ARCHITECTS, ENGINEERS AND QUANTITY SURVEYORS REGISTRATION BOARD

PRACTICAL TRAINING GUIDELINES FOR AERONAUTICAL ENGINEERS

A: INTRODUCTION

(a) Subject to the contents of these practical training guidelines, every trainee in the Aeronautical engineering discipline shall complete training in the types of works specified for a minimum period of three years.

(b) In the case of research workers and other specialists, where the nature of work renders it impracticable to adhere to the requirements set out in the contents of these practical guidelines, the Board shall evaluate each individual's case separately having due regard to the practical training approved for the time being by the Board.

(c) The main thrust for professional and technician engineer trainees is as follows:-

(i) Professional engineers:-

The main thrust is on knowledge, understanding subject matters, analysis and methods. Professional engineers must have analytical capabilities, adaptability to varying situations, ability to identify, rectify and design solutions, management capabilities, power and communication skills, adherence to the professional ethics and conduct as specified in the Architects, Engineers and Quantity Surveyors Registration Regulations 2014 and as amended from time to time.

(ii) Technician engineers:-

The main thrust is on know-how of subject matters. Technician engineers must have independent judgement within the field, top class engineering applications, development of cost effective systems and safe procedures, applications of appropriate mathematics, science and related subjects, team and resource management.

B: CONTENTS OF PRACTICAL TRAINING (a) Workshop Practice and field operations

Every trainee shall work under the supervision of a registered professional Aeronautical engineer for a minimum period of one year or as determined by the Board in accordance with the Architects, Engineers and Quantity Surveyors Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

(i) Engineering drawings and technical information including maintenance manuals, parts catalogues, overhaul manuals, services bulletins and modification data and maintenance schedules

(ii) Hangar/Workshop common practices and tools covering among other areas:
- Lubrication methods and application
- Hand tools and simple machine tools
- Precision measuring instruments
- Torque loading
- Soldering, brazing and welding including assessment of in service conditions
- Corrosion identification
- Painting and paint stripping
- Fire protection and safety
- Storage and handling
- Non-destructive condition testing

(iii) Structures:
- Sub-Structures (e.g. folded metal, sheet metals extrusions, tubing, holes, fasteners, honey combs, panels and consoles, drains and drain masks, equipment racks and stowages intakes, etc.
- Aircraft structures

(iv) Material and Parts:
- Common parts
- Gases and compounds
- Metals
- Non metals (Reinforced Plastics, Epoxy composites wood, fabrics, furnishings)

(v) Aircraft Systems:
- Flight controls
- Hydraulic
- Landing Gear
- Pneumatic
- Ice and Rain protection

- Environmental and passenger systems (Air conditioning, pressurization, oxygen, toilets, waste and water, Galley service, Baggage, Entertainment and Passenger services)
- Electrical
- Instruments and Equipment

(vi) Engines (General Piston and Turbine)
- Principles, Terminology, Definitions and laws
- Construction Arrangements

(b) Specialization

Every trainee shall work under the supervision of a registered professional Aeronautical engineer for a minimum period of one year or as determined by the Board in accordance with the Architects, Engineers and Quantity Surveyors Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

(i) Engine systems
- Carburation/induction, ignition and starting
- Fire protection and indication
- Lubrication
- Supercharging/turbocharging
- Aircraft, fuel, fuel controls and systems
- Water injection
- Engine control
- Engine instruments
- Propellers and shaft power provisioning
- Thrust reversing
- APU
- Cooling sealing and bleed Air services
- Surge protection and airflow control
- Ice and fire protection
- Pods, pylons, cowlings and mountings
- Ground handling

(iii) Flying controls
- General construction arrangements
- Transmission systems
- Equipment and instruments
- Ice and rain protection
- Heating and ventilation

(iv) Aeronautical Telecommunications:

- Compass compensation
- Radio and audio systems
- Radar systems category 'R'
- Instrument category 'X'
- Basic gyroscopes and servomechanisms
- Automatic pilots (Auto pilots)

(c) Management

Every trainee shall work under the supervision of a registered professional Aeronautical engineer for a minimum period of one year or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

Management, Certification and licensing laws:-

- Regulations
- Maintenance engineers licences and type rating requirements
- Log books and technical logs
- Aircraft documentation and requirement
- Approvals
- Defect and damage identification, analysis and rectification
- Joint Aviation Authority requirements
- Labour management and staff relations
- Selection of production process
- Materials supply, storage and handling
- Programming and estimation
- Budgeting and revenue
- Maintenance analysis and resultant feedback for rectification improved aircraft production and/or increased enterprise productivity
- Environmental impact issues (oils and waste disposal, exhaust)
- Communication Skills