Regulation of the Civil Aviation Board

No. 89

Relating to the Qualifications of Personnel Applicants

By virtue of Clauses 15(6) and 44(3) of the Air Navigation Act B.E. 2497, as amended by the Air Navigation Act (No. 11) B.E.2551, which is a law containing certain provisions relating to the restriction of people's rights and freedoms, to which Clause 29 and Clause 43 of the Constitution of the Kingdom of Thailand permits through the enactment of laws, the Civil Aviation Board, thorough the approval from the Minister of Transport, hereby issues this Regulation in accordance with Annex I and the amendment to Annex I of the Convention on International Civil Aviation (1944) concerning qualifications of persons applying to be personnel.

**Clause 1.** The Regulation of the Civil Aviation Board No.74 relating to the qualification of persons applying to be personnel, issued on 5 November B.E. 2550, is hereby repealed.

**Clause 2.** Under this Regulation;

"Aeroplane" means a heavier-than-air aircraft which has a propelling force by lift mainly from the dynamic reaction of air constantly acting on immovable wings under the prescribed aeronautical conditions.

"Helicopter" means a heavier-than-air aircraft which can hover through the reaction of air with one or more rotors, driven by forces around the axle which is situated almost vertically.

"Powered-lift" means a heavier-than-air aircraft which can take-off and land vertically and can fly with low velocity, by resorting to engine thrusters or engines for buoyancy during such flight, which does not have non-rotating aerofoil(s) in horizontal aeronautics.

"Airship" means a lighter-than-air aircraft which has propelling force.

"Glider" means a heavier-than-air aircraft which has no propelling force, in which its lift is mainly generated by aerodynamics reaction acting on fixed wings under the prescribed aeronautical conditions.

"Balloon" means a lighter-than-air aircraft which does not have a propelling force.

"Solo Flight Time" means the amount of flight time that a student pilot is alone in an aircraft.

"Pilot-in-Command under Supervision" means an assistant-pilot who performs the duties of and acts as a pilot controlling an aircraft under the supervision of a pilot-in-command in accordance with the measures certified by the Director-General.

"Flight Trainer" means Flight trainer with Basic Instrument Flight Trainer, Flight Procedures Trainer and Flight Simulator.

"A Student Air Traffic Controller" means a person who graduated from the air traffic controller (ATC) course certified by the Director-General from an institution certified by the Director-General, whom has not been granted an air traffic controller license, but has controlled air traffic under the supervision of an air traffic controller of the appropriate rank, at an air traffic control office located near an airport or inside a controlled area.

"Director-General" means the Director-General of the Department of Civil Aviation.

**Clause 3.** A personnel applicant shall have the following qualifications;

(1) A student pilot;

(a) Age, shall be not be less than 17 years old.

(b) Health, shall have received a class 2 medical certificate.

(2) A private Aeroplane pilot, a private Helicopter pilot, a private Powered-lift pilot and a private Airship pilot;

(a) Age, shall not be less than 17 years old.

(b) Health, shall have received a class 2 medical certificate.

(c) Knowledge, shall have knowledge in the following fields;

1) Air law in relation to;

a) Regulations relating to persons holding private pilot licenses.

b) Rules of the air.

c) Altimeter setting procedures.

d) Procedures on relevant air traffic services.

2) Aircraft general knowledge on;

a) Principles and function of engines, systems and meters.

b) Limitations on an aircraft operation and engines of the aircraft of which the applicant is applying for a license and relevant working information from aircraft flight manual or documents as appropriate.

For Helicopters and Powered-lifts, additional knowledge about transmission operation, and for Airships additional knowledge about the state and method of using gas.

3) Flight performance, planning and loading on;

a) Loading and weight distributing impacts, which affect flight performance, and weight and equilibrium calculation.

b) Usage and practice of aeronautical information and other performances.

c) Flight planning on private flight including before-flight and in-flight plan according to visual flight plans, plan preparation and proposal to air traffic services unit, operational rules on air traffic services, in-flight position reporting, altimeter setting procedures and operations in areas of high-density traffic.

4) Human performance relating to private pilots including the principles of threat and error management.

5) Meteorology in aeronautics, meteorological data usage and receiving, altimetry science, and hazardous weather avoidance.

6) Navigation, air-navigation and dead – reckoning techniques and usage of air navigation charts.

7) Operational procedures in the following matters;

a) Application of the principles of threat and error management to aviation performances.

b) Altimeter setting procedures.

c) Application of aeronautical documents including Aeronautical Information Publication (AIP), A Notice to Airmen (NOTAM) and other codes or aeronautical abbreviations.

d) Safety and emergency measures including avoidance of hazardous weather, wake turbulence, and other performances leading to hazard.

For Helicopters and Powered-lifts, the applicant shall have additional knowledge on a severe loss of lift caused by a vortex ring system engulfing the rotor (settling with power), a divergent oscillation caused by an imbalance in the rotation of a main rotor when it is on the ground or touching down (ground resonance), a stall of a main rotor with resultant relative wind (retreating blade stall), hazardous effects causing by touching down on a sloping ground, touching down with crosswinds, or lifting off the surface critically (dynamic roll-over), and other safety procedures, associated with flight in visual meteorological conditions (VMC).

8) Principles of flight

9) Radiotelephony regarding the communication languages and approaches, and measures taken in case of incapability to contact via radio.

(d) Proficiency, shall have proficiency in the following matters;

1) In case of a private Aeroplane pilot, applicant shall have operated as a pilot for not less than 60 flight hours. If the applicant has attended a course certified by the Director-General from an institution certified by the Director-General, the flight hours shall be reduced to not less than 40 flight hours. The flight hours under the supervision of flight instructors with flight simulators certified by the Director-General shall be credited towards the 60 flight hours or 40 flight hours, as the case may be, but not in the amount exceed 5 flight hours.

In case that an applicant has flight hours with other types of aircraft, the Director-General may allow such flight hours to be credited towards the Aeroplane flight hours.

In any case, an applicant shall be experienced in Solo Flight Times not less than 10 flight hours under a supervision of a flight instructor. This shall constitute solo dead-reckoning not less than 5 flight hours, one time solo flight with at least 270 kilometers (150 NM) distance and full-stop landing at two different airports.

2) In case of a private Helicopter pilot, applicant shall have expertise in operating a Helicopter of not less than 60 flight hours. If the applicant has attended a course certified by the Director-General from an institution certified by the Director-General, the flight hours shall be reduced to not less than 40 flight hours. The flight hours under the supervision of flight instructors with flight simulators certified by the Director-General shall be credited towards the 60 flight hours or 40 flight hours, as the case may be, but not in the amount exceed 5 flight hours.

In case that an applicant has flight hours with other types of aircraft, the Director-General may allow such flight hours to be credited towards the Helicopter flight hours.

In any case, an applicant shall be experienced in Solo Flight Time not less than 10 flight hours under an inspection of a flight instructor. This shall constitute solo dead-reckoning not less than 5 flight hours with at least 180 kilometers (100 NM) distance and shall operate full-stop landing at two different airports at least.

3) In case of a private Powered-lift pilot, the applicant shall have operated Powered-lifts of not less than 40 flight hours, which shall include being a co-pilot with a flight instructor of not less than 20 flight hours. As-a-pilot flight hours under flight instructors' supervision and the flight simulators certified by the Director-General can be calculated as a part of 40 flights hours or 20 flights hours, as a case may be, but not exceeding 5 flight hours.

In case that an applicant has operated other types of aircraft, the Director-General can issue a notification to count such period as Powered-lift flight hours.

In any cases, an applicant shall be experienced in Solo Flight Time not less than 10 flight hours under an inspection of a flight instructor. This shall constitute solo dead-reckoning not less than 5 flight hours with at least 270 kilometers (150 NM) distance and shall operate full-stop landing at two different airports at least.

4) In case of a private Airship pilot, the applicant shall have operated as a pilot of an Airship not less than 25 flight hours and shall comply with certain conditions as follows;

a) Completed dead-reckoning of not less than 3 flight hours with a distance of at least 45 kilometers (25 NM);

b) Completed lifting off and landing at an airport at least 5 times each;

c) Completed flights by instrument rating of at least 3 flight hours; and

d) Assuming the duties of a pilot-in-command under the supervision of a pilot-in-command at least 5 flight hours.

(3) A multi-crew pilot license;

(a) Age, shall be not less than 18 years old;

(b) Health, shall have a class 1 medical certificate;

(c) Knowledge, shall be competent in Clause (5) (c) in case of applicants for Airline Transport Pilot License;

(d) Proficiency, shall have proficiency in the following fields;

1) Graduated from a course certified by the Director-General from an institution certified by the Director-General with experience in pilot flying and pilot not flying by actual and simulated flight of not less than 240 flight hours.

2) An actual flight under Clause (d) 1) shall constitute private pilot proficiency under (2), including upset recovery training, operating night flights and flights solely by instrument rating.

3) Operated flying with Turbine - powered Aeroplanes which the Director-General certified to be operated by at least two pilots in accordance with flight manual or operated flying with an flight simulator approved by the Director-General.

(4) A commercial pilot-Aeroplane, a commercial pilot-Helicopter, a commercial pilot-Powered-lift and a commercial pilot-Airship;

(a) Age, shall be at least 18 years old.

(b) Health, shall have a class 1 medical assessment.

(c) Knowledge, shall have knowledge in the following fields;

1) Air law in the following matters;

a) Regulations imposed upon commercial pilot license.

b) Rules of the air.

c) Procedures on relevant Air traffic services.

2) Aircraft general knowledge;

a) Principles and functions of engines, systems and meters.

b) Limitations on operation of aircrafts and aircraft engines to which the applicant is applying for a license, and relevant working information from aircraft flight manual or documents deemed suitable.

c) Usage and inspection over instruments and aircraft system.

d) Maintenance of fuselage and aircraft engine. Additional knowledge about transmission operation is required for a commercial pilot-Helicopter and a commercial pilot-Powered-lift. Additional knowledge about state and method of using gas is required for commercial pilot-Airship.

3) Flight performance, planning and loading in the following matters;

a) Loading and weight distributing impacts on aircraft handling, flight characteristics, aircraft performances and equilibrium calculation.

b) Usage and practice of aeronautical information and other performances.

c) Flight planning on commercial flight including before-flight and in-flight plan according to visual flight plans, plan preparation and proposal to air traffic services unit, operational rules on air traffic services, in-flight position reporting, and altimeter setting procedures. For Helicopters, Powered-lifts and Airships additional knowledge about external loading is required.

4) Human performance relating to a commercial pilot including threat and error management.

5) Meteorology in the following matters;

a) Interpretation and appliance of weather reports, weather forecast, weather chart, means of acquiring weather news and its application, and Altimetry science.

b) Aeronautical meteorology, climatology in the relevant flight areas, atmospheric pressure movement, atmospheric pressure line's structure and initializations, and attributes of meteorological phenomena affecting aviation operations.

c) Causes and effects of ice, scraping in the atmospheric pressure line and hazardous weather avoidance.

6) Air navigation, application of air navigation charts, application of air navigation meter and supporter, understanding in air navigation system, and operation of lifting-up instruments.

In case of Airships, applicant shall have additional knowledge as follows;

a) Avionic usage, avionic limitations, and other necessary meters for air navigation and its control.

b) Air navigation system's operation, accuracy and reliability regarding aviating from origin points, aviating towards destination airport, en-route flight, landing and air navigation radio aids positioning.

7) Operational procedures in the following matters;

a) Application of principles of threat and error management to aviation performances.

b) Application of aeronautical documents including Aeronautical Information Publication (AIP), A Notice to Airmen (NOTAM), and other codes or aeronautical abbreviations.

c) Altimeter setting procedures.

d) Safety and emergency measures.

e) Procedures in delivery of hazardous goods.

f) Rules on safety announcement for passengers including caution on passenger transportation.

In case of Helicopters and Powered-lifts, the applicant shall have additional knowledge on a severe loss of lift caused by a vortex ring system engulfing the rotor (settling with power), a divergent oscillation caused by an imbalance in the rotation of a main rotor when it is on the ground or touching down (ground resonance), a stall of a main rotor with resultant relative wind (retreating blade stall), hazardous effects causing by touching down on a sloping ground, touching down with crosswinds, or lifting off the surface critically (dynamic roll-over), and other safety procedures, associated with flight in visual meteorological conditions (VMC).

8) Principles of flight

9) Radiotelephony regarding the communication languages and approaches, and measures taken in case of incapability to contact via radio.

(d) Proficiency, shall have proficiency in the following matters;

1) In case of a commercial pilot-Aeroplane, an applicant shall graduate from a course certified by the Director-General from an institution certified by the Director-General. The applicant shall have operated as a pilot in an Aeroplane not less than 150 flight hours. In this case, as-a-pilot flight hours in approved flight simulators under flight instructor's inspection can be included in such period but not exceeding 10 flight hours. In addition to the requirements above, the applicant shall have gone through the following requirements;

a) Operated as a pilot-in-command not less than 70 flight hours;

b) Operated as a pilot-in-command in dead-reckoning not less than 20 flight hours with at least 450 kilometers (300 NM) distance and shall operate full-stop landing at two different airports at least;

c) Operated flights by instrument rating not less than 10 flight hours which operating hours under a flight simulator can be included but not exceeding 5 flight hours; and

d) Operated as a pilot-in-command in night flights not less than 5 flight hours including operating lifting off and landing at an airport at least 5 times each.

In case that an applicant has flight hours with other types of aircraft, the Director-General may allow such flight hours to be credited towards the Aeroplane flight hours.

2) In case of a commercial pilot-Helicopter, an applicant shall have graduated from a commercial pilot course certified by the Director-General from an institution certified by the Director-General. The applicant shall have operated as a pilot in a Helicopter not less than 100 flight hours. In this case, as-a-pilot flight hours in approved flight simulators under flight instructor's inspection can be credited but not exceeding 10 flight hours. In addition to the requirements above, the applicant shall have gone through the following requirements;

a) Operated as a pilot-in-command not less than 35 flight hours;

b) Operated as a pilot-in-command in dead-reckoning not less than 10 flight hours and shall operate full-stop landing at two different airports at least;

c) Operated flights by instrument rating not less than 10 flight hours which operating hours under a flight simulator can be included but not exceeding 5 flight hours; and

d) Operated as a pilot-in-command in night flights not less than 5 flight hours including operating lifting off and landing at an airport at least 5 times each.

In case that an applicant has flight hours with other types of aircraft, the Director-General may allow such flight hours to be credited towards the Helicopter flight hours.

3) In case of a commercial pilot-Powered-lift, an applicant shall have graduate from course certified by the Director-General from an institution certified by the Director-General. The applicant shall have operated as a pilot in a Powered-lift not less than 150 flight hours. In this case, as-a-pilot flight hours in certified flight simulators under flight instructor's inspection can be credited but not exceeding 10 flight hours. In addition to the requirements above, the applicant shall have gone through the following requirements;

a) Operated as a pilot-in-command not less than 50 flight hours;

b) Operated as a pilot-in-command in dead-reckoning not less than 10 flight hours with at least 540 kilometers (300 NM) distance and shall operate full-stop landing at two different airports at least;

c) Operated flights by instrument rating not less than 10 flight hours which operating hours under a flight simulator can be included but not exceeding 5 flight hours; and

d) Operated as a pilot-in-command in night flights not less than 5 flight hours including operating lifting off and landing at an airport at least 5 times each.

In case that an applicant has flight hours with other types of aircraft, the Director-General may allow such flight hours to be credited towards Powered-lift flight hours.

4) In case of a commercial pilot-Airship, an applicant shall have operated as a pilot in an Airship not less than 200 flight hours. In addition to the requirements above, the applicant shall have gone through the following requirements;

a) Operated as a pilot-in-command of an Airship not less than 50 flight hours;

b) Operated as a pilot-in-command or a Pilot-in-Command under Supervision of Airship not less than 30 flight hours providing that both dead-reckoning and night flight operation not less than 10 flight hours.

c) Operated as a pilot by meters not less than 40 flight hours including aeronautical flights of not less than 20 flight hours, which shall include operating an Airship flight not less than 10 hours; and

d) Practiced as a pilot of an Airship in relation to flight as stipulated by the Director-General of not less than 20 flight hours.

(5) An airline transport pilot-Aeroplane, an airline transport pilot-Helicopter, and airline transport pilot –Powered-lift;

(a) Age, shall be at least 21 years old.

(b) Health, shall have a class 1 medical certificate.

(c) Knowledge, shall have knowledge in the following fields;

1) Air law in the following matters;

a) Regulations imposed upon airline transport pilot license holder.

b) Rules of the air.

c) Procedures on relevant air traffic services.

2) Aircraft general knowledge;

a) Principles and limitations of electricity, hydraulic, pressure adjustment, aviation control system, automatic pilot system, Aeroplane equilibration and other systems of Aeroplanes.

b) Engine maintenance, engine operational principles, atmospheric effect on engines and related working information from flight manual or acceptable documents.

c) Operation procedures and performance limitations of Aeroplane, atmospheric effect on engines, and related working information from flight manual or acceptable documents.

d) Usage and inspection over instruments and aircraft system.

e) Instrument rating, compasses, error adjustment and comparison, gyroscope, the Coriolis force's effect, and measures taken in case of instrument rating and electronic display malfunctions.

f) Maintenance of fuselage and aircraft engines.

For Helicopters and Powered-lifts additional knowledge about transmission operation is required.

3) Flight performance and planning in the following matters;

a) Loading and weight distributing impacts on aircraft handling, flight characteristics, aircraft performances and weight and equilibrium calculation.

b) Usage and practice of aeronautical information and other performances including dead-reckoning control.

c) Operational flight planning on commercial flight including before-flight and in-flight plan, plan preparation and proposal to air traffic services unit, operational rules on air traffic services, and altimeter setting procedures.

For Helicopters and Powered-lifts, additional knowledge about external loading is required.

4) Human performance relating to airline transport pilots including the principles of threat and error management.

5) Meteorology in the following matters;

a) Interpretation and appliance of weather reports, weather forecast, weather chart, means of acquiring weather news and its application, and Altimetry science.

b) Aeronautical meteorology, Climatology in the relevant flight areas, atmospheric pressure movement, atmospheric pressure line's structure and initializations, and attributes of meteorological phenomena affecting aviation operations.

c) Causes and effects of ice, scraping in the atmospheric pressure line, and hazardous weather avoidance.

6) Navigation in the following matters;

a) Air navigation including application of air navigation chart, air navigation radio aids, topographical navigation support systems, and specifications related to long-haul flights.

b) Avionic usage, avionic limitation, and other necessary meters for air navigation and its control.

c) Air navigation system's operation, accuracy and reliability regarding aviation from origin points, aviation towards destination airport, en-route flight, landing and air navigation radio aids positioning.

d) Principles and attributes of air navigation system both operating by internal and external referable equipment, and operation of taking-off equipment.

7) Operational procedures in the following matters;

a) Application of the principles of threat and error management to aviation performances.

b) Application and interpretation of aeronautical documents including Aeronautical Information Publication (AIP), A Notice to Airmen (NOTAM), and other codes or aeronautical abbreviations.

c) Safety and emergency measures.

d) Procedures in delivery of hazardous goods.

e) Rules on safety announcement for passengers including caution on passenger transportation.

For Helicopter and Powered-lifts, additional knowledge is required on a severe loss of lift caused by a vortex ring system engulfing the rotor (settling with power), a divergent oscillation caused by an imbalance in the rotation of a main rotor when it is on the ground or touching down (ground resonance), a stall of a main rotor with resultant relative wind (retreating blade stall), hazardous effects causing by touching down on a sloping ground, touching down with crosswinds, or lifting off the surface critically (dynamic roll-over), and other safety procedures, associated with flight in visual meteorological conditions (VMC).

8) Principles of flight

9) Radiotelephony regarding the communication languages and approaches, and measures taken in case of incapability to contact via radio.

In case of airline transport pilot-Aeroplane and airline transport pilot-Powered-lifts, an applicant shall have additional qualifications as specified under Clause (6) (a) regarding instrument rating potential.

(d) Proficiency, shall have proficiency in the following matters;

1) In case of an airline transport pilot-Aeroplane, an applicant shall have operated as a pilot in an Aeroplane not less than 1,500 flight hours. In this case, as-a-pilot flight hours in approved flight simulators under flight instructor's inspection can be credited but not exceeding 100 flight hours provided that operation by a flight procedures trainer and a basic instrument Flight trainer can be credited not exceeding 25 flight hours. In addition to the requirements above, the applicant shall have gone through the following Aeroplane operations;

a) Aviation operation shall not be less than 500 flight hours in case of operating solely as a Pilot-in-Command under Supervision. On the other hand, the flight hours are reduced to not less than 250 flight hours in case of operating as a pilot-in-command at least 70 flight hours and the rest can be operated as a Pilot-in-Command under Supervision;

b) Dead-reckoning operation shall not be less than 200 flight hours provided that operating as a pilot-in command or a Pilot-in-Command under Supervision is not less than 100 flight hours;

c) Operated flights by instrument rating not less than 75 flight hours which ground operations can be credited but not exceeding 30 flight hours; and

d) Operated as a pilot-in-command or a co-pilot in night flights not less than 100 flight hours.

In case that an applicant has flight hours with other types of aircraft, the Director-General may allow such flight hours to be credited towards the Aeroplane flight hours.

2) In case of an airline transport pilot-Helicopter, an applicant shall have operated as a pilot in a Helicopter not less than 1,000 flight hours. In this case, as-a-pilot flight hours in approved flight simulators under flight instructor's inspection can be included in such period but not exceeding 100 flight hours providing that operation by a flight procedures trainer and a basic instrument Flight trainer can be included not exceeding 25 flight hours. In addition to the requirements above, the applicant shall have gone through the following Helicopter operations;

a) Aviation operation shall not be less than 250 flight hours including operating solely as a pilot-in-command, or operating as a pilot-in-command not less than 70 flight hours and the rest can be operated as a Pilot-in-Command under Supervision;

b) Dead-reckoning operation shall not be less than 200 flight hours providing that operating as a pilot-in command or a Pilot-in-Command under Supervision is not less than 150 flight hours;

c) Operated flights by instrument rating not less than 30 flight hours which ground operations can be included but not exceeding 10 flight hours; and

d) Operated as a pilot-in-command or a co-pilot in night flights not less than 50 flight hours.

In case that an applicant has operated other types of aircraft, the Director-General may allow the flight hours to be credited towards the Helicopter flight hours.

3) In case of an airline transport pilot-Powered-lifts, an applicant shall have operated as a pilot in a Powered-lifting not less than 1,500 flight hours. In this case, as-a-pilot flight hours in approved flight simulators under flight instructor's inspection can be credited as specified by the Director-General. In addition to the requirements above, the applicant shall have gone through the following Powered-lift operations;

a) Aviation operation shall not be less than 250 flight hours including operating solely as a pilot-in-command, or operating as a pilot-in-command not less than 70 flight hours and the rest can be operated as a Pilot-in-Command under Supervision;

b) Dead-reckoning operation shall not be less than 100 flight hours providing that operating as a pilot-in command or a Pilot-in-Command under Supervision is not less than 50 flight hours;

c) Operated flights by instrument rating not less than 75 flight hours which ground operations can be included but not exceeding 30 flight hours; and

d) Operated as a pilot-in-command or a co-pilot in night flights not less than 25 flight hours.

In case that an applicant has operated other types of aircraft, the Director-General may allow the flight hours to be credited towards the Powered-lift flight hours.

(6) Instrument rating potential for an Aeroplane, a Helicopter, a Powered-lift and an Airship;

(a) Proficiency, shall have proficiency in the following fields;

1) Air law in the following matters;

a) Regulations imposed upon instrument rating.

b) Procedures on relevant air traffic services.

2) Aircraft general knowledge depending on types of requested aircraft licenses;

a) Avionic usage, avionic limitations, necessary meters for air navigation and its control under Instrument flight rules (IFR) and under instrument meteorological condition. Operations and limitations of the autopilot system, compasses, error adjustment and comparison, gyroscope, the Coriolis force's effect, and measures taken in case of instrument rating and electronic display malfunctions.

b) Maintenance of fuselage and aircraft engines.

3) Flight performance and planning depending on types of requested aircraft licenses;

a) Preparation and inspection deemed appropriate to instrument rating before operating the flights.

b) Operational flight planning, plan preparation and proposal to air traffic services unit in compliance with IFR, and altimeter setting procedures.

4) Human performance relating to instrument rating including the principles of threat and error management.

5) Meteorology in the following matters;

a) Interpretation and appliance of aeronautical meteorology, aviation weather reports, aviation weather forecast, aviation weather chart, aviation abbreviations, means of acquiring weather news and its application, and Altimetry science.

b) Causes and effects of ice, scraping in the atmospheric pressure line and hazardous weather avoidance.

For Helicopter and Powered-lift, additional knowledge of iced rotors is required.

6) Navigation depending on types of requested aircraft licenses;

a) Air navigation by operating air navigation radio aids.

b) Air navigation system's operation, accuracy and reliability regarding aviation from origin points, aviation towards destination airport, en-route flight, landing and air navigation radio aids positioning.

7) Operational procedures depending on types of requested aircraft licenses;

a) Application of the principles of threat and error management to aviation performances.

b) Application and interpretation of aeronautical documents including Aeronautical Information Publication (AIP), A Notice to Airmen (NOTAM), and other codes or aeronautical abbreviations. Application and interpretation of instrument rating chart concerning an aviation from origin points, en-route flight, and landing.

c) Safety and emergency measures including IFR safety measures about navigation and topographical obstacle distance.

8) Radiotelephony regarding the communication languages and approaches, and measures taken in case of incapability to contact via radio.

(b) Proficiency, shall have proficiency and pilot license depending on types of requested aircraft license, graduated from a course certified by the Director-General from an institution certified by the Director-General, which shall include;

1) Dead-reckoning operation as a pilot-in command in approved aircraft types shall not be less than 50 flight hours provided that applicants have operated in license-requested aircrafts not less than 10 flight hours; and

2) Operated flights by instrument rating not less than 40 flight hours which instrument ground time operations under flight instructors can be credited but not exceeding 20 flight hours, or approved flight simulator operations can be credited but not exceeding 30 flight hours.

(7) Flight instructor rating for a Helicopter, a Powered-lift and an Airship;

(a) The applicants shall have met the knowledge requirements in Clause (4) (c) for a commercial pilot license. In addition, the applicants shall have knowledge in the following areas;

1) Techniques of applied instruction.

2) Assessment of student performance in those subjects in which ground instruction is given.

3) The learning process.

4) Elements of effective teaching.

5) Student evaluation and testing, training philosophies.

6) Training program development.

7) Lesson planning.

8) Classroom instructional techniques.

9) Use of training aids, including flight simulation training devices as appropriate.

10) Analysis and correction of student errors.

11) Human performance relevant to flight instruction including principles of threat and error management.

12) Hazards involved in simulating system failures and malfunctions in the aircraft.

(b) Proficiency, shall have proficiency as graduated from flight instructor rating course certified by the Director-General from an institution certified by the Director-General, and proficiency as specified under Clause (4) (d) depending on types of requested aircraft licenses, including at least 20 flight hours as a flight instructor.

(8) Multi engine rating

(a) Knowledge, shall have knowledge in the following areas;

1) Aircraft system, aircraft equilibrium, and aircraft performance measurement.

2) Aerodynamics and aircraft procedures.

3) Aerodynamics, and aircraft malfunction and emergency measures.

4) Instrument rating procedures of aircrafts.

(b) Proficiency, shall have proficiency as specified under Clause (2) (d) or (4) (d) and operated multi engine under the supervision of multi-engine flight instructors of at least 15 flight hours. In this case, operation under approved flight simulators can be credited but not exceeding 4 flight hours.

(9) A Glider pilot;

(a) Age, shall be at least 16 years old;

(b) Health, shall have a class 2 medical certificate;

(c) Knowledge, shall have knowledge in the following fields;

1) Air law in relation to;

a) Rules and regulations relevant to the holder of a Glider pilot license.

b) Rules of the air.

c) Relevant air traffic services practices and procedures.

2) Aircraft general knowledge;

a) Principles of operations of Glider systems and instruments.

b) Operating limitations of Gliders; relevant operational information from the flight manual or other appropriate document.

3) Flight performances and planning;

a) Effects of loading and mass distribution on flight characteristics; mass and balance considerations.

b) Usage and practical application of launching, landing and other performance data.

c) Pre-flight and en-route flight planning appropriate to operations under visual flight rules (VFR), appropriate air traffic services procedures, altimeter setting procedures, and operations in areas of high-density traffic.

4) Human performance relevant to the Glider pilot including principles of threat and error management.

5) Application of elementary aeronautical meteorology including usage and procedures for obtaining meteorological information, and altimetry science.

6) Practical aspects of air navigation and dead-reckoning techniques, and use of aeronautical charts.

7) Operational procedures in the following matters;

a) Application and interpretation of aeronautical documents such as AIP, NOTAM, aeronautical codes and other abbreviations.

b) Different launch methods and associated procedures.

c) Safety and emergency measures including avoidance of hazardous weather, wake turbulence, and other performances leading to hazard.

8) Principles of flight relating to Gliders.

(d) Proficiency, shall have proficiency flying with Gliders of not less than 6 flight hours including 2 hours of Solo Flight Time which launch and landing performances are not less than 20 times.

In case that an applicant has operated other types of aircraft, the Director-General may allow the flight hours to be credited as Glider flight hours.

(10)Free Balloon pilot;

(a) Age, shall be at least 16 years old.

(b) Health, shall have a class 2 medical certificate.

(c) Knowledge, shall have knowledge in the following fields;

1) Air law in relation to;

a) Rules and regulations relevant to the holder of a free Balloon pilot license.

b) Rules of the air.

c) Relevant air traffic services practices and procedures.

2) Aircraft general knowledge;

a) Principles of operation of free Balloon systems and instruments.

b) Operating limitations of free Balloons and relevant operational information from the flight manual or other appropriate documents.

c) Physical properties and practical application of gases used in free Balloons.

3) Flight performances and planning;

a) Effects of loading on flight characteristics and mass calculations.

b) Usage and practical application of launching, landing and other performance data.

c) Pre-flight and en-route flight planning appropriate to operations under visual flight rules (VFR), appropriate air traffic services procedures, altimeter setting procedures, and operations in areas of high-density traffic.

4) Human performance relevant to the free Balloon pilot including principles of threat and error management.

5) Aeronautical meteorology including usage and procedures for obtaining meteorological information, and altimetry science.

6) Practical aspects of air navigation and dead-reckoning techniques, and use of aeronautical charts.

7) Operational procedures in the following matters;

a) Application and interpretation of aeronautical documents such as AIP, NOTAM, aeronautical codes and other abbreviations.

b) Different launch methods and associated procedures.

c) Safety and emergency measures including avoidance of hazardous weather, wake turbulence, and other performances leading to hazard.

8) Principles of flight relating to free Balloons.

(d) Proficiency, shall have proficiency in operating as a pilot of free Balloons not less than 16 flight hours including at least 8 launches and ascents of which one of them shall be solo.

(11) A Student Air Traffic Controller;

(a) Age, shall be at least 18 years old.

(b) Health, shall have a class 3 medical certificate.

(12) An air traffic controller;

(a) Age, shall be at least 21 years old.

(b) Health, shall have a class 3 medical certificate.

(c) Knowledge, shall have knowledge in the following fields;

1) Air law in relation to rules and regulations relevant to an air traffic controller;

2) Air traffic control equipment principles, use and limitations of equipment used in air traffic control;

3) Aircraft general knowledge including principles of flight, principles of operation and functioning of aircraft, engines and systems, and aircraft performance relevant to air traffic control operations;

4) Human performance including principles of threat and error management;

5) Meteorology including aeronautical meteorology, use and appreciation of meteorological documentation and information, origin and characteristics of weather phenomena affecting flight operations and safety, and altimetry science;

6) Navigation including principles of air navigation, principle, limitation and accuracy of navigation systems and visual aids; and

7) Operational procedures including air traffic control, communication, radiotelephony and phraseology procedures in case of routine, non-routine and emergency situations. Application of the relevant aeronautical documents and safety practices associated with flight.

(d) Proficiency, shall have proficiency of graduating from an air traffic control course certified by the Director-General from an institution certified by the Director-General provided that operating the actual control of air traffic under the supervision of an appropriately rated air traffic controller not less than 3 months. In this case, an applicant shall meet the requirements under Clause (13) (b) and the proficiency requirements specified for air traffic controller ratings may be credited as part of the proficiency specified in this paragraph.

(13) Air traffic controller ratings shall comprise the following categories: aerodrome control rating, approach control procedural rating, approach control surveillance rating, approach precision radar control rating, area control procedural rating, and area control surveillance rating;

(a) Knowledge, shall have knowledge in the following fields;

1) Airspace structure;

2) Applicable rules, procedures and source of information;

3) Air navigation facilities;

4) Air traffic control equipment and its use;

5) Terrain and prominent landmarks;

6) Characteristics of air traffic;

7) Weather phenomena; and

8) Emergency and search and rescue plans.

In case of aerodrome control rating, additional knowledge about aerodrome layout, physical characteristics and visual aids is required.

In case of approach control surveillance, approach precision radar control, and area control surveillance ratings, the applicant shall have additional knowledge in the following matters;

a) Principles, use and limitations of applicable ATS surveillance systems and associated equipment; and

b) Procedures for the provision of ATS surveillance service, as appropriate, including procedures to ensure appropriate terrain clearance.

(d) Proficiency, shall have proficiency by graduating from an air traffic control course certified by the Director-General from an institution certified by the Director-General provided that operating the actual control of air traffic under the supervision of an appropriately ranked air traffic controller as follows;

1) In case of an aerodrome control rating, the applicant shall have operated air traffic control at the airport for which the rank is sought for a period of not less than 90 hours or one month, whichever is greater.

2) In case of an approach control procedural, approach control surveillance, area control procedural and area control surveillance rank, the applicant shall have operated the control service at the area for which the rating is sought, for a period of not less than 180 hours or 3 months, whichever is greater.

3) In case of an approach precision radar control rank, the applicant shall have operated not less than 200 precision approaches of which not more than 100 shall have been carried out on a radar simulator approved for that purpose by the Director-General. Not less than 50 of those precision approaches shall have been carried out at the unit and on the equipment for which the rank is sought.

If the privileges of the approach control surveillance rating include surveillance radar approach duties, shall have proficiency of not less than 25 plan position indicator approaches on the surveillance equipment of the type in use at the unit for which the rating is sought and under the supervision of an appropriately ranked controller.

The proficiency specified in 1) - 3) shall have been completed within the 6-month period immediately preceding submission of the application.

When the applicant already holds an air traffic controller rating in another category, or the same rating for another unit, the Director-General may allow the reduction of the proficiency requirement in 1) – 3), and if so, the extent of such reduction.

(14) A flight operations officer/ flight dispatcher;

(a) Age, shall be at least 21 years old;

(b) Knowledge, shall have knowledge in the following fields;

1) Air law in relation to rules and regulations relevant to the holder of a flight operations officer license and appropriate air traffic services practices and procedures.

2) Aircraft general knowledge;

a) Principles of operation of Aeroplane engines, systems and instruments;

b) Operating limitations of Aeroplanes and engines; and

c) Minimum equipment list.

3) Flight performance calculation and planning procedures in the following matters;

a) Effects of loading and mass distribution on aircraft performance and flight characteristics and calculations of mass and balance.

b) Operational flight planning, fuel consumption and endurance calculations, alternate aerodrome selection procedures, en-route cruise control, and extended range operations.

c) Preparation and filing of air traffic services flight plans.

d) Basic principles of computer-assisted planning systems.

4) Human performance relevant to dispatch duties, including principles of threat and error management. 5) Aeronautical meteorology in the following matters;

a) Aeronautical meteorology, the movement of pressure line systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions.

b) Interpretation and application of aeronautical meteorological reports, charts and forecasts, codes, and abbreviations. Use and procedures for obtaining meteorological information.

6) Principles of air navigation with particular reference to instrument flight.

7) Operational procedures in the following matters;

a) Usage of aeronautical documents.

b) Operational procedures for the carriage of freight and dangerous goods.

c) Procedures relating to aircraft accidents, incidents, and emergency flight procedures.

d) Procedures relating to unlawful interference and sabotage of an aircraft.

8) Principles of flight relating to the category of aircrafts.

9) Procedures for communicating with aircraft and relevant ground stations.

(c) Proficiency, shall have proficiency in the following matters;

1) A total of no less than two years of service in any one or in any combination of the capacities specified below in a) to b) inclusive, provided that in any combination of experience the period serviced in any capacity shall be at least one year.

a) A flight crew member in air transportation; or

b) A meteorologist in an organization dispatching aircraft in air transportation; or

c) An air traffic controller; or a technical supervisor of flight operations officers or air transportation flight operations systems; or

2) Operating as an assistant in the dispatching of air transport at least one year; or

3) Graduated from a course certified by the Director-General from an institution certified by the Director-General provided that the applicant shall have served under the supervision of a flight operations officer for at least 90 working days within 6 months immediately preceding submission of the application.

**Clause 4.** Standards for each type of medical certificate shall be as prescribed by the Director-General which shall not be of a standard below that specified in Annex I (latest version) of the Convention, and the personnel applicant shall not use additive or harmful drugs, drink or consume drinks containing alcohol, sedatives, hypnotics and other psychoactive substances which causes direct harm to the applicant.

**Clause 5.** Rules for crediting of flight time shall be follows;

(1) A student pilot or the holder of a pilot license shall be entitled to be credited in full for all Solo Flight Time, dual instruction and pilot-in-command flight time towards the total flight time required for the initial issue of a pilot license or the issue of a higher grade of pilot license.

(2) The holder of a pilot license, when acting as co-pilot at a pilot station of an aircraft certificated for operation by a single pilot but required by the Director-General to be operated with a co-pilot, shall be entitled to be credited with not exceeding 50 per cent of the co-pilot flight time towards the total flight time required for a higher grade of pilot license. The Director-General may authorize that flight time be credited in full towards the total flight time required if the aircraft is equipped to be operated by a co-pilot and the aircraft is operated in a multi-crew operation;

(3) The holder of a pilot license, when acting as co-pilot at a pilot station of an aircraft certificated to be operated with a co-pilot, shall be entitled to be credited in full with this flight time towards the total flight time required for a higher grade of pilot license;

(4) The holder of a pilot license, when acting as Pilot-in-Command under Supervision, shall be entitled to be credited in full for the flight time towards the total flight time required for a higher grade of pilot license.

**Clause 6.** The certification of courses and certification of institutions in relation to proficiency shall be as prescribed by the Director-General.

**Clause 7.** All commercial pilot institutions certified and currently training commercial pilots in accordance with a certified course prior to the effective date of this Regulation, having not less than 200 flight hours, if intending to revise the certified course to have not less than 150 flight hours in accordance with this Regulation, the institution shall file a request to the Director-General within 30 effective date of this Regulation. The Director-General may allow the revision if the training under the revised course if the trainee will have sufficient proficiency, as prescribed in this Regulation.

**Clause 8.** Any person holding an Air Traffic Controller License prior to the effective date of this Regulation, or has completed an approved air traffic control course or training prior to the effective date of this regulation, or is a Student Air Traffic Controller during the effective date of this Regulation and has completed an approved course, or is a Student Air Traffic Controller in a course approved before the effective date of this Regulation within one year and has completed the course, all of the followings are deemed to have completed an approved air traffic control course under this regulation.

**Clause 9.** All regulations, notifications and other rules issued pursuant to the Regulation of the Civil Aviation Committee No. 74 relating to the Qualifications of Personnel Applicants shall apply mutatis mutandis.

**Clause 10.** This Regulation shall have effect from the date of announcement in the Royal Gazette onwards.

Issued on 28 February B.E. 2556

Chatchart Sitthipan

Minister of Transport

Chairman of Civil Aviation Board