

**The United Kingdom**  
**National Private Pilot Licence**  
**(Simple Single-engine Aeroplane) (SSEA)**  
**Syllabus**

**Fourth Edition July 2011**

**Accepted AOPA Syllabus for the**  
**UNITED KINGDOM**  
**National Private Pilot Licence**  
(Simple Single-engine Aeroplanes)

Contents	Page No.
<b>FOREWORD</b>	(iii)
<b>SECTION 1.</b>	
<b>INTRODUCTION</b>	
Training objectives	1
Co-ordination of training	1
Summary of minimum training hours	1
Ground training	1
Definitions	1
Air exercises	2
Primary reference material	2
<b>SECTION 2.</b>	
<b>NATIONAL PRIVATE</b>	
<b>PILOT LICENCE</b>	
<b>COURSE</b>	
Course objectives	3
Course description	3
Theoretical knowledge subjects	3
Flight training	4
Training aeroplanes	5
Training aerodromes	5
Theoretical Knowledge Examination	5
Navigation Skill Test and General Skill Test	5
<b>SECTION 3.</b>	
<b>THEORETICAL</b>	
<b>KNOWLEDGE</b>	
<b>SUBJECTS</b>	
Air Law	7
Aeroplane General Knowledge	11
Flight Performance and Planning	16
Human Performance	17
Meteorology	19
Navigation	22
Operational Procedures	26
Principles of Flight	27
Communication	29
General Flight Safety	30
Theoretical Knowledge Examinations	31

<b>SECTION 4.</b>		
<b>FLIGHT TRAINING</b>		
<b>SYLLABUS</b>		
	Flight training syllabus	32
	Flight briefings and air instruction	33
	Solo navigation briefing certificate	40
	Navigation Skill Test (NST)	42
	NST Report Form	45
	Qualifying cross country certificate	46
	General Skill Test (GST)	47
	Application and Report Form NPPL (SSEA) for the	
	General Skill Test Application & Report Form	50
	Summary of Exercises in Phases 1-4	51
	Flying Hours – Examples	52
	Training Record – Statements	53

## **FOREWORD**

This syllabus, for the National Private Pilot Licence Simple Single-engine Aeroplane (NPPL(SSEA)) conforms to the agreed requirements of the United Kingdom Civil Aviation Authority (CAA) for the training of pilots for the grant of a UK National Private Pilot Licence (SSEA). This syllabus is acceptable to the Authority.

# SECTION 1

## INTRODUCTION

The purpose of this syllabus is to give guidance to instructors who are involved in the task of training pilots and to student pilots for the United Kingdom National Private Pilot Licence Simple Single-engine Aeroplane. (NPPL (SSEA)).

## TRAINING OBJECTIVES

Each course is to be designed so that the students or the pilots under training are given the experience, the competence in flying, and the knowledge of aviation technical matters demanded by the ground and flight tests as laid down in this syllabus for the initial issue of a National Private Pilot Licence. To enable them to use the aeroplanes and facilities of the private flying environment within the privileges of the licence, in a safe and responsible manner within their own limitations.

## CO-ORDINATION OF TRAINING

The co-ordination of ground and flight training is a necessary and important part of any pilot course. Care should be exercised when conducting the course to ensure that flying training exercises are compatible with the student's ground training progress.

## SUMMARY OF MINIMUM TRAINING HOURS

DUAL: 22.00 hours to include: 1 hour instrument appreciation.

SOLO: 10.00 hours.

TOTAL: 32.00 hours -(Excluding Navigation Skill Test and General Skill Test)

## GROUND TRAINING

This consists of all the theoretical knowledge required for the course. No mandatory lecture periods are laid down and training may consist of directed self study.

## DEFINITIONS

The following definitions provide a general guide to the briefings given, but may vary in length and content dependent on the individual students' needs.

**Long Briefing** – A detailed explanation and discussion conducted by the flight instructor of the major considerations of an air exercise. The normal length should be approximately 30 minutes and may be given to an individual student, or as an informal lecture to two or more students.

**Pre-flight Briefing** – A practical exposition by the flight instructor and lasting 10-15 minutes, on the contents of a specific flight lesson. This normally includes a statement of the aims, a brief revision of the practical aspects of any Principles of Flight involved, a

statement of exactly what air exercises are to be taught by the instructor and practised by the student, and how, when and by whom the aeroplane is to be operated within the limits imposed by airmanship, weather and flight safety. These limits may vary with a particular flight and will be appropriate to the student's stage of training. The order in which the content is given may vary according to the instructor's judgement and the student's experience.

**Post-flight Discussion** – A few minutes devoted by the instructor immediately after a specific lesson to consolidate the major points made during the flight, clarify any queries the student may have and review progress made by the student, using fault analysis or praise as necessary, and finally to indicate the nature of the next lesson.

**Theoretical Subjects** – The essential knowledge needed by students to comprehend the constraints of their intended operating environment and its inter-relationship with the operation of an aeroplane within their personal limitations. The subject material may be covered by classroom lectures or by directed self study.

*Explanatory Note* – It should be appreciated that the wide coverage of theoretical subjects in the syllabus is due to the need for a student to develop a broad appreciation of the many factors concerned with the safe operation of aircraft, an appreciation which must be inculcated during training rather than afterwards. However, the need to have an "in depth" knowledge of the specified subject material will be confined to a limited number of items.

## **AIR EXERCISES**

The numbering of the air exercises is to be used primarily as a reference list and instructional sequencing guide only. Demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:

- The student's progress and ability
- The weather conditions affecting the flight
- The flight time available
- Instructional technique considerations
- The local operating environment.

## **PRIMARY REFERENCE MATERIAL**

National AIP and NOTAMS

Aeronautical Information Circulars

The Air Navigation Order

LASORS

CAP 413 - Radio Telephony Manual (latest edition)

Aeronautical Charts 1:500,000

Ground Training Manuals - Trevor Thom volumes 1 - 5

Human Performance and Limitations (Campbell and Bagshaw)

Aircraft Owners/Flight Manual/Pilot's Operating Handbook

Safety Equipment - Manufacturers Recommendations and Instruction Leaflets

Accident Information Bulletins

General Aviation Safety Sense Leaflets

ICAO Documents: Convention; Annexes 2, 7, 8, 11, 14; and Doc. 4444

# SECTION 2

## NATIONAL PRIVATE PILOT LICENCE

### Simple Single-engine Aeroplane (SSEA) Course

#### COURSE OBJECTIVES

The course shall be designed so that student pilots are given adequate theoretical knowledge and flight training in order to ensure they are capable of **safely** operating an aeroplane whilst flying in weather conditions appropriate to the **visual flight rules**.

#### COURSE DESCRIPTION

The course shall be undertaken at a Registered Facility (RF) or Flying Training Organisation (FTO) within the UK or Isle of Man and the required theoretical knowledge and flying training for the course is as follows:

#### Theoretical Knowledge Subjects:

The theoretical knowledge syllabus of the NPPL(SSEA) course shall cover the following:

**Air Law**

**Aeroplane General Knowledge**

**Flight Performance and Planning**

**Human Performance and Limitations**

**Meteorology**

**Navigation**

**Operational Procedures**

**Principles of Flight**

**Communications**

These subjects shall be covered by the use of lectures or by a course of directed study including self study at home. Full details of the theoretical knowledge subjects are shown in Section 3 of this syllabus.

## **Flight Training**

Flight instruction shall be given by flight instructors qualified in accordance with Joint Aviation Requirements-Flight Crew Licensing (JAR-FCL) and shall be sufficient to cover the following flight procedures and manoeuvres:

pre-flight operations, including mass and balance determination, aeroplane inspection and servicing;

aerodrome and traffic pattern operations, collision avoidance precautions and procedures; control of the aeroplane by external visual reference;

flight at critically slow airspeeds; recognition of, and recovery from, incipient and full stalls;

flight at critically high airspeeds; recognition of, and recovery from spiral dives;

normal and cross wind take-offs and landings, landing at unlicensed strips, shortfield/grass field operation;

maximum performance (short field and obstacle clearance) take-offs; short field landings; instrument appreciation;

cross-country flying using visual reference and dead reckoning;

emergency operations, including simulated aeroplane equipment malfunctions;

and operations to, from and transiting controlled aerodromes, compliance with air traffic services, procedures, radiotelephony procedures and phraseology.

Full details of the air exercises to cover the above items are shown in Section 4 of this syllabus.

An applicant for an NPPL must complete at least 32 hours flight time as pilot of aeroplanes. Of the 32 hours, a minimum of 22 hours dual including 1 hour of instrument appreciation and 10 hours solo must be completed. The Navigation Skill Test and General Skill Test are not included in the course hours.

Of the minimum 10 hours solo, a student must complete at least four hours of solo cross country flight, including one cross country of at least 185km (100 nm) in the course of which full stop landings at two aerodromes other than the aerodrome of departure shall be made.

**Entry to training** Before being accepted for training, an applicant should be informed of the medical requirements laid down prior to first solo and application for an NPPL.

**Minimum age for first solo:** 16 years.

**Minimum medical requirement to fly solo:** Driver and Vehicle Licensing Agency (DVLA) Group 1 car driving medical standards.

**Minimum age for issue of NPPL (SSEA): 17 years**



**Minimum medical requirements to carry passengers on issue of NPPL (SSEA):** A certificate of fitness from a GP, equivalent to the DVLA Group 2 professional driving medical standard.

### **Training Aeroplanes**

An adequate fleet of training aeroplane(s) equipped and maintained to the relevant BCAR/EASA standards shall be provided by the flying club or training organisation. Training conducted on aeroplanes having a certificate of airworthiness will enable an applicant to obtain a Simple Single-engine Aeroplane class rating for national private pilot licence issue. Each aeroplane shall be fitted with duplicated primary flight controls for use by the flight instructor and the student: swing-over flight controls shall not be acceptable. The fleet should include, as appropriate to the courses of training, aeroplane(s) suitable for demonstrating stalling and spin avoidance. Types of aeroplane used for training shall be approved by the Authority for training purposes.

### **Training Aerodromes**

Training for the NPPL shall be conducted at any licensed UK aerodrome.

### **Theoretical Knowledge Examination**

Applicants for a National Private Pilot Licence will have to satisfactorily complete a written examination to demonstrate that they hold a level of aeronautical knowledge appropriate to the holder of a JAR-FCL Private Pilot Licence. NPPL holders may, if they so wish, up-grade to a full JAR-FCL PPL at some future time and therefore, in view of this possibility, the theoretical knowledge examinations undertaken by NPPL applicants will be the same as those set for the JAR-FCL PPL examinations.

**Note:** This requirement has been recommended by the CAA, both to facilitate and remove impediments to the timely introduction of the NPPL. This requirement will be reconsidered after a suitable period of operation of the NPPL, with the intention of providing an option to take a simpler written examination, with theoretical knowledge syllabus and examinations reduced to a level consistent with the practical and relatively limited needs of the NPPL (SSEA) holder.

### **Navigation Skill Test**

Applicants for the NPPL will be required to take and pass a Navigation Skill Test with an examiner prior to undertaking the qualifying solo cross-country flight. (See page 44 of this syllabus)

### **General Skill Test**

Applicants for the NPPL will also have to demonstrate their ability to perform procedures and manoeuvres in an aeroplane for an examiner to assess their competency to hold an NPPL.

**Time limits for reference purposes for the validity periods of examinations for applicants for the National Private Pilot Licence (SSEA):**

All the theoretical knowledge examinations must be passed within a period of 18 months counted from the end of the month when the applicant first attempted an examination, and this pass will remain valid for licence issue for a period of 24 months from the date of successful completion of the examinations. All theoretical knowledge examinations must have been completed before taking the General Skill Test.

The General Skill Test must be undertaken within 6 months of completing the flying training, and all sections of the test must be completed within a period of 6 months.

# SECTION 3

## THEORETICAL KNOWLEDGE SUBJECTS

### **AIR LAW**

#### **LEGISLATION**

#### **The Convention on International Civil Aviation**

#### **The International Civil Aviation Organisation (ICAO)**

#### **Articles of the Convention relative to pilots**

- 1 Sovereignty
- 2 Territory
- 5 Flight over territory of Contracting States
- 10 Landing at customs airports
- 11 Applicability of air regulations
- 12 Rules of the air
- 13 Entry and clearance regulations of Contracting States
- 16 Search of aircraft
- 22 Facilitation of formalities
- 23 Customs and immigration procedures
- 24 Customs duty
- 29 Documents to be carried in aircraft
- 30 Use of aircraft radio equipment
- 31 Certificate of airworthiness
- 32 Licences of personnel
- 33 Recognition of certificates and licences
- 34 Journey log books
- 35 Cargo restrictions
- 36 Restrictions on use of photographic equipment
- 37 Adoption of international standards and procedures
- 39 Endorsements of certificates and licences
- 40 Validity of endorsed certificates and licences

#### **Annexes to the Convention (ICAO Annexes)**

#### **Annex 7 Aircraft nationality and registration marks**

- definitions
- aircraft registration marks
- certificate of registration
- identification plate

## Annex 8 Airworthiness of aircraft

- definitions
- certificate of airworthiness
- continuing airworthiness
- validity of certificate of airworthiness
- instruments and equipment
- aircraft limitations and information

## **Rules of the air**

### Annex 2 Rules of the air

- definitions
- applicability
- general rules
- visual flight rules
- signals (Appendix 1)
- interception of civil aircraft (Appendix 2)

## **Air traffic regulations and air traffic services**

### Annex 11 Air traffic regulations and air traffic services

- definitions -objectives of air traffic services
- classification of airspace
- flight information regions, control areas and control zones
- air traffic control services
- flight information services
- alerting service
- visual meteorological conditions
- instrument meteorological conditions
- in-flight contingencies

### Annex 14 Aerodrome data

- definitions
- conditions of the movement area and related facilities

#### Visual aids for navigation

- indicators and signalling devices
- markings
- lights
- signs
- markers
- signal area

#### Visual aids for denoting obstacles

- marking of objects
- lighting of objects

#### Visual aids for denoting restricted use of areas

#### Emergency and other services

- fire and rescue service
- apron management service

- Aerodrome ground lights and surface marking colours
  - colours for aeronautical ground lights
  - colours for surface markings

## **ICAO Doc. 4444 – Air Traffic Management – Procedures for air traffic services**

### General provisions

- definitions
- ATS operating practices
- flight plan clearance and information
- control of air traffic flow
- altimeter setting procedures
- wake turbulence information
- meteorological information
- air reports (AIREP)

### Area control service

- separation of controlled traffic in the various classes of airspace
  - pilots, responsibility to maintain separation in visual meteorological conditions (VMC)
  - emergency and communication failure, procedures by the pilot
  - interception of civil aircraft

### Approach control service

- departing and arriving aircraft procedures in VMC

### Aerodrome control service

- function of aerodrome control towers
- visual flight rules (VFR) operations
- traffic and circuit procedures
- information to aircraft
- control of aerodrome traffic

### Flight information and alerting service

- air traffic advisory service
- objectives and basic principles

### National operating rules and procedures

- reference to the ANO The Order and Regulations
- reference to the UK AIP
  - airspace restrictions and hazards
- reference to specific national Aeronautical Information Publications (AIPs)

## **Joint Aviation Authorities (JAA) Requirements (JAR)**

### JAR-FCL Subpart A - General requirements

- 1.025 Validity of licences and ratings
- 1.035 Medical fitness
- 1.040 Decrease in medical fitness
- 1.050 Crediting of flight time
- 1.065 State of licence issue
- 1.080 Log books

### JAR-FCL Subpart B - Student Pilot

- 1.085 Requirements
- 1.090 Minimum age
- 1.095 Medical fitness

### JAR-FCL Subpart C - Private pilot licence

- 1.100 Minimum age
- 1.105 Medical fitness
- 1.110 Privileges and conditions
- 1.120 Experience and crediting
- 1.125 Training course
- 1.130 Theoretical knowledge examination
- 1.135 Skill test

### JAR-FCL Subpart E -Instrument rating

- 1.175 Circumstances in which an instrument rating is required

### JAR-FCL Subpart F -Type and class ratings

- 1.215 Division of class ratings
- 1.225 Circumstances in which type or class ratings are required
- 1.245 Validity, revalidation and renewal

### JAR-FCL Subpart H -Instructor ratings

- 1.300 Instruction - general

### Reference to JAR-OPS

Recommended reference material to cover this aspect is as follows:

CAP 393 -Air Navigation: the Order and Regulations (as amended). The UK AIP: General (GEN) and En-route (ENR) (as amended).

# Aeroplane General Knowledge

## ***AIRFRAME***

### Airframe structure

- components
- fuselage, wings, tailplane, fin
- primary flying controls
- trim and flap/slat systems
- landing gear
- nose wheel, including steering
- tyres, condition
- braking systems and precautions in use
- retraction systems

### Airframe loads

- static strength
- safety factor
- control locks and use
- ground/flight precautions

## ***POWERPLANT***

### Engines -general

- principles of the four stroke internal combustion engine
- basic construction
- causes of pre-ignition and detonation
- power output as a function of RPM

### Engine cooling

- air cooling
- cowling design and cylinder baffles
- design and use of cowl flaps
- cylinder head temperature gauge

### Engine lubrication

- function and methods of lubrication
- lubrication systems
- methods of oil circulation
- oil pump and filter requirements
- qualities and grades of oil
- oil temperature and pressure control
- oil cooling methods
- recognition of oil system malfunction

### Ignition systems

- principles of magneto ignition
- construction and function

- purpose and principle of impulse coupling
- serviceability checks, recognition of malfunctions
- operational procedures to avoid spark plug fouling

#### Carburation

- principles of float type carburettor
- construction and function
- methods to maintain correct mixture ratio
- operation of metering jets and accelerator pump
- effect of altitude
- manual mixture control
  - maintenance of correct mixture ratio
  - limitations on use at high power
  - avoidance of detonation
- idle cut-off valve
- operation and use of primary controls
- air induction system
- alternate induction systems
- carburettor icing, use of hot air
- injection systems, principles and operation

#### Aero engine fuel

- classification of fuels
  - grades and identification by colour
  - quality requirements
- inspection for contamination
  - use of fuel strainers and drains

#### Fuel systems

- fuel tanks and supply lines
- venting system
- mechanical and electrical pumps
- gravity feed
- tank selection
- system management

#### Propellers

- propeller nomenclature
- conversion of engine power to thrust
- design and construction of fixed pitch propeller
- forces acting on propeller blade
- variation of RPM with change of airspeed
- thrust efficiency with change of speed
- design and construction of variable pitch propeller
- constant speed unit operation
- effect of blade pitch changes
- windmilling effect



## Engine handling

- starting procedures and precautions
- recognition of malfunctions
- warming up, power and system checks
- oil temperature and pressure limitations
- cylinder head temperature limitations
- ignition and other system checks
- power limitations
- avoidance of rapid power changes
- use of mixture control

## **SYSTEMS**

### Electrical system

- installation and operation of alternators / generators
- direct current supply
- batteries, capacity and charging
- voltmeters and ammeters
- circuit breakers and fuses
- electrically operated services and instruments
- recognition of malfunctions
- procedures in event of malfunctions

### Vacuum system

- components
- pumps
- regulator and gauge
- filter system
- recognition of malfunction
- procedure in event of malfunctions

## **INSTRUMENTS**

### Pitot/static system

- pitot tube, function
- pitot tube, principles and construction
- static source
- alternate static source
- position error
- system drains
- heating element
- errors caused by blockage or leakage

### Airspeed indicator

- principles of operation and construction
- relationship between pitot and static pressure
- definition of indicated, calibrated and true airspeed
- instrument errors
- airspeed indications, colour coding
- pilot's serviceability checks

### Altimeter

- principles of operation and construction
- function of the sub-scale
- effects of atmospheric density
- pressure altitude
- true altitude
- international standard atmosphere
- flight level -presentation (three needle)
- instrument errors
- pilot's serviceability checks

### Vertical speed indicator

- principles of operation and construction
- function
- inherent lag
- instantaneous VSI
- presentation
- pilot's serviceability checks

### Gyroscopes

- principles
- rigidity
- precession

### Turn indicator

- rate gyro
- purpose and function
- effect of speed
- presentation
- turn co-ordinator
- limited rate of turn indications
- power source
- balance indicator
- principle
- presentation
- pilot's serviceability checks

### Attitude indicator

- earth gyro
- purpose and function
- presentation
- interpretation
- operating limitations
- power source
- pilot's serviceability checks

### Heading indicator

- directional gyro
- purpose and function
- presentation
- use with magnetic compass
- setting mechanism
- apparent drift
- operating limitations
- power source
- pilot's serviceability checks

### Magnetic compass

- construction and function
- earth's magnetic field
- variation and deviation
- turning, acceleration errors
- precautions when carrying magnetic items
- pilot's serviceability checks

### Engine instruments

- principles, presentation and operational use of:
  - oil temperature gauge
  - oil pressure gauge
  - cylinder head temperature gauge
  - exhaust gas meter
  - manifold pressure gauge
  - fuel pressure gauge
  - fuel flow gauge
  - fuel quantity gauge(s)
  - tachometer

### Other instruments

- principles, presentation and operational use of:
  - vacuum gauge
  - voltmeter and ammeter
  - warning indicators
  - others relevant to aeroplane type

## ***AIRWORTHINESS***

### Airworthiness

- certificate to be in force
- compliance with requirements
  - periodic maintenance inspections
  - compliance with flight manual (or equivalent), instructions, limitations, placards
- flight manual supplements
- provision and maintenance of documents
  - aeroplane, engine and propeller log books
  - recording of defects
- permitted maintenance by pilots

## **FLIGHT PERFORMANCE AND PLANNING**

### ***MASS AND BALANCE***

#### Mass and balance

- limitations on maximum mass
- forward and aft limitations of centre of gravity, normal and utility operation
- mass and centre of gravity calculations, aeroplane manual, mass and balance sheet

### ***PERFORMANCE***

#### Take-off

- take-off run and distance available
- take-off and initial climb
- effects of mass, wind and density altitude
- effects of ground surface and gradient
- use of flaps

#### Landing

- effects of mass, wind, density altitude and approach speed
- use of flaps
- ground surface and gradient

#### In flight

- relationship between power required and power available
- performance diagram
- maximum rate and maximum angle of climb
- range and endurance

- effects of configuration, mass, temperature and altitude
- reduction of performance during climbing turns
- gliding
- adverse effects
  - icing, rain
  - condition of the airframe
  - effect of flap

## **HUMAN PERFORMANCE**

### ***BASIC PHYSIOLOGY***

#### Concepts

- composition of the atmosphere
- the gas laws
- respiration and blood circulation

#### Effects of partial pressure

- effect of increasing altitude
- gas transfer
- hypoxia
  - symptoms
  - prevention
- cabin pressurisation
- effects of rapid decompression
  - time of useful consciousness
  - the use of oxygen masks and rapid descent
- hyperventilation
  - symptoms
  - avoidance
- effects of accelerations

#### Vision

- physiology of vision
- limitations of the visual system
  - vision defects
  - optical illusions
  - spatial disorientation
  - avoidance of disorientation

#### Hearing

- physiology of hearing
- inner ear sensations
- effects of altitude change
- noise and hearing loss
  - protection of hearing

- spatial disorientation
  - conflicts between ears and eyes
  - prevention of disorientation

#### Motion sickness

- causes
- symptoms
- prevention

#### Flying and health

- medical requirements
- effects of common ailments and cures
  - colds
  - stomach upsets
  - drugs, medicines and side effects
  - alcohol
  - fatigue
- personal fitness
- passenger care
- scuba diving
- precautions before flying

#### Toxic hazards

- dangerous goods
- carbon monoxide from heaters

### ***BASIC PSYCHOLOGY***

#### The information process

- concepts of sensation
- cognitive perception
  - expectancy
  - anticipation
  - habits

#### The central decision channel

- mental workload, limitations
- information sources
  - stimuli and attention
  - verbal communication
- memory and its limitations
- causes of misinterpretation

#### Stress

- causes and effects
- concepts of arousal
- effects on performance
- identifying and reducing stress

## Judgement and decision making

- concepts of pilots' judgement
- psychological attitudes
  - behavioural aspects
- risk assessment
- development of situational awareness

## **METEOROLOGY**

### The atmosphere

- composition and structure
- vertical divisions

### Pressure, density and temperature

- barometric pressure, isobars
- changes of pressure, density and temperature with altitude
- altimetry terminology
- solar and terrestrial energy radiation, temperature
- diurnal variation of temperature
- adiabatic process
- temperature lapse rate
- stability and instability
- effects of radiation, advection, subsidence and convergence

### Humidity and precipitation

- water vapour in the atmosphere
- vapour pressure
- dew point and relative humidity
- condensation and vaporisation
- precipitation

### Pressure and wind

- high and low pressure areas
- motion of the atmosphere, pressure gradient
- vertical and horizontal motion, convergence, divergence
- surface and geostrophic wind
- effect of wind gradient and wind shear on take-off and landing
- relationship between isobars and wind, Buys Ballot's law
- turbulence and gustiness
- local winds, föhn, land and sea breezes

## Cloud formation

- cooling by advection, radiation and adiabatic expansion
- cloud types
- convection clouds
- orographic clouds
- stratiform and cumulus clouds
- flying conditions in each cloud type

## Fog, mist and haze

- radiation, advection, frontal, freezing fog
- formation and dispersal
- reduction of visibility due to mist, snow, smoke, dust and sand
- assessment of probability of reduced visibility
- hazards in flight due to low visibility, horizontal and vertical

## Airmasses

- description of and factors affecting the properties of airmasses
- classification of airmasses, region of origin
- modification of airmasses during their movement
- development of low and high pressure systems
- weather associated with pressure systems

## Frontology

- formation of cold and warm fronts
- boundaries between airmasses
- development of a warm front
  - associated clouds and weather
  - weather in the warm sector
- development of a cold front
  - associated clouds and weather
- occlusions
  - associated clouds and weather
- stationary fronts
  - associated clouds and weather

## Ice accretion

- conditions conducive to ice formation
- effects of hoar frost, rime ice, clear ice
- effects of icing on aeroplane performance
- precautions and avoidance of icing conditions
- powerplant icing
- precautions, prevention and clearance of induction and carburettor icing



## Thunderstorms

- formation
- airmass, frontal, orographic
- conditions required
- development process
- recognition of favourable conditions for formation
- hazards for aeroplanes
- effects of lightning and severe turbulence
- avoidance of flight in the vicinity of thunderstorms

## Flight over mountainous areas

- hazards
- influence of terrain on atmospheric processes
- mountain waves, windshear, turbulence, vertical movement, rotor effects, valley winds

## Climatology

- general seasonal circulation in the troposphere over Europe
- local seasonal weather and winds

## Altimetry

- operational aspects of pressure settings
- pressure altitude, density altitude
- height, altitude, flight level
- ICAO standard atmosphere
- QNH, QFE, standard setting
- transition altitude, layer and level

## The meteorological organisation

- aerodrome meteorological offices
- aeronautical meteorological stations
- forecasting service
- meteorological services at aerodromes
- availability of periodic weather forecasts

## Weather analysis and forecasting

- weather charts, symbols, signs
- significant weather charts
- prognostic charts for general aviation

## Weather information for flight planning

- reports and forecasts for departure, en-route, destination and alternate(s)

- interpretation of coded information, METAR, TAF
- availability of ground reports for surface wind, wind shear and visibility

Meteorological broadcasts for aviation

- VOLMET, ATIS, SIGMET

## **NAVIGATION**

Form of the earth

- axis, poles
- meridians of longitude
- parallels of latitude
- great circles, small circle rhumb lines
- hemispheres north/south, east/west

Mapping

- aeronautical maps and charts (topographical)
- projections and their properties
  - conformity
  - equivalence
  - scale
- great circles and rhumb lines

Conformal orthomorphic projection (ICAO 1:500,000 chart)

- main properties
- construction
  - convergence of meridians
- presentation of meridians, parallels, great circles and rhumb lines
- scale, standard parallels -depiction of height

Direction

- true north
- earth's magnetic field, variation - annual change
- magnetic north
- vertical and horizontal components
- isogonals, agonic lines

Aeroplane magnetism

- magnetic influences within the aeroplane
- compass deviation

- turning, acceleration errors
- avoiding magnetic interference with the compass

## Distances

- units
- measurement of distance in relation to map projection

## Charts in practical navigation

- plotting positions
- latitude and longitude
- bearing and distance
- use of navigation protractor
- measurement of tracks and distances

## Chart reference material / map reading

- map analysis
- topography
- relief
- cultural features
  - permanent features e.g. line features, spot features, unique or special features
  - features subject to change e.g. water
- preparation
- folding the map for use
- methods of map reading
- map orientation
- checkpoint features
- anticipation of checkpoints
  - with continuous visual contact
  - without continuous visual contact
  - when uncertain of position
- aeronautical symbols
- aeronautical information
- conversion of units

## Principles of navigation

- IAS, RAS, (CAS) and TAS
- track, true and magnetic
- wind velocity, heading and groundspeed
- triangles of velocities
- calculation of heading and groundspeed
- drift, wind correction angle
- ETA
- dead reckoning, position, fix

## The navigation computer

- the use of the circular slide rule to determine:
  - TAS, time and distance
  - conversion of units
  - fuel required
  - pressure, density and true altitude
  - time on route and ETA
- use of computer to solve triangles of velocities
  - application of TAS and wind velocity to track
  - determination of heading and groundspeed
  - drift and wind correction angle

## Time

- relationship between universal co-ordinated (standard) (UTC) time and local mean time (LMT)
- definition of sunrise and sunset times

## Flight planning

- selection of charts
- route and aerodrome weather forecasts and reports
- assessing the weather situation
- plotting the route
- considerations of controlled/regulated airspace, airspace restrictions, danger areas, etc.
- use of AIP and NOTAMS
- ATC liaison procedures in controlled/regulated airspace
- fuel considerations
- en-route safety altitude(s)
- alternate aerodromes
- communications and radio/navaid frequencies
- compilation of flight log
- compilation of ATC flight plan
- selection of check points, time and distance marks
- mass and balance calculations
- mass and performance calculations

## Practical navigation

- compass headings, use of deviation card
- organisation of in-flight workload
- departure procedure, log entries, altimeter setting and establishing IAS
- maintenance of heading and altitude
- use of visual observations
- establishing position, checkpoints
- revisions to heading and ETA
- arrival procedures, ATC Liaison

-completion of flight log and aeroplane log entries

## ***RADIO NAVIGATION***

### Ground D/F

- application
- principles
- presentation and interpretation
- coverage
- errors and accuracy
- factors affecting range and accuracy

### ADF, including associated beacons (NDBs) and use of RMI

- application
- principles
- presentation and interpretation
- coverage
- errors and accuracy
- factors affecting range and accuracy

### VOR/DME

- application
- principles
- presentation and interpretation
- coverage
- errors and accuracy
- factors affecting range and accuracy

### GPS

- application
- principles
- presentation and interpretation
- coverage
- errors and accuracy
- factors affecting reliability and accuracy

### Ground radar

- application
- principles
- presentation and interpretation
- coverage
- errors and accuracy
- factors affecting reliability and accuracy

## Secondary surveillance radar

- principles (transponders)
- application
- presentation and interpretation
- modes and codes

## **OPERATIONAL PROCEDURES**

### ICAO Annex 6, Part II - Operation of Aircraft

- foreword
- definitions
- general statement
- flight preparation and in-flight procedures
- performance and operating limitations
- instruments and equipment
- communications and navigation equipment
- maintenance
- flight crew
- lights to be displayed

### ICAO Annex 12 - Search and rescue

- definitions
- operating procedures
- procedures for pilot-in-command (para 5.7)
- search and rescue signals

### ICAO Annex 13 - Aircraft accident investigation

- definitions
- national procedures

### ICAO Annex 16 – Environmental Protection

#### Noise abatement

- general procedures
- application to take-off and landing

#### Contravention of aviation regulations

- offences
- penalties

## PRINCIPLES OF FLIGHT

### The atmosphere

- composition and structure
- ICAO standard atmosphere
- atmospheric pressure

### Airflow around a body, subsonic

- air resistance and air density
- boundary layer
- friction forces
- laminar and turbulent flow
- Bernoulli's principle - venturi effect

### Airflow about a two dimensional aerofoil

- airflow around a flat plate
- airflow around a curved plate(aerofoil)
- description of aerofoil cross section
- lift and drag
- $C_L$  and  $C_D$  and their relationship to angle of attack

### Three dimensional flow about an aerofoil

- aerofoil shapes and wing planforms
- induced drag
  - downwash angle, vortex drag, ground effect
  - aspect ratio
- parasite (profile) drag
  - form, skin friction and interference drag
- lift/drag ratio

### Distribution of the four forces

- balance and couples
- lift and mass
- thrust and drag
- methods of achieving balance

### Flying controls

- the three planes
  - pitching about the lateral axis
  - rolling about the longitudinal axis
  - yawing about the normal axis
- effects of the elevators (stabilators), ailerons and rudder
- control in pitch, roll and yaw
- cross coupling, roll and yaw
- mass and aerodynamic balance of control surfaces

### Trimming controls

- basic trim tab, balance tab and anti-balance tab
- purpose and function
- method of operation

### Flaps and slats

- simple, split, slotted and Fowler flaps
- purpose and function
- operational use
- slats, leading edge
- purpose and function
- normal/automatic operation

### The stall

- stalling angle of attack
- disruption of smooth airflow
- reduction of lift, increase of drag
- movement of centre of pressure
- symptoms of development
- aeroplane characteristics at the stall
- factors affecting stall speed and aeroplane behaviour at the stall
- stalling from level, climbing, descending and turning flight
- inherent and artificial stall warnings
- recovery from the stall

### Avoidance of spins

- wing tip stall
- the development of roll
- recognition at the incipient stage
- immediate and positive stall recovery

### Stability

- definition of static and dynamic stability
- longitudinal stability
- centre of gravity effect on control in pitch
- lateral and directional stability
- interrelationship, lateral and directional stability

### Load factor and manoeuvres

- structural considerations
- manoeuvring and gust envelope
- limiting load factors, with and without flaps
- changes in load factor in turns and pull-ups
- manoeuvring speed limitations
- in-flight precautions

### Stress loads on the ground

- side loads on the landing gear



- landing
- taxiing, precautions during turns

## COMMUNICATION

### Radio telephony and communications

- use of AIP and frequency selection
- microphone technique
- phonetic alphabet
- station/aeroplane/callsigns/abbreviations
- transmission technique
- use of standard words and phrases
- listening out
- required 'readback' instructions

### Departure procedures

- radio checks
- taxi instructions
- holding on ground
- departure clearance

### En-route procedures

- frequency changing
- position, altitude/flight level reporting
- flight information service
  - weather information
  - weather reporting
- procedure to obtain bearings, headings, position
- procedural phraseology
- height/range coverage

### Arrival and traffic pattern procedures

- arrival clearance
- calls and ATC instructions during the:
  - circuit
  - approach and landing
  - vacating the runway

### Communications failure

- action to be taken
  - alternate frequency
  - serviceability check including microphone and headphones
- in-flight procedures according to type of airspace

### Distress and urgency procedures

- distress (Mayday), definition and when to use
- frequencies to use
- contents of Mayday message

- urgency (PAN), definition and when to use
- frequencies to use
- relay of messages
- maintenance of silence when distress/urgency calls heard
- cancellation of distress/urgency

## **GENERAL FLIGHT SAFETY**

### **Aeroplane**

- seat adjustment and security
- harness and seat belts
- emergency equipment and its use
- fire extinguisher
- engine/cabin fires
- de-icing systems
- survival equipment, life jackets, life rafts
- carbon monoxide poisoning
- refuelling precautions
- flammable goods/pressurised containers

### **Operational**

- wake turbulence
- aquaplaning
- wind shear, take-off, approach and landing
- passenger briefings
- emergency exits
- evacuation from the aeroplane
  - forced landings
  - gear-up landing
  - ditching

# THEORETICAL KNOWLEDGE EXAMINATION

1. The examination shall be in written form and may be taken on one or more days and shall comprise seven examinations in accordance with the JAR-FCL PPL theoretical knowledge syllabus in current sets provided by the UK Civil Aviation Authority as indicated below:

## Subject

Air Law and Operational Procedures

Navigation and Radio Aids

Meteorology

Aircraft General and Principles of Flight

Human Performance

Flight Performance and Planning

Communications PPL

2. The majority of the questions shall be multiple choice.

3. A pass in a subject will be awarded to an applicant achieving at least 75% of the marks allocated to that subject. Marks shall only be awarded for correct answers.

4. A pass in The Communications examination for the Flight Radiotelephony Operator's Licence (FRTOL) as shown in the list of subjects above, shall be obtained together with all the other theoretical knowledge examinations in the 18 month period counted from the end of the calendar month when the applicant first attempted an examination. Thereafter it will remain valid for a period of 24 months for the issue of a FRTOL when combined with a course of PPL training. The examination shall be completed prior to the NPPL General Skill Test.

5. **FRTOL Practical Test:** All applicants for a FRTOL are required to demonstrate that they have achieved the required standard for licence issue.

# SECTION 4

## FLIGHT TRAINING SYLLABUS

The flying training section of the NPPL (SSEA) course will be covered following the various exercises as shown below. The exercise numbering corresponds to the exercises conducted for the JAR-FCL PPL, but the depth of coverage and time spent on the different exercises will be less than in the full 45 hour JAR-FCL PPL course. The exercises, particularly those following first solo and consolidation on the circuit, will not necessarily be given in the exact order as shown.

1. Familiarisation with the aeroplane
  - 1E. Emergency drills
  2. Preparation for and action after flight
  3. Air experience
  4. Effects of controls
  5. Taxiing
  6. Straight and level flight
  7. Climbing
  8. Descending
  9. Medium turns
  - 10A. Slow flight
  - 10B. Stalling
  11. Spin avoidance
  12. Take-off and climb
  13. Approach and landing
  - 12/13E. Emergency procedures (as appropriate)
  14. First solo
- Consolidation of take-offs and landings including:
- Crosswind take-off and landing
  - Short field take-off and landing, soft field procedures
  - Glide approaches, powered approaches
  - Flapless landings
- 14B. Circuit departure procedures, local area orientation, RTF procedures, use of magnetic compass, map reading, circuit rejoining.
  15. Advanced turning
  16. Forced landings without power
  17. Precautionary landings
  - 18A. Pilot navigation
  - 18B. Navigation at lower levels
  19. Instrument appreciation

Revision for the NPPL (SSEA) qualifying Navigation Skill Test and General Skill Test.

# SYLLABUS OF FLIGHT BRIEFINGS AND AIR INSTRUCTION FOR THE NATIONAL PRIVATE PILOT LICENCE SIMPLE SINGLE-ENGINE AEROPLANE (SSEA)

## *Exercise 1 Familiarisation with the aeroplane*

- characteristics of the aeroplane
- cockpit layout
- systems
- check lists, drills, controls
- passenger care

## *Exercise 1E Emergency drills*

- action in event of fire on the ground and in the air
- engine, cabin and electrical system fire
- systems failure
- escape drills, location and use of emergency equipment and exits

## *Exercise 2 Preparation for and action after flight*

- flight authorisation and aeroplane acceptance
- serviceability documents
- equipment required, maps, etc
- external checks
- internal checks
- harness, seat or rudder pedal adjustments
- starting and warm up checks
- power checks
- running down system checks and switching off the engine
- parking, security and picketing (e.g. tie down)
- completion of authorisation sheet and serviceability documents

## *Exercise 3 Air experience*

- flight exercise

## *Exercise 4 Effects of controls*

- primary effects when laterally level and when banked
- further effects of aileron and rudder
- effects of:
  - airspeed
  - slipstream
  - power
  - trimming controls
  - flaps
  - other controls as applicable

- operation of:
  - mixture control
  - carburettor heat
  - cabin heating/ventilation
- airmanship

***Exercise 5    Taxiing***

- pre-taxi checks
- starting, control of speed and stopping
- engine handling
- control of direction and turning
- turning in confined spaces
- parking area procedures and precautions
- effects of wind and use of flying controls
- effects of ground surface
- freedom of rudder movement
- marshalling signals
- instrument checks
- air traffic control procedures
- airmanship

***Exercise 5E    Emergencies***

- brakes and steering failure

***Exercise 6    Straight and level***

- at normal cruising power, attaining and maintaining straight & level flight
- flight at critically high airspeeds
- demonstration of inherent stability
- control in pitch, including use of trim
- lateral level, direction and balance, trim:
  - at selected airspeeds (use of power)
  - during speed and configuration changes
  - use of instruments for precision flight
- airmanship

***Exercise 7    Climbing***

- entry, maintaining the normal and maximum rate climb, levelling off
- levelling off at selected altitudes
- en-route climb (cruise climb)
- climbing with flap down
- recovery to normal climb
- maximum angle of climb
- airmanship

### ***Exercise 8 Descending***

- entry, maintaining and levelling off
- levelling off at selected altitudes
- glide, powered and cruise descent (including effect of power and airspeed)
- descending with flaps down
- side slipping (on suitable types)
- airmanship

### ***Exercise 9 Turning***

- entry and maintaining medium level turns
- resuming straight flight
- faults in the turn (incorrect pitch, bank, balance)
- climbing turns
- descending turns
- slipping turns (on suitable types)
- turns on to selected headings, use of gyro heading indicator and compass
- use of instruments for precision flight
- airmanship

### ***Exercise 10A Slow flight***

#### **Note:**

The objective is to improve the student's ability to recognise inadvertent flight at critically low speeds and provide practice in maintaining the aeroplane in balance while returning to normal airspeed.

- safety checks
- introduction to slow flight
- controlled flight down to critically slow airspeed
- application of full power with correct attitude and balance to achieve normal climb speed
- airmanship

### ***Exercise 10B Stalling***

- airmanship
- safety checks
- symptoms
- recognition
- clean stall and recovery without power and with power
- recovery when a wing drops
- approach to stall in the approach and in the landing configuration with and without power, recovery at the incipient stage of the stall

***Exercise 11 Spin avoidance***

- airmanship
- safety checks
- stalling and recovery at the incipient spin stage (stall with excessive wing drop, about 45°)
- instructor induced distractions during the stall

**Note 1:** At least two hours of stall awareness and spin avoidance flight training shall be completed during the course.

**Note 2:** Consideration of manoeuvre limitations and the need to refer to the aeroplane manual and mass and balance calculations.

***Exercise 12 Take-off and climb to downwind position***

- pre-take-off checks
- into wind take-off
- safeguarding the nosewheel
- crosswind take-off
- drills during and after take-off
- short take-off and soft field procedure/techniques including performance calculations
- noise abatement procedures
- airmanship

***Exercise 13 Circuit, approach and landing***

- circuit procedures, downwind, base leg
- powered approach and landing
- safeguarding the nosewheel
- effect of wind on approach and touchdown speeds, use of flaps
- crosswind approach and landing
- glide approach and landing
- short landing and soft field procedures/techniques
- flapless approach and landing
- 3 point landing (tailwheel aeroplane, if applicable)
- missed approach/go-around
- noise abatement procedures
- airmanship

***Exercise 12/13E Emergencies***

- abandoned take-off
- engine failure after take-off
- mislanding/go-around
- missed approach

In the interests of safety it will be necessary for pilots trained on nose-wheel aeroplanes to undergo differences training before flying tailwheel aeroplanes and vice versa



**Exercise 14** *First solo*

- instructor's briefing, observation of flight and de-briefing

**Note:** During flights immediately following the solo circuit consolidation the following should be revised:

- procedures for leaving and rejoining the circuit
- the local area, restrictions, map reading
- turns using the magnetic compass
  - compass errors
- airmanship

**Exercise 15** *Advanced turning*

- steep turns (45°), level, descending
- stalling in the turn and recovery
- recoveries from unusual attitudes, including spiral dives
- airmanship

**Exercise 16** *Forced landing without power*

- forced landing procedure
- choice of landing area, provision for change of plan
- gliding distance
- descent plan
- key positions
- engine warming procedure
- engine failure checks
- use of radio
- base leg
- final approach
- landing
- actions after landing
- airmanship

**Exercise 17** *Precautionary landing*

- full procedure away from the aerodrome to break-off height
- occasions necessitating
- in-flight conditions
- landing area selection
  - normal aerodrome
  - disused aerodrome
  - ordinary field
- circuit and approach
- actions after landing
- airmanship

## *Exercise 18A Navigation*

### Flight planning

- weather forecast and actuals
- map selection and preparation
  - choice of route
  - controlled airspace
  - danger, prohibited and restricted areas
  - safety altitude(s)
- calculations
  - magnetic heading(s) and time(s) en-route
  - fuel consumption
  - mass and balance
  - mass and performance
- flight information
  - NOTAMS etc.
  - radio frequencies
  - selection of alternate aerodromes
- aeroplane documentation
- notification of the flight
  - pre-flight administrative procedures
  - flight plan form

### Departure

- organisation of cockpit workload
- departure procedures
  - altimeter settings
  - ATC liaison in controlled/regulated airspace
  - setting heading procedure
  - noting of ETAs
- maintenance of altitude and heading
- revision of ETAs & heading
- log keeping
- use of radio
- minimum weather conditions for continuation of flight
- in-flight decisions
- transitting controlled/regulated airspace
- diversion procedures
- uncertainty of position procedure
- lost procedure

### Arrival, aerodrome joining procedure

- ATC liaison in controlled/regulated airspace

- altimeter setting
- entering the traffic pattern
- circuit procedure
- parking
- security of aeroplane
- refuelling
- booking in/closing of flight plan, if appropriate
- post-flight administrative procedure

***Exercise 18B Navigation problems at lower levels and in reduced visibility***

- actions prior to descending
- hazards (e.g. obstacles & terrain)
- difficulties of map reading
- effects of wind and turbulence
- avoidance of noise sensitive areas
- joining the circuit
  - bad weather circuit and landing

***Exercise 19 Instrument appreciation***

- physiological sensations
  - instrument appreciation
  - demonstration to show need for proper training before flying by sole reference to instruments and being able to make a 180° turn on instruments on inadvertent encounter with cloud
-

## Solo Navigation Briefing Certificate

### NOTES

1. The Solo Navigation Briefing Certificate is to be left at the base aerodrome, when completed.
2. The student should carry the NPPL (SSEA) Qualifying Cross Country Certificate on the final qualifying cross country flight and return it duly completed to the authorising instructor.

I certify that student pilot .....has been briefed for a solo navigation exercise as follows:

From ..... To .....

From ..... To .....

For an ETD of .....hrs UTC/local on .....20.....

The navigation flight plan has been checked and the following items discussed and, where applicable, the required facts noted on the flight plan.

### ITEM

1. WEATHER
  - altitude to fly and terrain clearance (safety altitude)
  - destination(s) actual
2. ROUTE
  - need and method for maintaining VFR flight
  - military zones, and procedures for crossing (if applicable)
  - danger areas (if applicable)
  - altimeter setting regions
  - applicable NOTAMS, regulated airspace & entry/exit lane procedures
  - current navigation warnings including royal flights
3. DESTINATION
  - PPR (if applicable), joining procedure/position reports/knowledge of landing runways
  - land away procedure (including refuelling instructions and booking in/out)
4. ABNORMAL AND EMERGENCY PROCEDURES
  - knowledge of controlled/regulated airspace and related minimum altitudes/levels
  - action in event on intrusion into controlled airspace
  - action in event of weather deterioration and/or fuel shortage

- action on becoming lost
- use of R/T including position reports – use of D/F – RTF PAN procedure
- action in event of an unscheduled landing

5. AEROPLANE

- full fuel and oil
- aeroplane serviceability
- mass and balance
- mass and performance

6. RADIO

- use of radio (when applicable) if lost
- RTF MAYDAY procedure
- Selection and noting of communications frequencies for normal and emergency operation

Instructor's signature .....

Licence number .....

I certify that I have been briefed for the navigation exercise detailed above and understand that in the event of an unscheduled landing I will contact the CFI or his/her deputy by the quickest possible means and act according to their instructions.

Student pilot's signature .....

Date ..... Time (UTC/local) .....

## THE NAVIGATION SKILL TEST

The Navigation Skill Test (NST) is a qualifying requirement for the grant of a NPPL (SLMG) or NPPL (SSEA). The aim of the test is to provide an independent check of the student pilot's ability to apply visual navigation techniques, to prepare for an in-flight diversion, to liaise with ATC and, in the case of the SLMG NST only, to navigate safely following change to the planned route resulting from an unsuccessful soaring opportunity. Before attempting this test, the student must have satisfactorily completed all the dual navigation training in the NPPL syllabus, except as defined for applicants claiming cross-crediting allowances against training as outlined in the NPPL Licence Allowance document. The student must have passed the Navigation Skill Test before undertaking the qualifying solo cross-country.

### **The test comprises the following:**

1. Flight planning and self briefing (including assessment of weather suitability) for a route of not less than 60 minutes flying time.
2. In-flight recording of the progress of the flight. Notes made on the map are acceptable for this requirement.
3. ATC liaison and compliance; observance of ATC Regulations and Rules of the Air.
4. DR navigation (correction of track error, revision of ETA, heading-setting technique including, where fitted, synchronising directional gyro with magnetic compass in flight).
5. Map reading. 'Track crawling' through continuous map reading will not be considered an acceptable visual navigation technique.
6. Maintenance of heading, height and airspeed at normal cruising levels.
7. (*SLMG only*) Re-establishment of position by visual methods following deliberate disruption of the original flight plan, simulating an unsuccessful attempt to take advantage of an off-track soaring opportunity.
8. Diversion procedure following simulated adverse weather conditions en-route.

### **Pre-Flight Planning Requirements**

#### Weather

- obtaining appropriate information
- interpreting the information
- assessing weather suitability

## Airspace

- obtaining appropriate information including relevant NOTAMs
- interpreting the information
- assessing any threats

## Navigation flight plan & map preparation

## Fuel plan & aircraft loading

## Booking out/ local procedures

## **Flight Test Procedure**

1. The route should not be made available to the applicant earlier than 2 hours before walking out to the aircraft.
2. The applicant must not have practised (either dual or solo) flying the route to be used.
3. The flight is to be non-stop; i.e. without an intermediate landing.
4. Radio navigation aids or GPS may not be used, except during the practice diversion once the applicant has made an initial assessment of the required heading to the diversion and the ETA at the diversion. If such navigation aids are used, their correct use will be assessed. Radar navigational assistance may not be used at any time.
5. The planned route is normally to be A - B - C, subject to the following provisos:
  - leg A - B should require at least 20 mins flight time;
  - track change at B should be between 60° and 120° and the distance B - C should require at least 20 mins flight time.
6. During leg B-C:
  - (*SLMG only*) between about 10-15 min after B the examiner will direct the applicant, simulating changed soaring opportunities, to a position about 5 nm off track.
  - (*SLMG only*) when directed, the applicant must make and implement an appropriate decision either to regain the planned track or to plan a revised track direct to the next turning point.
  - between 10-15 min after B (or, *SLMG only*, once the applicant's revised tracking and timing have been assessed), the applicant will be told to assume weather deterioration and to prepare for a practice diversion to a point not less than 20 nm off track.

- The test may be terminated when the applicant has demonstrated the ability to track towards the diversion for not less than 10 minutes, has told the examiner the location of the aeroplane and has given an acceptable ETA at the diversion.

7. Appropriate systems management, including fuel use and carburettor heat operation is to be assessed throughout the test.

8. The record of the flight in the applicant's logbook is to include the examiner's signature and examiner number, stating that the flight was a NST and whether a successful pass was achieved. The planned route is to be shown in the remarks column, together with details of the diversion point. Successful applicants should log the flight time as PIC U/S.

---



## REPORT FORM FOR THE NAVIGATION SKILL TEST FOR THE NPPL SLMG/(SSEA)\*

Applicant's Name		For Official use CAA Reference																		
Applicant's Signature		U	K	N	P															

It is an offence to make, with intent to deceive, any false representations for the purpose of procuring the grant, issue, renewal, or variation of any certificate, licence approval, permission or other document. Persons so doing render themselves liable, on summary conviction to a fine not exceeding the statutory maximum (currently £5,000, or in Northern Ireland £2,000) and on conviction on indictment to an unlimited fine or imprisonment for a term not exceeding 2 years or both.

**Date of Test:** ..... **Place of Test:** .....

Aircraft Type & Registration	Block Times			Examiner's name and licence no.
	Depart	Arrive	Duration	
Route:				
Result:				
Re-test: (Details as required)				
Retraining requirement if required:				
Remarks:				
The test was conducted in accordance with NPPL Syllabus				(SLMG/SSEA)*
Examiner's Name:				
Examiner's Signature:				
Examiner's CAA Authorisation Number:				

\* Delete as applicable

## NPPL (SSEA) Cross Country Certificate

### NOTICE TO PILOTS

In the event of a landing being made at a place other than an aerodrome named hereon, the authorisation for the flight is automatically terminated. The CFI is then immediately to be notified by telephone (number: ..... ) and the flight **MUST NOT** be continued without his/her specific authorisation.

This is to certify that ..... Holder of student pilot's privileges and pilot of ..... Aircraft, G-..... was authorised to leave ..... at ..... hours, on ..... 20..... for ..... for the purpose of .....

Signed .....  
Authorising instructor

This is to certify that the above named pilot landed at ..... at ..... Hours on ..... 20.....  
The nature of the landing was .....  
As far as can be ascertained the pilot was alone in the aircraft and unaccompanied by any other aircraft.

Signed .....  
Chief Flying Instructor/Deputy or  
Air Traffic Controller/FISO

This is to certify that the above named pilot landed at ..... at ..... Hours on ..... 20.....  
The nature of the landing was .....  
The standard of airmanship displayed was .....  
As far as can be ascertained the pilot was alone in the aircraft and unaccompanied by any other aircraft.

Signed .....  
Chief Flying Instructor/Deputy or  
Air Traffic Controller/FISO

The above cross country flight was carried out to my satisfaction.

Signed .....  
Chief Flying Instructor

## **THE GENERAL SKILL TEST**

1. An applicant for an NPPL(SSEA) shall have demonstrated the ability to perform as pilot-in-command of an aeroplane the procedures and flight manoeuvres described in the foregoing pages of this syllabus with a degree of competency appropriate to the privileges granted to the holder of an NPPL(SSEA).
2. An applicant for an NPPL(SSEA) General Skill Test shall have satisfactorily completed all of the required flight training, including instruction on the same class/type of aeroplane to be used during the Navigation Skill Test (NST) and the General Skill Test (GST).
3. The General Skill Test shall be taken within 6 months of the completion of training and all sections of the test must be completed within 6 months of the first attempt. If the applicant does not pass all sections of the skill test at the first attempt, the section(s) which have been failed may be attempted in a further test. There is no limit to the number of tests that may be taken.
4. A pass will be achieved when all sections of the General Skill Test have been passed.
5. The General Skill Test shall be conducted by an authorised Flight Examiner.
6. An applicant for a General Skill Test shall have successfully completed all theoretical knowledge examinations. Although not mandatory, it is recommended that applicants should also have completed FRTOL requirements.
7. Provision of aeroplanes for the General Skill Test - The aeroplane used for the test shall meet the requirements for training aeroplanes (See page 5).

### **8. SECTIONS OF THE FLIGHT TEST**

- Section 1: Pre-flight operations and departure
- Section 2: General Airwork
- Section 3: Approach and landing procedures
- Section 4: Abnormal and emergency operations

### **9. FLIGHT TEST TOLERANCES**

The applicant shall demonstrate the ability to:

- operate the aeroplane within its limitations;
- complete all manoeuvres with smoothness and accuracy;
- exercise good judgement and airmanship;
- apply aeronautical knowledge; and
- maintain control of the aeroplane at all times in such a manner that the successful outcome of the procedure or manoeuvre is never seriously in doubt.

The following limits are for general guidance. The examiner will make allowances for turbulent conditions and for the handling qualities and performance of the aeroplane used.

Height  $\pm$  150ft. Heading  $\pm$  10°. Speed  $\pm$  15kts

## CONTENTS OF THE GENERAL SKILL TEST

The General Skill Test contents for the issue of an NPPL (SSEA) are shown below:

*Use of checklists, control of the aeroplane by external visual reference, anti/de-icing procedures, etc. apply in all sections.*

### SECTION 1 - PRE-FLIGHT OPERATIONS AND DEPARTURE

- a Pre-flight documentation and weather brief
- b Mass and balance and performance calculation
- c Aeroplane inspection and servicing
- d Passenger care and considerations
- e Engine starting and after starting procedures
- f Taxiing and aerodrome procedures, pre take-off procedures
- g Take-off and after take-off checks
- h Aerodrome departure procedures
- i ATC liaison - compliance, R/T procedures, Airmanship

### SECTION 2 - GENERAL AIRWORK

- a ATC liaison and compliance, R/T procedure, Airmanship
- b Straight and level flight, with speed changes
- c Climbing:
  - i best rate of climb
  - ii climbing turns
  - iii levelling off
- d Medium (30° bank) turns
- e Steep turns (360° left and right - 45° bank) including recognition and recovery from a spiral dive
- f Flight at critically low airspeed with and without flaps. Best angle of climb

- g Stalling:
  - i Clean stall and recovery with power
  - ii Approach to stall descending turn with bank angle 20°, approach configuration
  - iii Approach to stall in landing configuration
- h Descending
  - i With and without power
  - ii Descending turns (steep gliding turns)
  - iii Levelling off

### **SECTION 3 - APPROACH AND LANDING PROCEDURES**

- a Aerodrome arrival procedures
- b \* Precision landing (short field landing), cross wind, (if suitable conditions available)
- c \* Flapless landing
- d Approach to landing with idle power
- e Touch and go
- f Go-around from low height
- g ATC liaison -compliance, R/T procedures, Airmanship
- h Actions after flight including documentation

### **SECTION 4 - ABNORMAL AND EMERGENCY PROCEDURES**

*This section may be combined with Sections 1 through 3*

- a Simulated engine failure after take-off
- b \* Simulated forced landing
- c Simulated precautionary landing
- d \* Simulated emergencies

*\*some of these items may be combined at the discretion of the Flight Examiner.*

## APPLICATION & REPORT FORM - NPPL (SSEA) GENERAL SKILL TEST

Applicant's Name		For Official use CAA Reference																				
Applicant's Signature		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;">U</td> <td style="width: 20px; height: 20px;">K</td> <td style="width: 20px; height: 20px;">N</td> <td style="width: 20px; height: 20px;">P</td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table>	U	K	N	P																
U	K	N	P																			

It is an offence to make, with intent to deceive, any false representations for the purpose of procuring the grant, issue, renewal, or variation of any certificate, licence approval, permission or other document. Persons so doing render themselves liable, on summary conviction to a fine not exceeding the statutory maximum (currently £5,000, or in Northern Ireland £2,000) and on conviction on indictment to an unlimited fine or imprisonment for a term not exceeding 2 years or both.

Date of Test: ..... Place of Test: .....

Aircraft Type & Reg.	Block Times			Examiners name and Licence Number	
	Dep.	Arrival	Duration		
<b>TEST SECTIONS:</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>SECTIONS TO BE TAKEN:</b>					
<b>RESULT:</b>					
	<b>a</b>				
	<b>b</b>				
	<b>c</b>				
	<b>d</b>				
	<b>e</b>				
	<b>f</b>				
	<b>g</b>				
	<b>h</b>				
	<b>i</b>				
<b>Re-test:</b>					
<b>Test Sections incomplete:</b>					
<b>Items not completed:</b>					
<b>Retraining requirements of any failed sections/items:</b>					
<b>Examiner's Name</b>			<b>CAA Authorisation No.</b>		
<b>Examiner's Signature</b>			<b>FTO/RF/Flg Club</b>		
			<b>Flying Training Completed</b>		

**SUMMARY OF AIR EXERCISES CONTAINED IN PHASES  
1 TO 4 OF THE FLIGHT CURRICULUM**

- |                       |   |
|-----------------------|---|
| <b><i>PHASE 1</i></b> | <ul style="list-style-type: none"> <li>1. Familiarisation with the aeroplane</li> <li>1E. Emergency drills</li> <li>2. Preparation for and action after flight</li> <li>3. Air experience</li> <li>4. Effects of controls</li> <li>5. Taxiing</li> <li>6. Straight and level flight</li> <li>7. Climbing</li> <li>8. Descending</li> <li>9. Medium turns</li> <li>10A. Slow flight</li> <li>12. Take-off and climb</li> <li>13. Approach and landing</li> </ul>   |
| <b><i>PHASE 2</i></b> | <p style="text-align: center;">Consolidation of previously taught air exercises<br/>(as required)</p> <ul style="list-style-type: none"> <li>10B. Stalling</li> <li>11. Spin avoidance</li> <li>14. First solo</li> </ul>   |
| <b><i>PHASE 3</i></b> | <p style="text-align: center;">Consolidation of take-offs and landings including:<br/>Crosswind take-off and landing</p> <ul style="list-style-type: none"> <li>12/13. Short field take-off and landing, soft field procedures<br/>Landing at unlicensed strips, shortfield/grass operation<br/>Glide approaches, powered approaches<br/>Flapless landings</li> <li>12/13E. Emergency procedures (as appropriate)</li> <li>14B. Circuit departure procedures, local area orientation, RTF<br/>procedures, use of magnetic compass, map reading, circuit<br/>rejoining.</li> </ul> |
| <b><i>PHASE 4</i></b> | <p style="text-align: center;">Consolidation of previously taught air exercises<br/>(as required)</p> <ul style="list-style-type: none"> <li>15. Advanced turning</li> <li>16. Forced landings without power</li> <li>17. Precautionary landings</li> <li>18A. Pilot navigation</li> <li>18B. Navigation at lower levels</li> <li>19. Instrument appreciation</li> </ul>  |

Revision for the NPPL(SSEA) qualifying General Skill Test.

The following breakdown of flying hours is only an example, it does not take into account any additional training which may be necessary for a student to reach an acceptable standard of performance.

**Phase 1.**

Exercise No.	Dual	Solo	Total Dual	Total Solo	Total Dual/Solo	Details of Exercise
1.	)					Familiarisation with the a/c
1E.	)					Emergency Drills
2.	)					Pre. For/after flight
3.	) 1.30	-	1.30	-	1.30	Air experience
4.	)					Effects of controls
5.	)					Taxiing
5E.	)				1.30	Taxiing emergencies
6.	1.00	-	2.30	-	2.30	Straight & level flight
7.	0.45	-	3.15	-	3.15	Climbing
8.	0.45	-	4.00	-	4.00	Descending
9.	0.45	-	4.45	-	4.45	Turning
10A.	0.30	-	5.15	-	5.15	Slow flight
10B.	1.00	-	6.15	-	6.15	Stalling
11.	0.30	-	6.45	-	6.45	Spin avoidance

**Phase 2** Consolidation of above exercises and 12/13

12.	1.15	-	8.00	-	8.00	Take-off/climb to down-wind position
13.	1.15	-	9.15	-	9.15	Circuit approach & landing
13E.	0.30	-	9.45	-	9.45	Emergencies during take-off and landing
14.	-	0.15	9.45	0.15	10.00	First solo

**Phase 3**

12/13.	1.00	2.15	10.45	2.30	13.15	Consolidation on circuit dual/solo
14B.	0.45	1.00	11.30	3.30	15.00	Leaving circuit, local area, compass turns, circuit rejoining

**Phase 4**

15.	1.00	0.45	12.30	4.15	16.45	Advanced turning
16.	2.00	0.45	14.30	5.00	19.30	Forced landings without power
17.	1.00	-	15.30	5.00	20.30	Precautionary landings and operations at minimum level
18A/B	4.30	4.00	20.00	9.00	29.00	Compass turns, map reading, dual/solo/x/country
19.	1.00	-	21.00	9.00	30.00	Instrument appreciation
Revision	1.00	1.00	22.00	10.00	32.00	Revision as required

Navigation Skill Test - to be conducted prior to the qualifying solo cross-country 1.00 (or as required)

General Skill Test - to be undertaken on completion of all the training 1.00 (or as required)



# TRAINING RECORD STATEMENTS

## PHASE 1

I certify that the student has received the flying and ground training in this section.

Chief Flying Instructor

Name .....

Signature .....

Student name .....

Signature.....

## PHASE 3

I certify that the student has received the flying and ground training in this section.

Chief Flying Instructor

Name .....

Signature .....

Student name .....

Signature.....

## PHASE 2

I certify that the student has received the flying and ground training in this section.

Chief Flying Instructor

Name .....

Signature .....

Student name .....

Signature.....

## PHASE 4

I certify that the student has received all the training required in this syllabus.

Chief Flying Instructor

Name .....

Signature .....

Student name .....

Signature.....