOE/007, Chapters 2.11, 2.20, 2.23, 2.24 & 2.26.

- The above procedures also address the activities in the process like cleaning, foreign object controls, special handling for sensitive products, marking and labelling, shelf life control and stock rotation and special handling for hazardous materials (SPOG).

  Ref: Stores Department Manual GAT/QA/DOC/MOE/007.

8.5.5 Post-delivery support.

- Business development process is responsible for the Post-delivery support. Maintenance and planning process assist the business development in post-delivery support.

- QMS process carries out the aircraft maintenance reliability study and investigations of post-delivery complaints received by GACAEL. Procedures for the controls required for off-site work activities are documented in MOE Chapter 2.24.

8.5.6 Control of changes

GACAEL controls and documents the changes affecting maintenance process and other related processes, and also the personnel, maintenance equipment, tools, or software programs. Changes to maintenance processes are assessed by the respective process owners and approved by quality department to confirm that the desired effect has been achieved without adverse effects to product conformity. Procedures for the control of production process changes are documented in MOE Chapters 1.11 and 2.8.

8.6 RELEASE OF PRODUCTS AND SERVICES

GACAEL has implemented planned arrangements, at appropriate stages, to verify that the product and service requirements have been met. The documented information shall include:

a) Evidence of conformity with the acceptance criteria,

b) Traceability to the person (s) authorizing the release.

Detailed procedures for ‘certificate of release to service’ and ‘maintenance release’ are documented in MOE Chapter 2.16.

8.7 CONTROL OF NON-CONFORMING OUTPUTS

8.7.1

- The Maintenance process ensures that product which does not conform to requirements is identified and controlled to prevent its unintended use or delivery as per the procedures documented in MOE Chapters 2.19 and 2.20, which define the controls and related responsibilities and authorities for dealing with nonconforming product. Information of the nonconformity of a product shall be given to the customer and the regulator, as applicable. “Nonconforming product” includes nonconforming product returned by a customer, damaged or worn product, counterfeit and/or suspected unapproved parts. Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained from regulatory authority and /or customer shall be maintained.

- Business development and planning departments in association with maintenance and Stores department is responsible for the post-delivery support which includes nonconforming product returned to the customer.

- QMS process carries out the aircraft maintenance reliability study and investigations of the post-delivery complaints received by GACAEL. Refer Chapter 2.13 of Quality Department Manual GAT/QA/DOC/MOE/003.

- Dispositions of use-as-is (UAI) or repair are used only after approval from organizations responsible for design. Dispositions of UAI or repair are not used without customer authorization. Scrap product is marked and controlled. (Chapter 3.4 & 3.5 of Purchase Department Manual Ref No: GAT/QA/DOC/MOE/008 and Chapters 2.18 of Stores Department Manual Ref No: GAT/QA/DOC/MOE/007 refers).

- Unsalvageable and counterfeit parts shall be conspicuously marked and returned to the customer.

8.7.2 Retention of documented information for non-conforming outputs

Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained with due concurrence of customer and/or approving authority shall be maintained by Quality Manager and shall ensure retention of records for a minimum period of three years. Detailed procedures are documented in MOE 2.18

Part-9

PERFORMANCE EVALUATIONS

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9.1 MONITORING, MEASUREMENT, ANALYSIS AND EVALUATION

9.1.1 General

- Respective process owners are responsible for monitoring, measuring, analyzing, and carrying out improvement of their respective processes in conformity with regulatory, customer and standard requirements using applicable methods.

Monitoring of Applicable Regulations

- QM shall ensure that the changes in DGCA regulations and applicable CAR Section 2, AAC and other applicable regulations are captured and implemented in GACAEL within the time frame as defined by DGCA. Quality Department will monitor the DGCA regulations pertaining to DGCA CAR 145 organisation and associated regulations for amendments. This is done by visiting the DGCA website on a fortnightly basis, this is recorded in a form (GAT/QA/165) and filed, any information found with respect to regulations, the same is informed to QM.
  Manager-audit & surveillance will monitor the EN9110:2018 standard for any revision or amendments on Monthly basis. The record of revision monitoring will be maintained in a form (GAT/QA/165).

- The records of approval and quality monitoring / audit of Vendors, Suppliers, Contracted/ sub-contracted agencies shall be retained (in hard/ soft format) for a period of three years from its last validity.

Monitoring of Tool Suppliers and Subcontractors

- All tool suppliers will be selected based on their evaluation using Supplier Approval Questionnaire Form No. GAT/MT/001 and Vendor Master Transcript (VMT) Form No. GAT/MT/002. Details are documented in Chapter 3.4 of Purchase department manual.
- FTS/CDCCL tasks for traceability/monitoring purposes.

- Monitoring and analysis of the latest version of maintenance data every fortnight by technical publications cell.

- Monitoring safety performance and human factors concerns.

- Monitoring and Control of Shelf Life of spares and Modification Standards.

- Monitoring of refuelling operations by the certifying staff and ensure the appropriate type/grade of fuel is uplifted into the aircraft.

- Monitoring, evaluation and analysis of audit findings.

- Safety performance index and risk register to monitor identification and reporting of hazards at work place, identifying potential threats and risks and working out measures to mitigate them.

9.1.2 Customer Satisfaction

Business development, planning and maintenance departments are responsible for monitoring the information relating to the customer requirements for Base Maintenance activities.
Procedures for obtaining/using customer perception data such as Customer complaints, Corrective action request, on time delivery performance, Conformance of Maintenance information which includes product conformity, on-time delivery (OTD), Customer complaints, and corrective action requests are documented in Business Development Department Manual Ref: GAT/QA/DOC/MOE/034.

9.1.3 Analysis And Evaluation

- All process owners in consultation with the quality process will be responsible for devising methods for measurement and analysis of their respective processes to ensure that their processes achieve planned results.

- Corrective and preventive actions will be taken by the respective process owners when planned results are not achieved.

- When determining suitable methods, the process owner will consider the type and extent of monitoring or measurement appropriate to each of their processes in relation to their impact on the conformity to product requirements and on the effectiveness of the quality management system.

- In the event of process non-conformity, the respective process owner will take appropriate action to correct the non-conforming process. He will also evaluate whether the process nonconformity has resulted in product non-conformity. The product non-conformity should not affect safety or reliability issue, and determine if the process nonconformity is limited to a specific case or whether it could have affected other processes or products.

- GACAEL Maintenance process will monitor and measure the Aircraft Base maintenance activity to verify that maintenance requirements have been met. This will be carried out at appropriate stages of the Aircraft base maintenance realization process in accordance with the planned arrangements defined before the start of aircraft base maintenance activity.
- Evidence of conformity with the acceptance criteria shall be maintained by planning process. (Refer MOE Chapters 2.8, 2.9, 2.13, 2.16 & 2.23).

- All Process owners will determine, collect, and analyze appropriate data to demonstrate the suitability and effectiveness of their processes and evaluate where continual improvement of the effectiveness of the process can be made. This will include data generated as a result of monitoring and measurement and from other relevant sources.

- The analysis of data by the respective process owners (Refer MOE Chapters 2.9, 2.13, 2.16 and 2.28) shall provide minimum information related to:

i. Customer satisfaction
ii. Conformity to product requirements
iii. The effectiveness of actions taken to address risks and opportunities
iv. Characteristics and trends of processes and products and the need and methods for improvements to Product safety management.
v. Opportunities for prevention of maintenance errors.
vi. Performance of external service providers and suppliers.
vii. Human factors issues.

The above data provided by the process owners of GACAEL will be collected, and periodically analysed. Analysis of data including customer satisfaction, conformity to product requirements, characteristics and trends of processes and products, supplier performance and human factor events will be reviewed by the Accountable Manager in the Management Review meeting.

9.2 INTERNAL AUDIT

9.2.1 Procedures for conducting internal audits at planned intervals to ensure conformity to planned arrangements are defined in the MOE Chapter 3.1. During these planned audits, auditors will ensure that all process confirm to the planned arrangements and requirements of regulatory, customer's contractual requirements and EN 9110:2018 standard, and is effectively implemented and maintained.

9.2.2

a) GACAEL shall plan, establish, implement and maintain an audit program including the frequency, methods, and responsibilities, planning requirements and reporting. Procedures are documented in MOE Chapters 3.1, 3.2 & 3.3 and in Quality Department Manual GAT/QA/DOC/MOE/003.

b) An audit program is planned, taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audits. The audit criteria, scope, frequency and methods are defined.

c) Master checklists are prepared based on the regulations as described above and the same shall be used for undertaking audits of various processes and standards, based on this, auditor will ensure objectivity and impartiality of the audit process which will be documented. Records of all audits, non-conformances, corrective and preventive actions taken and closure thereof shall be retained for a period of three years.

d) A documented procedure is established to define the responsibilities and requirements for planning and conducting audits, establishing records, and reporting results. Records of the audits and their results are maintained as per QDM 3.11.4

e) The selected auditors are trained and approved as per the requirements defined in MOE Chapter 3.6.

f) Process owners of the concerned process being audited will ensure that root cause is identified and necessary corrective and preventive actions are taken without undue delay to eliminate detected nonconformities within stipulated timeline.

g) Follow-up activities shall include the verification of the actions taken and the reporting of verification results to the top management.

9.3 MANAGEMENT REVIEW

9.3.1 General

- Top management reviews the QMS for suitability, adequacy, and effectiveness at planned intervals of once in a year. Management Review records are maintained by Quality Manager
- Management Review includes assessing opportunities for improvement and the need for changes to the quality policy and quality objectives, the safety policy and safety objectives.

9.3.2 Management Review inputs

Following are the minimum inputs to Management Reviews:

1. the status of actions from previous management reviews;
2. changes in external and internal issues that are relevant to the quality management system;
3. information on the performance and effectiveness of the quality management system, including trends in:

a) customer satisfaction and feedback from relevant interested parties;

b) the extent to which quality objectives have been met;

c) process performance and conformity of products and services;

d) nonconformities and corrective actions;

e) monitoring and measurement results;

f) audit results;

g) the performance of external providers;

h) on-time delivery performance;

4. the adequacy of resources;
5. the effectiveness of actions taken to address risks and opportunities (see 6.1);
6. opportunities for improvement;
7. safety performance monitoring (product safety);
8. the adequacy, accomplishment, and effectiveness of the training program;
9. future changes to competent authority and customer requirements that could impact the organization.

9.3.3 Management Review outputs

- Outputs to the Management Review including any decisions and actions related to the above inputs which will be recorded and circulated to all concerned process owners by the Management Representative.

- The outputs of the management review shall include decisions and actions related to:

a) opportunities for improvement;

b) any need for changes to the quality management system;

c) resource needs;

d) risks identified.

Part-10

IMPROVEMENTS

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10.2	Non-conformity and Corrective Action	1
10.3	Continual Improvement	1

10.1 GENERAL

- The organization shall determine and select opportunities for improvement and implement any necessary actions to meet customer requirements and enhance customer satisfaction.

- These shall include:

a) improving products and services to meet requirements as well as to address future needs and expectations;

b) correcting, preventing, or reducing undesired effects;

c) improving the performance and effectiveness of the quality management system;

d) improving the performance and effectiveness of the safety management.

10.2 NON-CONFORMITY AND CORRECTIVE ACTION (CA)

10.2.1 Actions are taken to eliminate the causes of non-conformities.

- Detailed procedures are documented in MOE Chapter 3.3. Procedure for corrective actions:

a) Reviewing of nonconformities

b) Determining the causes of nonconformities

c) Evaluating action to prevent recurrence

d) Determining and implementing actions

e) Record of actions taken

f) Reviewing the effectiveness of corrective actions

g) Flowing down Corrective Action requirements to the suppliers when the root cause is attributable to the supplier

h) Actions where timely and/ or effective CAs are not achieved

i) Determining if potential for additional non-conformance exists

j) Evaluating actions based on human factors.

- Dissemination of information to all concerned in the form of QCIs or correction training for personnel involved in the process where non-conformity was observed. Whenever any Level 1 Non Conformance is reported, the process shall be re-audited after three months for verification of action taken to prevent recurrence. Hazard identification for both Level 1 and Level 2 non-conformances and its risk assessment and mitigation shall be carried out by the process owner.

- There will be re-verification for the CAPAs taken in the subsequent audits. A feedback from customer will be taken for the product release to confirm that the Non-Conformance is not repetitive. The information from customer is collected for up to 15 days post release to verify the possibility of a Non- conformance.

- The CAPAs shall be adequate to cover all the aspects of prevention of recurrence of Non Conformance in the main process and related processes also.

- A thorough investigation shall be made to determine the root cause and analysis thereof, such that the preventive actions shall also address the root cause.

10.2.2 Documented information of non-conformities noted and the corrective & preventive actions taken are retained as evidence for a period of three years from the date of closure of the non-conformity. Results of the corrective & preventive actions are verified prior to closure action of the non-conformity during next scheduled audit.

10.3 CONTINUAL IMPROVEMENT

- The QMS is continually improved through the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management reviews. Improvements and the evaluation of effectiveness are monitored.

- All GACAEL processes will be monitored by the respective process owners from the results of lessons learned, problems resolved, process & product risks mitigated, benchmarking of best practices at GACAEL and implement improvement activities as a part of continual improvement. All process owners are responsible for the non-conformities/ deficiencies recorded during audit and will monitor the continuous improvement through corrective and preventive actions.

- As a part of continual improvement, the QMS and process owners issue circulars to educate personnel on problems encountered, lessons learnt, best maintenance practices and methods to improve standards at the working level. The training cell imparts information/lessons regarding non-conformities observed during internal and external audits and methods to prevent recurrence during continuity training of the certifying and support staff on a regular basis.

Part-11

APPENDICES

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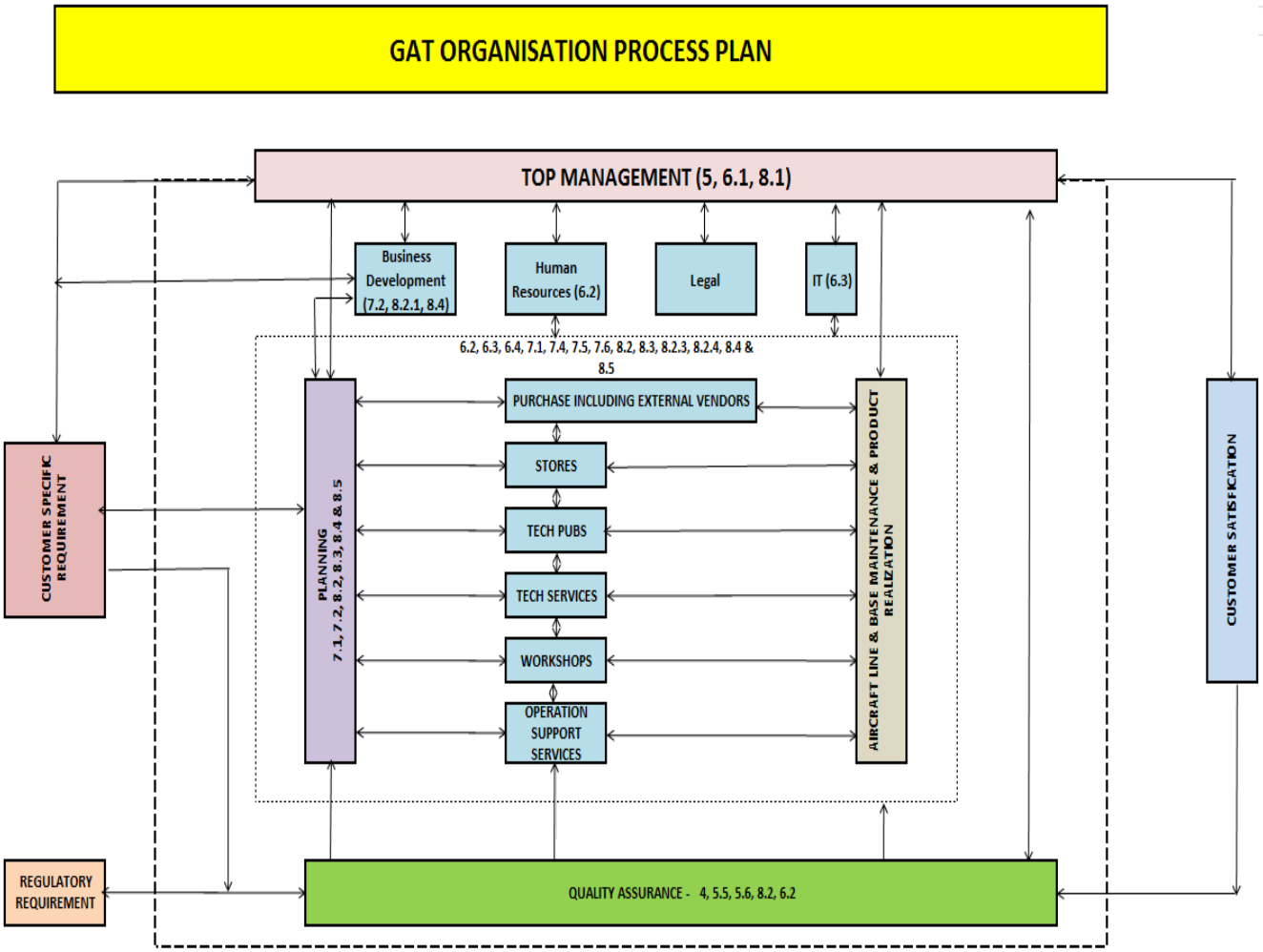
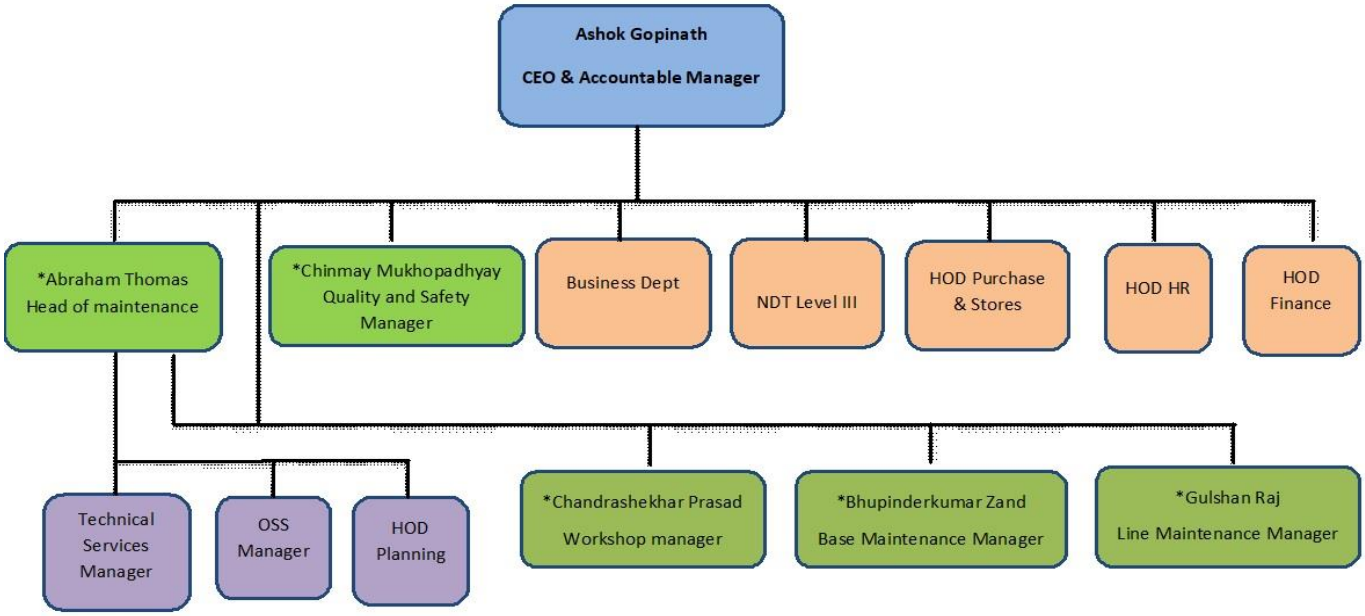
11.1 APPENDIX - A: BUSINESS PROCESS MAP

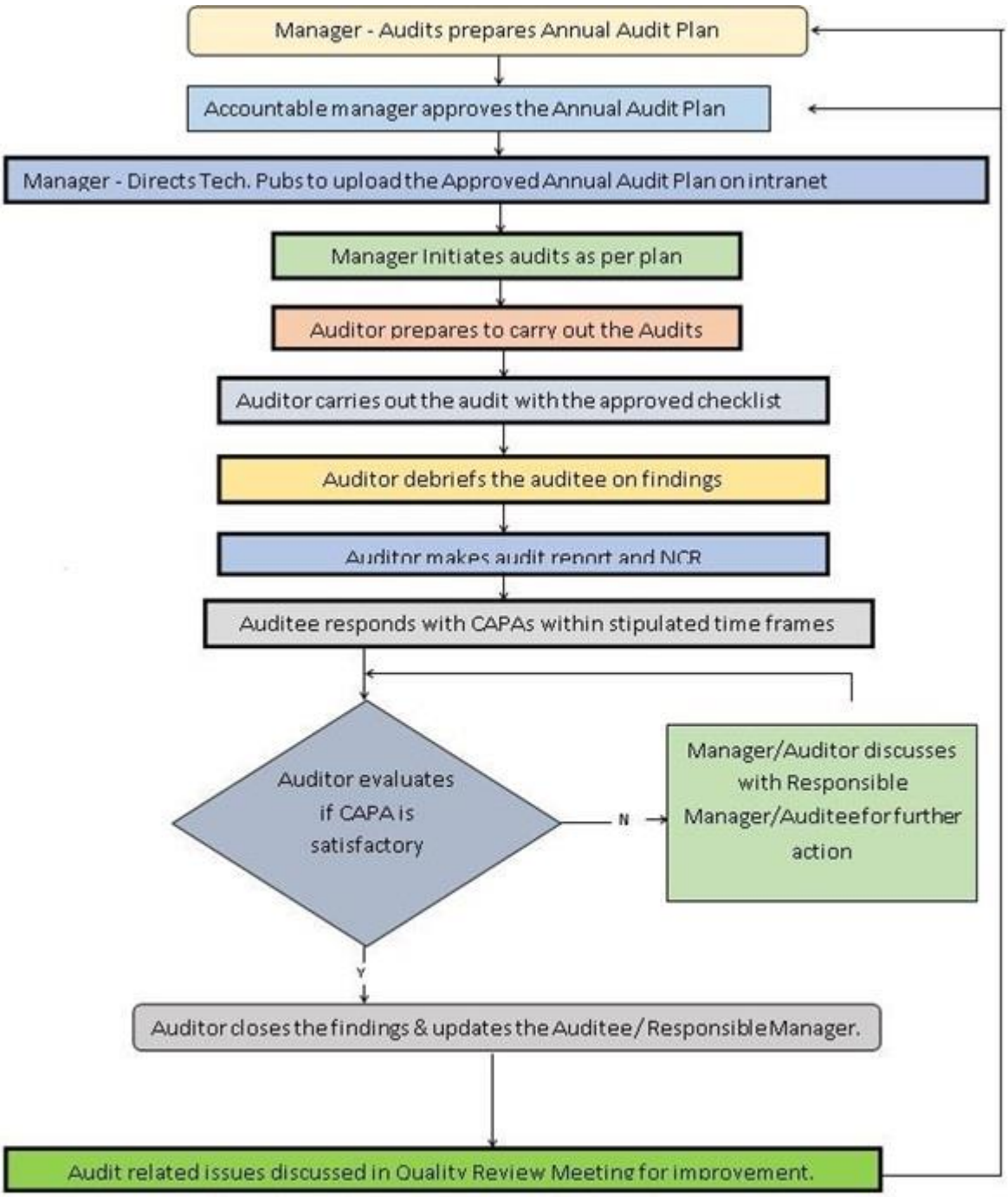


11.2 APPENDIX – B: ORGANISATION CHART



Note: Asterisk (*) with green color background denotes Post holder for Respective functions.

11.3 APPENDIX – C: AUDIT PROCESS FLOWCHART



Note: The timelines for administration of Audit Report and NCR is given in QDM Part 3.5

11.4 APPENDIX –D: PROCESS PLANS FOR VARIOUS PROCESSES IN GACAEL

PROCESS	REFERENCE NUMBER
Quality Process	GACAEL/QA/AS/PP/001
Purchase Process	GACAEL/QA/AS/PP/002
Stores Process	GACAEL/QA/AS/PP/003
Planning Process	GACAEL/QA/AS/PP/004
Business Development Process	GACAEL/QA/AS/PP/005
Tech Pub & Tech Service Process	GACAEL/QA/AS/PP/006
NDT Process	GACAEL/QA/AS/PP/007
Paint Shop Process	GACAEL/QA/AS/PP/008
Maintenance Process	GACAEL/QA/AS/PP/009
Composite Shop Process	GACAEL/QA/AS/PP/011
Structure Shop Process	GACAEL/QA/AS/PP/012
Flight Control Shop Process	GACAEL/QA/AS/PP/013
Welding Shop Process	GACAEL/QA/AS/PP/014
Ground Support Equipment Process	GACAEL/QA/AS/PP/015
Hangar Tool Crib Process	GACAEL/QA/AS/PP/016
Aircraft Utilities Process	GACAEL/QA/AS/PP/017
Galley & Seat Shop Process	GACAEL/QA/AS/PP/018
Air-Condition Shop Process	GACAEL/QA/AS/PP/019
Battery Shop Process	GACAEL/QA/AS/PP/020
Oxygen Shop Process	GACAEL/QA/AS/PP/021
HR Process	GACAEL/QA/AS/PP/022