



Notice of Proposed Amendment 2021-12

in accordance with Articles 6(3), 7 and 8 ('Standard procedure': public consultation) of MB Decision No 18-2015

New air mobility

Subtask 2 — Gyroplanes

Flight crew licensing for private pilot licences and non-commercial operations conducted in visual flight rules by day and by night

RMT.0731

EXECUTIVE SUMMARY

The objective of this rulemaking task (RMT) is to support the development of new technologies and non-traditional aircraft, as well as the competitiveness of the EU industry in this regard. Subtask 2 of this RMT addresses gyroplanes.

According to Article 2(1)(a) and (b) and Annex I point 1(f) of Regulation (EU) 2018/1139, gyroplanes with a maximum take-off mass (MTOM) of more than 600 kg or with more than 2 seats fall within the scope of the common European rules in the field of civil aviation.

EASA has identified a lack of suitable European rules for the operation of such gyroplanes. This hinders both their introduction and operation, thus putting the competitiveness of the EU industry that is willing to develop such gyroplanes at a major disadvantage.

Therefore, this Notice of Proposed Amendment (NPA) proposes new rules with regard to flight crew licensing and the operation of gyroplanes, thereby ensuring a uniform application of the essential requirements of Regulation (EU) 2018/1139 to such aircraft. The proposed amendments to existing rules, as well as the proposed new rules, concern the following domains:

- flight crew licensing for private pilot licences (PPL), and
- operational rules for non-commercial operations (NCO) conducted in visual flight rules (VFR) by day and by night.

Domain:	New technologies and concepts		
Related rules:	Regulations (EU) Nos 1178/2011 and 965/2012, and related acceptable means of compliance and guidance material (AMC & GM)		
Affected stakeholders:	Pilots, flight instructors, flight examiners, air operators, and training organisations for gyroplanes; national competent authorities		
Driver:	Safety	Rulemaking group:	No
Impact assessment:	No	Rulemaking Procedure:	Standard

EASA rulemaking procedure milestones

Start Terms of Reference	Public consultation NPA 2021-12	Proposal to the Commission EASA Opinion	Adoption by the Commission Implementing/Delegated act(s)	Decision Certification Specifications, Acceptable Means of Compliance, Guidance Material
12.5.2021	15.11.2021	2023/Q1	2023	2023



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1. About this NPA

1.1. How this NPA was developed

The European Union Aviation Safety Agency (EASA) developed this Notice of Proposed Amendment (NPA) in line with Regulation (EU) 2018/1139¹ (the ‘Basic Regulation’) and the Rulemaking Procedure². This Rulemaking Task (RMT).0731, Subtask 2 ‘Gyroplanes’, is included in the European Plan for Aviation Safety (EPAS) for 2021–2026³. The scope and timescales of the task were defined in the related Terms of Reference (ToR)⁴.

EASA developed this NPA following a preliminary consultation with its Advisory Bodies (ABs), i.e. Member States (MSs) and other affected stakeholders. The NPA is now submitted to all interested parties for consultation in accordance with the Basic Regulation and Articles 6(3), 7 and 8 of the Rulemaking Procedure⁵.

The major milestones of this RMT are presented on the cover page.

1.2. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/>⁶.

The deadline for the submission of comments is **14 January 2022**.

¹ Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139>).

² EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the ‘Rulemaking Procedure’. See MB Decision No 18-2015 of 15 December 2015 replacing Decision 01/2012 concerning the procedure to be applied by EASA for the issuing of opinions, certification specifications and guidance material (<http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure>).

³ https://www.easa.europa.eu/sites/default/files/dfu/epas_2021_2025_vol_two_final.pdf

⁴ <https://www.easa.europa.eu/sites/default/files/dfu/ToR%20RMT.0731%20Issue%202.pdf>

⁵ <http://www.easa.europa.eu/the-agency/management-board/decisions/easa-mb-decision-18-2015-rulemaking-procedure>

⁶ In case of technical problems, please send an email to crt@easa.europa.eu with a short description.

1.3. The next steps

Following the public consultation, EASA will review all the comments received.

Based on the comments received, EASA will consider the need to propose amendments to the following regulations:

- Aircrew
 - Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council⁷
 - Commission Delegated Regulation (EU) 2020/723 of 4 March 2020 laying down detailed rules with regard to the acceptance of third-country certification of pilots and amending Regulation (EU) No 1178/2011⁸
- Air OPS
 - Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council⁹

An opinion will be prepared and issued, together with a summary of the comments received and an explanatory note. The individual comments received on this NPA and the EASA responses to them will be reflected in a comment-response document (CRD), which will be published on the EASA website¹⁰.

The opinion will be submitted to the European Commission, which will decide whether to amend the related regulations based on the opinion.

If the European Commission decides to amend the related regulations based on the opinion, EASA will publish decisions to issue the related acceptable means of compliance (AMC) and guidance material (GM) to support the implementation of the amendments to the regulations.

⁷ OJ L 311, 25.11.2011, p. 1.

⁸ OJ L 170, 2.6.2020, p. 1.

⁹ OJ L 296, 25.10.2012, p. 1.

¹⁰ <https://www.easa.europa.eu/document-library/comment-response-documents>

2. In summary — why and what

2.1. Why we need to amend the rules — issue/rationale

2.1.1. General introduction to RMT.0731 ‘New air mobility’

The current common European regulatory framework for civil aviation safety (Regulation (EU) 2018/1139, the ‘Basic Regulation’)¹¹ was initially designed for conventional fixed-wing aircraft, helicopters, balloons, airships and sailplanes, and assumes that propulsion is mostly provided by piston or turbine engines, using fossil fuels. The introduction of new technologies and air transport concepts (from multimodal vehicles to autonomous vehicles) requires revisiting this framework. The objective of this Rulemaking Task (RMT).0731 ‘New air mobility’ is to address new technologies and operational air transport concepts by adapting, where necessary, the regulatory framework. A general principle that governs this RMT is that future requirements should not be technology specific, where possible (e.g. performance based instead of prescriptive), while ensuring legal certainty.

One of the streams of activity in this RMT is ‘Subtask 2 — Gyroplanes’¹².

2.1.2. Subtask 2 — Aircrew and Air Operations Regulations for gyroplanes

According to the Basic Regulation, gyroplanes¹³ with a maximum take-off mass (MTOM) of more than 600 kg or that have more than 2 seats fall within the scope of the common European rules in the field of civil aviation¹⁴. Single- and two-seater gyroplanes with a MTOM not exceeding 600 kg are still addressed by national rules.

The airworthiness of the design of gyroplanes that are within the scope of the common European rules can be certified according to the existing requirements of Regulation (EU) No 748/2012, but no suitable operational rules exist in the following domains:

- Aircrew (Commission Regulation (EU) No 1178/2011 (the ‘Aircrew Regulation’)¹⁵); and
- Air Operations (Commission Regulation (EU) No 965/2012 (the ‘Air OPS Regulation’)¹⁶).

¹¹ Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1536149403076&uri=CELEX:32018R1139>).

¹² More information is available at:

<https://www.easa.europa.eu/sites/default/files/dfu/ToR%20RMT.0731%20Issue%202.pdf>

¹³ ‘Gyroplane’ means a heavier-than-air aircraft that is supported in flight chiefly by one or more non-engine-driven rotors.

¹⁴ Gyroplanes fell within the scope of Annex II of Regulation (EC) No 1592/2002 (the ‘first Basic Regulation’). When said Regulation was repealed and replaced by Regulation (EC) No 216/2008, Annex II excluded gyroplanes with an MTOM of less than 560 kg. According to point 1(f) of Annex I to the current Basic Regulation, single and two-seater gyroplanes with an MTOM not exceeding 600 kg are not subject to the Regulation. Such aircraft have to comply with the applicable national rules of the respective Member States (MSs).

¹⁵ Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R1178&qid=1615284094109>).

¹⁶ Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0965&qid=1615284224143>).

Note: Where no suitable rules exist in the Continuing Airworthiness (CAW) domain, this is addressed by RMT.0731 Subtask 1.

The lack of suitable European rules for the operation of gyroplanes with a MTOM of more than 600 kg or with more than 2 seats hinders their introduction and operation, thus deteriorating the progression and competitiveness of the EU industry that is willing to develop such gyroplanes.

2.1.3. Affected stakeholders

The affected stakeholders are manufacturers, pilots, flight instructors, flight examiners, air operators, training organisations for gyroplanes, and competent authorities.

The regulatory proposal is an enabler for the market development of gyroplanes with a MTOM of more than 600 kg or with more than 2 seats. Currently, there are two European manufacturers that have applied for an EASA type certificate (TC) for such gyroplanes. The certification process for the PAL-V manufacturer¹⁷ is in progress. The applicant targets for a TC by mid-2023. The second applicant has not submitted yet an application for a TC.

Background and facts

According to the information provided by 10 EASA Member States in 2019, approximately 3 000 pilots who are trained by approximately 300 flight instructors are flying a gyroplane under national rules in those countries.

The typical workload for a competent authority (CA) regarding gyroplane oversight is between 50 to 150 hours per year.

Globally, the gyroplane training industry started in 2013 a collaboration project known as ‘The International Association of Professional Gyroplane Training (IAPGT)’¹⁸. There are currently 4 579 members (pilots and flight instructors) from 120 countries. The IAPGT has strongly supported the development of the FCL requirements.

2.1.4. Regulatory approach to the amendments to the Aircrew and the Air Operations Regulations as regards gyroplanes

For the introduction of common European requirements for the very first time in the Aircrew and the Air Operations Regulation, which will specifically apply to gyroplanes, a two-step approach is followed, according to market needs:

- 1) The scope of this NPA is limited to non-commercial air operations in VFR Day/Night, and the corresponding aircrew requirements for private pilots.
- 2) When the need arises, the scope of the Aircrew and the Air Operations Regulation may be extended to include also commercial air operations with gyroplanes.

2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This NPA will contribute to the achievement of the overall objectives by addressing the issues outlined in Section 2.1.

¹⁷ <https://www.pal-v.com/>

¹⁸ <https://www.iapgt.org/>

The specific objectives of this RMT are:

- more generally, to support the development of new technologies and non-traditional aircraft;
- to establish the necessary legal framework by introducing rules for flight crew licensing for the operation of gyroplanes, thereby ensuring a uniform application of the essential requirements of the Basic Regulation;
- to support the competitiveness of the EU industry in this regard.

2.3. How we want to achieve it — overview of the proposed amendments

This NPA proposes new implementing rules (IRs) and related acceptable means of compliance (AMC) and guidance material (GM) for aircrews regarding private pilot licences (PPL) and non-commercial air operations (NCO) in VFR Day/Night.

2.3.1. General approach

Since today gyroplanes are not within the scope of these regulations, a full set of new requirements has to be developed. However, a gyroplane is a well-known type of aircraft that combines aeroplane and helicopter characteristics. In addition, it has characteristics that are specific only to gyroplanes. Therefore, the approach was, firstly, to define the existing PPL and NCO aeroplane and helicopter requirements which are also relevant for gyroplanes (Section 2.3.1), and secondly to develop the rotorcraft-specific requirements (Section 2.3.2).

When developing the PPL requirements, an initial discussion took place to assess whether the gyroplane licencing scheme should follow:

- either the ICAO structure for PPL, CPL, flight instructor and flight examiner, by adding gyroplanes to the aeroplane and helicopter categories; or
- the balloon and sailplane approach adopted at European level by establishing a unique gyroplane pilot licence (GPL).

Looking forward at the future development of the rules in the field of commercial air operations with gyroplanes, the ICAO structure for PPL, CPL, flight instructor and flight examiner was considered by EASA to be the most suitable way to integrate the gyroplane requirements into the Aircrew Regulation.

When developing the Air OPS requirements, a suitable approach was found by integrating in the Air OPS Regulation a definition for rotorcraft, encompassing both helicopters and gyroplanes. This allows to have minimal changes by replacing 'helicopter' by 'rotorcraft' in most of the cases.

Question to stakeholders

While the scope of the requirements in ‘SUBPART D — INSTRUMENTS, DATA AND EQUIPMENT’ of Part-NCO has been extended to encompass rotorcraft instead of only helicopters, it is proposed to keep the designation unchanged, i.e. ‘NCO.IDE.H.100 Instruments and equipment — general’, instead of replacing ‘H’ by ‘R’ — even though, in running text, ‘helicopter’ is replaced by ‘rotorcraft’.

This is done to minimise the impact of the amendments on helicopter operators — that is, by avoiding the need to update references in procedures and manuals.

— EASA would like to know whether you agree to this approach.

The AMC and GM to the Air OPS Regulation on the fuel/energy policy concerning point NCO.OP.125 *Fuel/energy and oil supply* are based on EASA Opinion No 02/2020¹⁹, pending the publication of the related AMC and GM to support the implementation of Commission Implementing Regulation (EU) 2021/1296 of 4 August 2021 amending and correcting Regulation (EU) No 965/2012 as regards the requirements for fuel/energy planning and management, and as regards requirements on support programmes and psychological assessment of flight crew, as well as testing of psychoactive substances²⁰.

¹⁹ EASA Opinion No 02/2020 ‘Fuel/energy planning and management’ (<https://www.easa.europa.eu/document-library/opinions/opinion-022020>).

²⁰ OJ L 282, 5.8.2021, p. 5 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R1296&qid=1634035185223>).



2.3.2. Highlights of the gyroplane specificities in the proposed regulations

2.3.2.1 The Aircrew Regulation

Transitional measures of proposed Article 4d

The transitional measures of the proposed Article 4d are intended to enlarge the pool of available training aircraft in the introductory phase of Part-FCL gyroplane requirements. By this, flight instructors and flight examiners will be able to gain Part-FCL gyroplane training, testing and checking experience more rapidly, which is important in the context of the requirements of points FCL.900(b)(2) and FCL.1000(b)(2).

The MTOM limit of 500 kg for acceptable national gyroplanes (i.e. gyroplanes that fall within the scope of Annex I to Regulation (EU) 2018/1139) is inserted in order to ensure similar flying characteristics, compared to heavier gyroplanes that fall within the EASA scope, and will exclude all amateur-built and lighter gyroplanes.

Theoretical-exam questions

The following list provides the differences of the theoretical exam for the PPL among aeroplanes, helicopters, and gyroplanes:

- Topic without any variation between the PPL(A) and the PPL(G), or the PPL(H) and the PPL(G):
 - Air Law and ATC Procedures,
 - Human Performance,
 - Meteorology,
 - Communications,
 - Instrumentation,
 - Navigation.
- Topics with differences between the PPL(A) and the PPL(H); however, these differences do not apply to gyroplanes (i.e. it would, therefore, not matter which exam is taken):
 - Operational Procedures,
 - Flight Performance and Planning.
- Topics with significant differences:
 - Principles of Flight,
 - Aircraft General Knowledge.

The topics 'Principles of Flight' and 'Aircraft General Knowledge' require specific questions, different from those for aeroplanes and helicopters. Given that the PPL(G) requirements form part of the objectives of this RMT, it will be the responsibility of the Member States to develop and maintain the questions for the PPL(G) theoretical knowledge examinations in accordance with point ARA.FCL.300.

The theoretical knowledge examination for the draft gyroplane rules proposed in this NPA will not fall within the scope of the European Central Question Bank (ECQB)²¹ managed by EASA.

2.3.2.2 The Air Operations Regulation and non-commercial air operations in VFR Day/Night

There is a proposed amendment to Regulation (EU) No 965/2012 regarding a gyroplane-specific requirement, i.e. NCO.SPEC.172 *Performance and operating criteria — gyroplanes*. When operating a gyroplane at a height of less than 150 m (500 ft) above a non-congested area, for the operation of a gyroplane that is not able to sustain level flight in the event of a critical engine failure, the pilot-in-command will have to establish operational procedures and brief crew members in the event of a forced landing.

2.3.3. Pending item on the class or type rating

Lacking experience with gyroplanes of more than 600 kg MTOM or with more than 2 seats, and also considering the still early stage of the PAL-V certification process (no prototype flying yet), EASA is not yet in a position to finally conclude and confirm that a class rating will be appropriate for the PAL-V. The application of point (a)(3)(ii) of CS FCD.200 *Determination of a pilot type rating* could eventually end up in the PAL-V being considered as requiring a type rating. Hence, a placeholder for the class and type rating is introduced in the draft FCL rules. When finalising the rules, an upper weight limit of 1 200 kg MTOM may be introduced, in order to ensure that even greater seat capacity and heavier gyroplanes (expected in the future) will not automatically fall into a class rating. For the latter case, type ratings will be most probably needed.

2.4. What are the expected benefits and drawbacks of the proposed amendments

The expected benefits and drawbacks of the proposed amendments are summarised below.

Expected benefits

- The introduction of gyroplanes above 600 kg MTOM or with more than 2 seats into the common EU Aircrew and Air OPS requirements for non-commercial operations in VFR Day/Night will allow such operations to be conducted in accordance with the EU rules, thus ensuring a level playing field at EU level for private pilots and NCO operators of gyroplanes and for other general aviation aircraft.
- Hence, the introduction of gyroplane-specific requirements will facilitate the introduction of gyroplanes above 600 kg MTOM or with more than 2 seats for general aviation.
- Furthermore, they will support the EU competitiveness of the gyroplane manufacturing and training sectors.

The following information from PAL-V gives an initial forecast of the gyroplane market above 600 kg MTOM or with more than 2 seats.

²¹ In accordance with point (b) of point ARA.FCL.300 *Examination procedures of Annex VI (PART-ARA) to the Aircrew Regulation*.

The European manufacturer PAL-V is a European manufacturer for flying cars²², providing also pilot training for its products. On the road, these flying cars are certified three-wheel vehicles complying with the European L5e class road certification (granted in October 2020). In the air, these flying cars are in the process to be certified as a gyroplane aircraft above 600 kg MTOM or with more than 2 seats by the Agency (expected year: 2023).

The production will begin in 2023 and the turnover is foreseen to grow to €380 million in its first 5 years of production. 95 employees are working for the company (expected to be 600 by 2028-2030).

Orders with down payments from European customers is currently over 90, with a continuous increase. 80% of the customers are non-pilots.

Summary table – Key indicators from 2021 to 2030 based on PAL-V business plan basic scenario

	2021	2022	2023*	2024	2025	2026	2027	2030
Production unit	-	-	20	70	420	780	980	1390
Region	-	-	EU+CH+NO+IS			EU+CH+NO+IS+ non-EU		
PAL-V trainees**	16	30	105	630	1170	1470	1755	2085
Instructors needed	3	5	16	92	170	215	256	305

* 2023 is the planned year for the Type Certificate

** Early Adopter students start their training in advance of their PAL-V delivery

Expected drawbacks

There are no drawbacks identified for gyroplane pilots and operators since the proposed requirements enable the operation of gyroplanes. The proposed requirements aim to provide a simple and proportionate way of regulating those aircraft, similar to the regulations for other GA aircraft. The only issue to pay attention to could be for some national competent authorities (NCAs) that have not yet established national gyroplane licensing rules. Such NCAs may be faced with additional workload if there would be new pilots that are willing to undertake a PPL(G) in their country (e.g. development of exam questions, etc.) for gyroplanes above 600 kg MTOM or with more than 2 seats. In order to assess the magnitude of this impact, NCAs are invited to answer the following questions:

Questions to NCAs

Note: New pilots are currently expected from the following EU Members States plus the EFTA Member States at the beginning of the market development for gyroplanes above 600 kg MTOM or with more than 2 seats: Belgium, Finland, France, Germany, Greece, Italy, Poland, The Netherlands, Slovenia, Spain, and Switzerland.

- What would be the additional costs for competent authorities incurred by the implementation of the draft requirements, as proposed in Chapter 3 of the NPA?
- Would these costs trigger a significant impact considered not sustainable by the competent authority resources?

Please provide explanations.

²² As of 1 July 2021, €80 million are invested in the company by private and institutional investors from the European Union and 5 Member States.

3. Proposed amendments

3.1. Draft Flight Crew Licensing Regulation

Commission Regulation (EU) No 1178/2011 is amended as follows:

COVER REGULATION

Article 4d Transitional measures for gyroplanes

- (1) Until [3rd anniversary of application of amending Regulation], training that has been completed prior to the entry into force of this Regulation in accordance with national gyroplane flight crew licensing requirements in gyroplanes that have a maximum take-off mass of at least 500 kg shall be given credit for the purpose of issuing a private pilot licence for gyroplanes in accordance with this Regulation, on the basis of a credit report established by a Member State in consultation with EASA. The credit report shall comply with Article 9(3).
- (2) The amount of credit granted by a credit report in accordance with paragraph 1 shall in any case not exceed the credit that may have been granted in accordance with point FCL.210.G(c) of Annex I to this Regulation. In any case, applicants shall complete the additional flight training at an approved training organisation or at a declared training organisation (DTO) in a gyroplane that has been certified in accordance with Regulation (EU) 2018/1139 and the implementing and delegated acts adopted on the basis thereof, before being recommended by the ATO or the DTO for the skill test.

Rationale

The transitional measures of the proposed Article 4d are intended to enlarge the pool of available training aircraft in the introductory phase of the Part-FCL gyroplane requirements. By this, flight instructors and flight examiners will be able to gain Part-FCL gyroplane training, testing and checking experience more rapidly, which is important in the context of the requirements of points FCL.900(b)(2) and FCL.1000(b)(2).

The MTOM limit for acceptable national gyroplanes (i.e. gyroplanes that fall within the scope of Annex I to Regulation (EU) 2018/1139) is inserted in order to ensure similar flying characteristics, compared to heavier gyroplanes that fall within the scope of the Basic Regulation, and will exclude all amateur-built and lighter gyroplanes.

ANNEX I (PART-FCL)

SUBPART A — GENERAL REQUIREMENTS

FCL.010 Definitions

[...]

'gyroplane' means a heavier-than-air aircraft supported in flight chiefly by one or more non-engine-driven rotors;

[...]

AMC1 FCL.050 Recording of flight time

[...]

(g) Flight time is recorded:

- (1) for aeroplanes, touring motor gliders, gyroplanes, and powered-lift aircraft, from the moment an aircraft first moves to take-off until the moment it finally comes to rest at the end of the flight;

[...]

FCL.055 Language proficiency

- (a) General. Aeroplane, helicopter, powered-lift, gyroplane, and airship pilots required to use the radio telephone shall not exercise the privileges of their licences and ratings unless they have a language proficiency endorsement on their licence in either English or in the language used for radio communications involved in the flight. The endorsement shall indicate the language, the proficiency level and the validity date.

FCL.060 Recent experience

- (b) Aeroplanes, helicopters, powered-lift aircraft, ~~and~~ airships, and gyroplanes, when applicable. A pilot shall not operate an aircraft in commercial air transport or ~~for~~ carrying passengers:

[...]

Rationale

Commercial air operations are outside the scope of this NPA. Therefore, the wording 'when applicable' is added next to gyroplanes to ensure that point FCL.060 is applicable only for gyroplanes when carrying passengers.

GM1 FCL.060(b)(1) Recent experience

AEROPLANES, HELICOPTERS, POWERED-LIFT, AIRSHIPS, ~~AND SAILPLANES~~ AND GYROPLANES²³

[...]

SUBPART C — PRIVATE PILOT LICENCE (PPL)

AMC3 FCL.210.PPL(G) Training course

FLIGHT INSTRUCTION FOR THE PPL(G)

(a) Entry to training

Before being accepted for training an applicant should be informed that the appropriate medical certificate must be obtained before solo flying is permitted.

(b) Flight instruction

(1) The PPL(G) flight instruction syllabus takes into account the principles of threat and error management and also covers:

- (i) pre-flight operations, including mass and balance determination, aircraft inspection and servicing;
- (ii) ground manoeuvring, rotor handling;
- (iii) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
- (iv) control of the gyroplane by external visual reference;
- (v) flight at altitude, at slow airspeed, maintaining altitude;
- (vi) flight on idle power, at very slow airspeed, maintaining rudder authority;
- (vii) normal and crosswind take-offs and landings;
- (viii) maximum performance (short field and obstacle clearance) take-offs, short-field landings;
- (ix) cross-country flying using visual reference, dead reckoning and electronic navigation aids;
- (x) emergency operations, including simulated aeroplane equipment malfunctions;
- (xi) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, communication procedures and phraseology.

(2) Before allowing the applicant for a PPL(G) to undertake his/her first solo flight, the FI should ensure that the applicant can use R/T communication.

(c) Syllabus of flight instruction

²³ GM1 FCL.060(b)(1) is presented as currently in force. In parallel, the deletion of the term 'AND SAILPLANES' has already been proposed with EASA NPA 2020-14 'Simpler, lighter and better Part-FCL requirements for general aviation' of 14 December 2020. The progression of these two NPAs will be coordinated in order to ensure a final correct version of this GM.

- (1) The numbering of exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide; therefore the demonstrations and practices need not necessarily be given in the order listed. The actual order and content will depend upon the following interrelated factors:
 - (i) the applicant's progress and ability;
 - (ii) the weather conditions affecting the flight;
 - (iii) the flight time available;
 - (iv) instructional technique considerations;
 - (v) the local operating environment;
 - (vi) applicability of the exercises to the gyroplane.
- (2) Each of the exercises involves the need for the applicant to be aware of the needs of good airmanship and look-out, which should be emphasised at all times.
- (3) Syllabus and list of exercises

Exercise 1: Introduction to the gyroplane

- (a) safety considerations around an airfield;
- (b) introduction to the gyroplane;
- (c) essential pre-flight preparation;
- (d) safety brief in emergency drills;
- (e) essential in-flight etiquette;
- (f) introduction to rotary wing flight in a gyroplane.

Exercise 2: Basic Skills 1 — Lookout, Speed, Direction

- (a) primary controls, instruments, cockpit layout;
- (b) lookout procedure;
- (c) use of the stick — speed and direction.

Exercise 3: Basic Skills 2 — Trim, Height, Balance

- (a) trim (pitch and roll, as applicable), avoiding pilot-induced oscillation (PIO);
- (b) use of throttle — height;
- (c) use of pedals — balance

Exercise 4: Start-up, Taxi, Shutdown

- (a) pre-flight planning — pilot/passenger, aircraft, weather, flight content, human factors — risk mitigation;
- (b) handling the gyroplane prior to start;
- (c) pre-start and start-up procedure;
- (d) taxiing (rotor stationary);
- (e) power and pre-runway checks;
- (f) post-landing checks and procedures;

(g) shutdown.

Exercise 5: Understanding Power Changes

- (a) cruise datum power;
- (b) the secondary effect of power changes on balance;
- (c) the secondary effect of power changes on roll;
- (d) the secondary effect of power changes on pitch;
- (e) transition to the climb, descents and level-out at constant speed and balance throughout.

Exercise 6: Coordinated Medium-Level Turns

- (a) medium-level turns;
- (b) power requirements during a turn;
- (c) maintaining balance during turns in different directions;
- (d) turning onto headings using the compass.

Exercise 7: Correcting for Wind

- (a) wind terminology;
- (b) the technique for flying in a straight line with a strong crosswind;
- (c) determining the wind position during flight.

Exercise 8: Accurate Height and Speed

- (a) the technique for fine-tuning height.

Exercise 9: Performance Climbing and Descending

- (a) effect of power on the rate of climb and descent;
- (b) effect of airspeed on the rate of climb and descent;
- (c) full-power climbs, idle-power descents.

Exercise 10: Climbing and Descending Turns

- (a) effect of the angle of bank on the rate of climb and on descent;
- (b) maintaining balance during full-power climbing turns, and the differences between right and left turns;
- (c) maintaining balance during idle-power descending turns, and the differences between right and left turns.

Exercise 11: Significant Speed Changes, Fast Flight

- (a) rapid acceleration and rapid deceleration to given speeds;
- (b) fast flight.

Exercise 12: Flying the Circuit Pattern

- (a) terminology in the circuit pattern;

- (b) pre-landing checks;
- (c) flying an accurate circuit pattern;
- (d) maintaining appropriate spacing for other traffic in the circuit;
- (e) go-around.

Exercise 13: Active Rotor Management

- (a) active rotor management, taxi with rotor turning;
- (b) building rotor speed during the early take-off phase;
- (c) smooth transition to the wheel balance attitude, prior to take-off;
- (d) stopping the gyroplane.

Exercise 14: Take-off — Wind on the Runway Heading

- (a) lifting the gyroplane off the surface;
- (b) building airspeed, transitioning to climb airspeed;
- (c) understanding the height/velocity avoidance curve;
- (d) rejecting take-offs, landing ahead;
- (e) trimming during take-off;
- (f) climbing through 300 ft — checks.

Exercise 15: Take-off — Different Conditions

- (a) crosswinds from the left and the right;
- (b) strong winds;
- (c) nil wind;
- (d) considerations for take-off performance;
- (e) determining an appropriate take-off abortion point;
- (f) rough ground take-offs;
- (g) smooth surface take-offs;
- (h) immediate-departure take-offs, pre-rotating at the holding point.

Exercise 16: Landing — Wind on the Runway Heading

- (a) flying an accurate approach;
- (b) descending through 300 ft — checks;
- (c) extending a landing to touch down close to the exit point;
- (d) recovering from a balloon when landing.

Exercise 17: Landing — Different Conditions

- (a) crosswinds — left and right;
- (b) flying the approach using the 'split angle' technique;
- (c) landing in strong winds — considerations;

(d) landing in nil wind — considerations;

(e) rough/soft ground.

Exercise 18: Precision Landings

(a) the hazards related to precision landings;

(b) the ‘chop and plop’ technique.

Exercise 19: Precision Landings — Idle Power

(a) the importance of maintaining airspeed;

(b) the technique for making a precision landing when power is not available.

Exercise 20: Departing and Arriving at Airfields

(a) departing from the airfield;

(b) arriving at the airfield.

Exercise 21: Slow Flight at Constant Altitude (Helicopter Mode)

(a) HASEL checks (Height, Area, Security, Engine, Lookout) before unusual manoeuvres;

(b) flying on the back side of the power curve;

(c) avoiding flying behind the power curve.

Exercise 22: Flight at Minimum Airspeed on Idle Power (Parachute Mode)

(a) importance of maintaining rudder authority to avoid loss of control;

(b) establishing slow flight on idle power;

(c) recovering speed when power is available;

(d) recovering speed to a glide descent when power is not available;

(e) recovery from an incipient slow rotation to the right when loss of rudder authority.

Exercise 23: Ground Reference Turns

(a) high bank angle turns;

(b) turning in relation to a ground reference (with significant wind).

Exercise 24: Unusual Attitudes

(a) the hazards of distraction and fixation;

(b) recognising unusual attitudes;

(c) recovering from unusual attitudes:

(i) excessive pitch up;

(ii) excessive pitch up and roll (left and right);

(iii) excessive pitch down, close to never-exceed speed (VNE);

(iv) excessive pitch down and roll (left and right), spiral descent.

Exercise 25: Low Flying



- (a) legal issues relating to low flying;
- (b) hazards associated with flying low;
- (c) the consequences of an engine failure when flying low downwind (discussion).

Exercise 26: Consolidation, En-Route Airmanship

Note: This exercise is a continuation of Exercise 4, and the combination of these exercises is taught and consolidated in parallel with all the previous exercises.

- (a) advanced pre-flight preparation and post-flight responsibilities;
- (b) en-route airmanship.

Exercise 27: In-flight Emergencies

- (a) possible emergency scenarios;
- (b) standard emergency procedures;
- (c) mitigating a catastrophic failure.

Exercise 28: Precautionary Landing

- (a) selecting appropriate fields;
- (b) technique for surveying suitable fields prior to landing.

Exercise 29: Forced Landing

- (a) restart procedure;
- (b) distress/urgency radio calls;
- (c) technique for positioning prior to the approach above 300 ft AGL;
- (d) technique for positioning in the final stages of the approach below 300 ft AGL.

Exercise 30: Forced Landing Around the Airfield

- (a) being prepared should the engine stop when flying in the circuit pattern;
- (b) preparation prior to take-off.

Exercise 31: Pre-Solo Check Flight

- (a) difference in flying characteristics;
- (b) checking all the prerequisites have been completed.

Exercise 32: First Solo

- (a) first solo flight.

Exercise 33: Solo Consolidation

- (a) flying only according to the instructor's briefing;
- (b) decision to fly — decision making.

Exercise 34: En-route Navigation

- (a) navigation pre-flight planning;

(b) navigation technique — dead reckoning;

(c) navigation technique — GPS assisted.

Exercise 35: Landing Out

(a) destination pre-flight planning.

Exercise 36: Solo Navigation

(a) practise navigation flights.

Exercise 37: Qualifying Cross-Country

(a) planning and flying the cross-country flights.

Exercise 38: Preparing for the Skills Test

(a) flying all the exercises and assessing competence before taking the skills test.

AMC4 FCL.210; FCL.215 Training course and theoretical knowledge examination

SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE PPL(G)

The following tables contain the syllabi for the courses of theoretical knowledge, as well as for the theoretical knowledge examinations for the PPL(G). The training and examination should cover aspects related to non-technical skills in an integrated manner, taking into account the particular risks associated to the licence and the activity.

The DTO or the ATO responsible for the training should check if all the appropriate elements of the training course of theoretical knowledge instruction have been completed to a satisfactory standard before recommending the applicant for the examination.

The table below indicates where the subjects and examinations are identical to PPL(A) or PPL(H). Entries marked with a X indicate the exam as specified in AMC1 FCL.210; FCL 215 should be used.

		PPL(A)	PPL(H)
1.	AIR LAW AND ATC PROCEDURES	X	X
2.	HUMAN PERFORMANCE	X	X
3.	METEOROLOGY	X	X
4.	COMMUNICATIONS	X	X
5.	PRINCIPLES OF FLIGHT	See below	See below
6.	OPERATIONAL PROCEDURES	X	X
7.	FLIGHT PERFORMANCE AND PLANNING	X	X
8.	AIRCRAFT GENERAL KNOWLEDGE	See below	See below
9.	NAVIGATION	X	X

5.	PRINCIPLES OF FLIGHT — GYROPLANES	PPL
5.1	Forces acting on a gyroplane	
	Weight, lift, thrust, drag	X
	Centre of gravity	X
	Mass, gravitational force, weight	X
	Blade loading, disc loading	X
5.2	Aerofoils / Rotor blades	
	Aerofoil lift, Bernoulli principle, boundary layer, streamline flow	X
	Turbulent flow, separation point, aerofoil stall	X
	Dynamic pressure	X
	The density of the air	X
	Relative airflow, chord line	X
	Angle of attack, total reaction, lift, drag	X
	Aerofoil shapes	X
	Centre of pressure	X
	Coefficient of lift versus angle of attack	X
5.3	Drag	
	Fuselage drag — air resistance	X
	Induced drag	X
	Parasite drag, profile drag, form, skin friction, interference	X
	Span, chord, aspect ratio	X
	Total drag (graph)	X
	Lift–drag ratio	X
5.4	Propellers	
	Airflow and the helix	X
	Fixed pitch propellers	X
	Variable pitch propellers	X
	Slipstream effect on the tail section	X
	Offset rudder considerations	X
5.5	Engine torque	
	Rolling effect with power	X
	Stability in the air	
	Positive dynamic stability, neutral dynamic stability, dynamic stability	X
	Thrust line	
5.6	Stability on the ground	
	Undercarriage design	X
	High centre of gravity	X
	Forces in a turn	X
5.7	Graph of power required	
	Power available	X

	Power required	X
	Maximum endurance speed	X
	Maximum range speed	X
5.8	Rotor dynamics	
	Components of a rotor	X
	Autorotation forces	X
	Driven, driving and stalled regions of a blade/disc	X
	Coning angle	X
	Blade pattern	X
	Blade tracking	X
	Blade balancing	X
	Underslung rotors	X
	Dissymmetry of lift	X
	Teetering to equality	X
	Conservation of angular momentum and the effect on rotor rpm	X

		PPL
8.	AIRCRAFT GENERAL KNOWLEDGE — GYROPLANES	
8.1	ENVELOPE, AIRFRAME AND SYSTEMS, ELECTRICS, POWERPLANT AND EMERGENCY EQUIPMENT	
	Main components of a gyroplane	X
	Fuselage, doors, floor, windscreen, windows	X
	Keel, mast	X
	Rotorhead components and functionality	X
	Tail components and functionality	X
	Trim mechanisms	X
	Prerotation mechanisms	X
	Undercarriage, wheels, brakes and tyres	X
	Piston engines	X
	Principle of a 2-stroke engine	X
	Principle of a 4-stroke engine	X
	Fuel	X
	Carburettor	X
	Carburettor icing	X
	Fuel injection	X
	Air cooling	X
	Water cooling	X
	Lubrication systems	X
	Ignition circuits	X
	Electrics	X
	Battery	X

	Alternator	X
	Generator	X
	AC/DC	X
	Circuit breakers	X
	Propellers	X
	Hydraulics	X
	Pneumatics	X
8.2	INSTRUMENTATION	
	Static pressure	X
	Dynamic pressure	X
	Altimeter	X
	Vertical speed indicator	X
	Airspeed indicator	X
	Magnetic compass	X
	Temperature senders	X
	Rotor rpm mechanism	X
	Exhaust gas sensors	X
	GPS	X

AMC4 FCL.235 Skill test

CONTENTS OF THE SKILL TEST FOR THE ISSUE OF A PPL(G)

- (a) The route to be flown for the navigation test should be chosen by the FE. The route may end at the aerodrome of departure or at another aerodrome. The applicant should be responsible for the flight planning and should ensure that all equipment and documentation for the execution of the flight are on board. The navigation section of the test should have a duration that allows the pilot to demonstrate his/her ability to complete a route with at least three identified waypoints and may, as agreed between the applicant and FE, be flown as a separate test.
- (b) An applicant should indicate to the FE the checks and duties carried out, including the identification of radio facilities. Checks should be completed in accordance with the authorised checklist for the gyroplane on which the test is being taken. During pre-flight preparation for the test the applicant should be required to determine power settings and speeds. Performance data for take-off, approach and landing should be calculated by the applicant in compliance with the operations manual or flight manual for the gyroplane used.

FLIGHT TEST TOLERANCE

- (c) The applicant should demonstrate the ability to:
- (1) operate the gyroplane within its limitations;
 - (2) complete all manoeuvres with smoothness and accuracy;

- (3) exercise good judgment and airmanship;
 - (4) apply aeronautical knowledge;
 - (5) maintain control of the gyroplane at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt.
- (d) The following limits are for general guidance. The FE should make allowance for turbulent conditions and the handling qualities and performance of the gyroplane used:
- (1) height: ± 150 ft
 - (2) heading or tracking of radio aids: $\pm 10^\circ$
 - (3) speed:
 - (i) take-off and approach: $+15 / -5$ kt
 - (ii) all other flight regimes: ± 15 kt

CONTENT OF THE SKILL TEST

- (e) The skill test contents and sections set out in this AMC should be used for the skill test for the issue of a PPL(G). In all sections, all of the following should be included:
- (1) RT, as appropriate for the airfield and classification of airspace;
 - (2) critical assessment of active rotor handling, whenever the blades are turning at less than flying speed;
 - (3) use of checklists, airmanship, control of gyroplane by external reference and anti-de-icing procedures etc.
- (f) Content and sections of the skill test for the issue of a PPL(G)

SECTION 1 — PRE-FLIGHT OPERATIONS

- a Pre-flight preparation: Pilot(s) and passenger(s)
Documentation; fitness to fly
- b Pre-flight preparation: Gyroplane
Documentation; pre-flight inspection; servicing
- c Pre-flight preparation: Weather
Forecast; interpretation of actual weather; personal limits
- d Pre-flight preparation: Flight planning
NOTAM; route plan; destination plan; fuel; mass and balance; performance
- e External factors and pressure to fly

SECTION 2 — TAKE-OFF AND LANDING

- a Start-up and taxi
- b Take-off and landing; touch and go; and full stop
- c Rejected take-off
- d Go-around from baulked approach
- e Precision landing 0 + 100 m (simulated 1-m fence at each side)
- f Glide approach, precision landing 0 + 200 m (simulated 1-m fence at each side)

SECTION 3 — GENERAL HANDLING

- a Straight and level flight
- b Turning to heading

- c 360-degree turns
- d Climb and descent to given heights and headings
- e Fast flight (90 % VNE)
- f Slow flight, level altitude
- g Stationary flight (if possible)
- h Idle-power slow-speed descent, recover with power
- i Idle-power slow-speed descent, recover without power to glide descent
- J 360-degree turns around a ground reference

SECTION 4 — EMERGENCY LANDING

- a Standard emergency procedures
- b Precautionary landings
- c Simulated engine failure
- d Unusual attitude recovery

SECTION 5 — RETURN AND POST-FLIGHT

- a Airfield rejoin procedure
- b Shutdown
- c Post-flight actions



SECTION 5 — SPECIFIC REQUIREMENTS FOR THE PRIVATE PILOT LICENCE FOR GYROPLANES (PPL(G))

FCL.205.G PPL(G) Privileges

- (a) The privileges of the PPL(G) holder are to act as PIC in gyroplanes:
- (1) without remuneration in non-commercial air operations;
 - (2) including the carriage of passengers only when they have completed 10 hours of flight time as PIC on gyroplanes after the issuance of the licence.
- (b) Notwithstanding (a) above, the PPL(G) holder that has instructor or examiner privileges may receive remuneration for:
- (1) the provision of flight instruction for the PPL(G);
 - (2) the conduct of skill tests and proficiency checks for the PPL(G);
 - (3) the training, testing and checking for the ratings attached to this licence.
- (c) The exercise of the privileges granted by a PPL(G) shall be dependent upon the compliance of the licence holder with the applicable recency requirements.

FCL.210.G PPL(G) — Experience requirements and crediting

- (a) An applicant for a PPL(G) shall have completed at least 45 hours of flight instruction in gyroplanes, 5 of which may have been completed in an FSTD, including at least:
- (1) 25 hours of dual flight instruction; and
 - (2) 10 hours of supervised solo flight time, including at least 5 hours of solo cross-country flight time with at least 1 cross-country flight of at least 185 km (100 NM), during which full-stop landings at 2 aerodromes different from the aerodrome of departure shall be made.
- (b) Crediting. An applicant that holds a pilot licence for another category of aircraft, with the exception of balloons, shall be credited with 10 % of their total flight time as PIC on such aircraft up to a maximum of 20 hours. The amount of credit given shall in any case not include the requirements of point (a)(2).
- (c) An applicant with prior experience as PIC on gyroplanes may receive credit towards the requirements of point (a). The amount of credit shall be decided by the DTO or the ATO where the pilot undergoes the training course, on the basis of pre-entry flight assessment, but shall in any case not exceed any of the following:
- (1) the total flight time as PIC;
 - (2) 50 % of the hours required in point (a).
- In any case, the credit shall not be given for the requirements of point (a)(2).

SUBPART H — CLASS AND TYPE RATING

GM1 FCL.700 Circumstances in which class or type ratings are required

[...]

(c) Class ratings (gyroplane):²⁴

Manufacturer	Gyroplanes		Licence Endorsement
Placeholder	Placeholder		Placeholder

(d) Additional class and type rating lists and endorsement lists are published by EASA.

(e) Whenever (D) is indicated in one of the lists mentioned in paragraphs (a) to (d), it indicates that differences training in accordance with FCL.710 is required.

FCL.725 Requirements for the issue of class and type ratings

(a) Training course. An applicant for a class or type rating shall complete a training course at an ATO. An applicant for a non-high-performance single-engine piston class rating, a TMG class rating, a gyroplane class or type²⁵ rating or a single-engine type rating for helicopters referred to in point DTO.GEN.110(a)(2)(c) of Annex VIII (Part-DTO) may complete the training course at a DTO. The type rating training course shall include the mandatory training elements for the relevant type as defined in the operational suitability data established in accordance with Annex I (Part 21 ~~Part-21~~) to Commission Regulation (EU) No 748/2012.

[...]

AMC1 FCL.725(a) Requirements for the issue of class and type ratings

[...]

IV. GYROPLANES

(a) Detailed listing for gyroplane structure and equipment (if installed), normal operation of systems and malfunctions:

(1) engine:

(i) type of engine;

(ii) in general, function of the following systems or components:

²⁴ Depending on the certification process for the PAL-V, a class or type rating can be the outcome. For the meantime, a placeholder for a possible class rating related to gyroplanes is included.

²⁵ Depending on the certification process for the PAL-V a class or type rating can be the outcome. For the meantime, a placeholder for a possible class/type rating related to gyroplanes is included.

- (A) engine,
 - (B) oil system,
 - (C) fuel system,
 - (D) cooling system,
 - (E) ignition system,
 - (F) starting system,
 - (G) fire warning and extinguishing system,
 - (H) generators and generator drives,
 - (I) power indication,
 - (J) propeller system,
 - (K) feathering system;
- (iii) engine controls (including starter), engine instruments and indications in the cockpit, their function, interrelation and interpretation;
- (iv) engine operation, during engine start, start and engine malfunctions, procedures for normal operation in the correct sequence;
- (2) fuel system:
- (i) location of the fuel tanks, fuel pumps, fuel lines to the engines, tank capacities, valves and measuring;
 - (ii) location of the following systems:
 - (A) filtering,
 - (B) fuelling and defueling,
 - (C) venting;
 - (iii) in the cockpit:
 - (A) the monitors and indicators of the fuel system,
 - (B) quantity and flow indication, and interpretation;
 - (iv) procedures:
 - (A) fuel procedures distribution into the various tanks,
 - (B) fuel supply, temperature control, and fuel dumping;
- (4) ice and rain protection, windshield wipers and rain-repellent systems:
- (i) ice-protected components of the gyroplane, including engines, heat sources, controls and indications;
 - (ii) operation of the anti-icing or the de-icing system during take-off, climb, cruise and descent, and conditions that require the use of the ice and rain protection systems;

- (iii) controls and indications of the windshield wipers, and operation of the rain-repellent systems;
- (5) hydraulic system:
- (i) components of the hydraulic system(s), quantities and system pressure, hydraulically actuated components associated to the respective hydraulic system;
 - (ii) controls, monitors and indicators in the cockpit, function and interrelation and interpretation of indications;
- (6) landing gear:
- (i) main components of the:
 - (A) main landing gear,
 - (B) nose gear,
 - (C) gear steering,
 - (D) wheel brake system, including anti-skid;
 - (ii) required tyre pressure, or location of the relevant placard;
- (7) flight controls and high-lift devices:
- (i) (A) rotor system,
 - (B) rudder system,
 - (C) trim system,
 - (D) pre-rotation system;
 - (ii) flight control system from the cockpit controls to the flight control surfaces;
 - (iii) controls, monitors and indicators;
- (8) electrical power supply:
- (i) number, power, voltage, frequency and location of the main power system (AC or DC), location of the auxiliary power system, and external power system;
 - (ii) location of the controls, monitors and indicators in the cockpit;
 - (iii) flight instruments, communication and navigation systems, main and backup power sources;
 - (iv) location of vital circuit breakers;
 - (v) generator operation and monitoring procedures of the electrical power supply;
- (9) flight instruments, communication and navigation equipment:
- (i) visible antennae;
 - (ii) controls and instruments of the following equipment in the cockpit during normal operation:
 - (A) flight instruments,

- (B) flight management systems,
 - (C) communication and navigation systems,
 - (D) autopilot,
 - (E) collision avoidance system,
 - (F) warning systems;
- (10) cockpit, cabin and cargo compartment:
- (i) operation of the exterior, cockpit, cabin and cargo compartment lighting and of the emergency lighting;
 - (ii) operation of the cabin and cargo doors, windows and emergency exits;
- (11) emergency equipment operation and correct application of the following emergency equipment in the aeroplane:
- (i) portable fire extinguisher;
 - (ii) first-aid kits;
 - (iii) portable oxygen equipment;
 - (iv) emergency ropes;
 - (v) life jacket;
 - (vi) life rafts;
 - (vii) emergency transmitters;
 - (viii) crash axes;
 - (ix) megaphones;
 - (x) emergency signals;
- (12) pneumatic system:
- (i) components of the pneumatic system, pressure source and actuated components;
 - (ii) controls, monitors and indicators in the cockpit and function of the system;
 - (iii) vacuum system.
- (b) Limitations:
- (1) general limitations:
- (i) certification of the gyroplane, category of operation, noise certification, and maximum and minimum performance data for all flight profiles, conditions and aircraft systems:
 - (A) maximum tail and crosswind components at take-off and landing,
 - (B) for maximum rudder deflection v_a ;
 - (ii) (A) minimum control speed air v_{mca} ,
 - (B) maximum speed v_{ne} ,

- (C) maximum speed for normal operation V_{MO} ,
 - (D) altitude and temperature limitations;
 - (iii) (A) maximum airport pressure altitude, runway slope,
 - (B) maximum take-off mass,
 - (C) zero fuel mass,
 - (D) certified range of centre of gravity;
 - (2) engine limitations:
 - (i) operating data of the engines:
 - (A) time limits and maximum temperatures,
 - (B) minimum rpm and temperatures,
 - (C) minimum and maximum oil temperature and pressure,
 - (D) maximum starter time and required cooling,
 - (E) time between two start attempts for engines;
 - (ii) certified oil grades;
 - (3) minimum equipment list.
- (c) Performance, flight planning and monitoring:
- (1) performance calculation about speeds, gradients, masses in all conditions for take-off, en-route, approach and landing according to the documentation available (for example, for take-off V_1 , V_{MBE} , V_r , V_{LOF} , V_2 , take-off distance, maximum take-off mass and the required stop distance) on the following factors:
 - (i) accelerate or stop distance;
 - (ii) take-off run and distance available (TORA, TODA);
 - (iii) ground temperature, pressure altitude, slope, wind;
 - (iv) maximum load and maximum mass (for example, ZFM);
 - (v) minimum climb gradient after engine failure;
 - (vi) influence of snow, slush, moisture and standing water on the runway;
 - (vii) possible engine failure during cruise flight;
 - (viii) effects of excessive approach speed and abnormal glideslope on the landing distance;
 - (2) flight planning for normal and abnormal conditions:
 - (i) optimum or maximum flight level;
 - (ii) minimum required flight altitude;
 - (iii) drift-down procedure after an engine failure during cruise flight;

- (iv) power setting of the engines during climb, cruise and holding under various circumstances, as well as the most economic cruising flight level;
 - (v) calculation of a short-range or a long-range flight plan;
 - (vi) optimum and maximum flight level and power setting of the engines after engine failure;
- (3) flight monitoring.
- (d) Load and balance, and servicing:
- (1) load and balance:
 - (i) load and trim sheet on the maximum masses for take-off and landing;
 - (ii) centre-of-gravity limits;
 - (iii) influence of fuel consumption on the centre of gravity;
 - (iv) lashing points, load clamping, maximum ground load;
 - (2) servicing on ground, servicing connections for:
 - (i) fuel;
 - (ii) oil;
 - (iii) water;
 - (iv) hydraulic.
- (e) Emergency procedures:
- (1) recognition of the situation as well as immediate memory actions in correct sequence and for those conditions recognised as emergencies by the manufacturer and competent authority for certification:
 - (i) engine failure during take-off before and after v_1 , as well as in flight;
 - (ii) malfunction of the propeller system;
 - (iii) engine overheat, engine fire on ground and in flight;
 - (iv) electrical smoke or fire;
 - (v) fuel pump failure;
 - (vi) electric power failure;
 - (vii) equipment cooling failure;
 - (viii) flight instrument failure;
 - (2) actions according to the approved abnormal and emergency checklist:
 - (i) engine restart in flight;
 - (ii) emergency descent.

FCL.740 Validity and renewal of class and type ratings

(a) Validity

- (1) The validity period of class and type ratings shall be 1 year, except for single-pilot single-engine class ratings for which the validity period shall be 2 years, unless otherwise determined in the OSD. If pilots choose to fulfil the revalidation requirements earlier than prescribed in FCL.740.A, FCL.740.H, FCL.740.PL, and FCL.740.As and FCL.740.G, the new validity period shall commence from the date of the proficiency check.

[...]

(b) Renewal

For the renewal of a class or type rating, applicants shall comply with all of the following:

- (1) in order to determine whether refresher training is necessary for the applicant to reach the level of proficiency to safely operate the aircraft, they shall undergo an assessment at one of the following:

[...]

- (ii) at a DTO or at an ATO, if the expired rating concerned a non-high-performance single-engine piston class rating, a TMG class rating, a gyroplane class or type rating or a single-engine type rating for helicopters referred to in point DTO.GEN.110(a)(2)(c) of Annex VIII;
- (iii) at a DTO, at an ATO or with an instructor, if the rating expired no more than 3 years ago and the rating concerned a non-high-performance single-engine piston class rating, a gyroplane class or type rating or a TMG class rating;

[...]

SECTION 6 — SPECIFIC REQUIREMENTS FOR THE GYROPLANE CATEGORY

FCL.740.G Revalidation of class and type ratings — gyroplanes

- (a) For the revalidation of a gyroplane class or type²⁶ rating, the applicant shall:

- (1) within the 3 months preceding the expiry date of the rating, pass a proficiency check in the relevant class in accordance with Appendix 9 to this Part with an examiner; or

²⁶ Depending on the certification process for the PAL-V, a class or type rating can be the outcome. For the meantime, a placeholder for a possible class/type rating related to gyroplanes is included.

- (2) within the 12 months preceding the expiry date of the rating, complete 12 hours of flight time in the relevant class, including:
 - (i) 6 hours as PIC;
 - (ii) 12 take-offs and 12 landings; and
 - (iii) refresher training of at least 1 hour of total flight time with a flight instructor.

SUBPART I — ADDITIONAL RATINGS

FCL.810 Night rating

[...]

- (c) Gyroplanes. If the privileges of a PPL(G) are to be exercised in VFR conditions at night, the applicant shall have:
 - (1) completed at least 50 hours of flight time as pilot in gyroplanes after the issue of the licence, including at least 20 hours of cross-country flight;
 - (2) completed a training course at a DTO or at an ATO; the course shall be completed within a period of 6 months and comprise:
 - (i) 5 hours of theoretical knowledge instruction;
 - (ii) 3 hours of gyroplane dual instrument instruction time; and
 - (iii) 5 hours of flight time at night, including at least 3 hours of dual instruction, including at least 1 hour of cross-country navigation and 5 solo night circuits; each circuit shall include a take-off and a landing;
 - (3) an applicant that holds or has held an instrument rating in an aeroplane, helicopter or TMG, shall be credited with 2 hours towards the requirement in (2)(ii) above.

AMC1 FCL.810(c) Night rating

[...]

GYROPLANE NIGHT RATING COURSE

- (a) The aim of the course is to qualify PPL(G) holders to exercise the privileges of the licence at night.
- (b) The DTO or the ATO should issue a certificate of satisfactory completion of the instruction towards licence endorsement.

(c) Theoretical knowledge

The theoretical knowledge syllabus should cover the revision or explanation of the following:

- (1) night VMC minima;
- (2) rules about airspace control at night and facilities available;
- (3) rules about aerodrome ground, runway, landing site and obstruction lighting;
- (4) aircraft navigation lights and collision avoidance rules;
- (5) physiological aspects of night vision and orientation;
- (6) dangers of disorientation at night;
- (7) dangers of weather deterioration at night;
- (8) instrument systems or functions and errors;
- (9) instrument lighting and emergency cockpit lighting systems;
- (10) map marking for use under cockpit lighting;
- (11) practical navigation principles;
- (12) electronic navigation aid principles;
- (13) planning and use of safety altitude;
- (14) danger from icing conditions, avoidance and escape manoeuvres.

(d) Flying training

- (1) The exercises of the night rating flight syllabus should be repeated as necessary until the student achieves a safe and competent standard:
- (2) The flying exercises should comprise the following:
 - (i) dual instruction by sole reference to instruments simulating inadvertent entry into IMC:
 - (A) general handling:
 - (a) interpretation and use of the EFIS;
 - (b) straight and level flight;
 - (c) rate-1 turns left and right;
 - (d) turns to specific headings;
 - (e) maintaining a heading for a significant period of time;
 - (f) standard climbs to specific altitudes;

- (g) standard descents to specific altitudes;
- (h) glide descents;
- (i) maintaining trim and balance;
- (B) unusual attitudes:
 - (a) nose high and banked;
 - (b) nose low and banked;
- (C) emergencies
 - (a) initial response when inadvertently entering IMC;
 - (b) simulated engine failure in flight;
- (ii) flying by night:
 - (A) standard night flying:
 - (a) circuit flying at night;
 - (b) navigating to a specified location;
 - (B) emergencies
 - (a) initial response when inadvertently entering IMC;
 - (b) simulated engine failure in flight (initial actions only);
 - (C) unusual attitudes at night:
 - (a) nose high and banked;
 - (b) nose low and banked;
 - (D) solo night circuits.

SUBPART J — INSTRUCTORS

GM1 FCL.900 Instructor certificates

- (a) Nine instructor categories are recognised:
- (1) FI certificate: aeroplane (FI(A)), helicopter (FI(H)), airship (FI(As)), sailplane (FI(S)), gyroplane (FI(G)) and balloon (FI(B));
- [...]

GM1 FCL.900(c)(1) Instructor certificates

INSTRUCTION OUTSIDE THE TERRITORY OF THE MEMBER STATES

The competent authority may issue an unrestricted flight instructor (FI) certificate (FI(A) for aeroplanes, or FI(H) for helicopters, or FI(G) for gyroplanes) to an applicant that has at least 100 hours of experience in flight instruction and 25 hours of experience in solo-flight supervision.

AMC5 FCL.935 Assessment of competence

REPORT FORMS FOR THE INSTRUCTOR CERTIFICATES

- (a) Assessment of competence form for the FI, IRI and CRI certificates:

APPLICATION AND REPORT FORM FOR THE INSTRUCTOR ASSESSMENT OF COMPETENCE			
1 Applicant's personal particulars:			
Applicant's last name(s):		First name(s):	
Date of birth:		Tel. (home):	Tel. (work):
Address:		Country:	
2 Licence details			
Licence type:		Number:	
Class ratings included in the licence:		Exp. Date:	
Type ratings included in the licence:	1.		
	2.		
	3.		
	4.		
	5.		
Other ratings included in the licence:	1.		
	2.		
	3.		
	4.		
	5.		

3 Pre-course flying experience				
Total flying hours	PIC, SEP or TMG hours	SEP preceding 6 months	Instrument flight instruction	Cross-country hours
4 Pre-entry flight test				
<i>I recommend for the FI course.</i>				
Name of ATO:			Date of flight test:	
Name(s) of FI conducting the test (capital letters):				
Licence number:				
Signature:				

5 Declaration by the applicant				
<i>I have received a course of training in accordance with the syllabus for the: (tick as applicable)</i>				
FI certificate FI(A)/(H)/(As)/(G)		IRI certificate IRI(A)/(H)/(As)		CRI certificate CRI(A)
Applicant's name(s): (capital letters)			Signature:	
6 Declaration by the CFI				
<i>I certify that has satisfactorily completed an approved course of training for the</i>				
FI certificate FI(A)/(H)/(As)/(G)		IRI certificate IRI(A)/(H)/(As)		CRI certificate CRI(A)
<i>in accordance with the relevant syllabus.</i>				
Flying hours during the course:				
Aircraft or FSTDs used:				
Name(s) of CFI:				
Signature:				
Name of ATO:				
7 Flight instructor examiner's certificate				
<i>I have tested the applicant according to Part-FCL</i>				
A. FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT (in case of partial pass):				
Theoretical oral examination:			Skill test:	
Passed	Failed	Passed	Failed	
<i>I recommend further flight or ground training with an instructor before re-test</i>				
<i>I do not consider further flight or theoretical instruction necessary before re-test (tick as applicable)</i>				
B. FLIGHT INSTRUCTOR EXAMINER'S ASSESSMENT:				

	FI certificate
	IRI certificate
	CRI certificate (tick as applicable)
Name(s) of FIE (capital letters):	
Signature:	
Licence number:	Date:

SECTION 2 — SPECIFIC REQUIREMENTS FOR THE FLIGHT INSTRUCTOR — FI

FCL.910.FI FI — Restricted privileges

[...]

- (c) The limitations in (a) and (b) shall be removed from the FI certificate when the FI has completed at least:
- (1) for the FI(A), 100 hours of flight instruction in aeroplanes or TMGs and, in addition has supervised at least 25 student solo flights;
 - (2) for the FI(H) 100 hours of flight instruction in helicopters and, in addition has supervised at least 25 student solo flight air exercises;
 - (3) for the FI(As), FI(S) and FI(B), 15 hours or 50 take-offs of flight instruction covering the full training syllabus for the issue of a PPL(As), SPL or BPL in the appropriate aircraft category.
 - (4) for the FI(G):
 - (i) 100 hours of flight instruction in gyroplanes and, in addition has supervised at least 25 solo flights;
 - (ii) in the case of an FI(G) who also holds an FI(A) or FI(H) certificate and complies with points (1) or (2), as applicable, 25 hours of flight instruction in gyroplanes and, in addition, has supervised at least 10 student solo flights

FCL.915.FI FI — Prerequisites

[...]

- (e) for an FI(G), have completed at least 150 hours of flight time on gyroplanes, of which at least 100 hours as PIC.

FCL.930.FI FI — Training course

[...]

- (b) The FI training course shall include:
- (1) 25 hours of teaching and learning;

- (2) at least 100 hours of theoretical knowledge instruction, including progress tests;
- (3) (i) in the case of an FI(A), ~~and~~ (H) and (G), at least 30 hours of flight instruction, of which 25 hours shall be dual flight instruction, of which 5 hours may be conducted in an FFS, an FNPT I or II, or an FTD 2/3;
- (ii) in the case of an FI(As), at least 20 hours of flight instruction, of which 15 hours shall be dual flight instruction;
- (4) ~~When~~ applying for an FI certificate in another category of aircraft, pilots that holding or have held an FI(A), (H), (G) or (As) shall be credited with 55 hours towards the requirement in point (b)(2);
- (5) applicants for an FI(G) certificate that hold or have held an FI(A), (H) or (As) certificate shall be credited with 15 hours towards the requirement in point (b)(3)(i), of which a maximum of 10 hours shall be a credit towards the dual instruction time.

[...]

AMC1 FCL.930.FI FI — Training course

FI(A), FI(H), FI(G) AND FI(AsS) TRAINING COURSE

[...]

D. Gyroplanes

Part 2

AIR EXERCISES

- (a) The air exercises are similar to those used for the PPL(G) training, but with additional items designed to cover the needs of an FI.
- (b) The numbering of the exercises should be used primarily as an exercise reference list and as a broad instructional sequencing guide: therefore, the demonstrations and practices need not necessarily be given in the listed order listed. The actual order and content will depend upon the following interrelated factors:
- (1) the applicant's progress and ability;
 - (2) the weather conditions affecting the flight;
 - (3) the flight time available;
 - (4) instructional technique considerations;
 - (5) the local operating environment;
 - (6) the applicability of the exercises to the gyroplane type used.
- (c) It follows that student instructors will eventually be faced with similar interrelated factors. They should be shown and taught how to construct flight lesson plans, taking these factors into account, so as to make best use of each flight lesson, combining parts of different exercises as necessary.

GENERAL

- (d) The briefing normally includes a statement of the objectives and, only if relevant, a brief reference to the principles of flight. An explanation is to be given of what air

exercises exactly are to be taught by the instructor and practised by the student during the flight. The explanation should include how the flight will be conducted, who is to fly the gyroplane, and what airmanship, weather and flight safety aspects currently apply. The nature of the lesson will govern the order in which the constituent parts are to be taught.

(e) The four basic components of the briefing should be:

- (1) the aim;
- (2) principles of flight (briefest reference only);
- (3) the air exercise(s) (what, and how and by whom);
- (4) airmanship (weather, flight safety etc.).

PLANNING OF FLIGHT LESSONS

(f) The preparation of the lesson plans is an essential prerequisite of good instruction and the student instructor is to be given supervised practice in the planning and practical application of the flight lesson plans.

GENERAL CONSIDERATIONS

(g) The student instructor should complete flight training to practise the principles of basic instruction at the PPL(G) level.

(h) During this training, except when acting as a student pilot for mutual flights, the student instructor occupies the seat that is normally occupied by the FI(G).

(i) It is to be noted that airmanship and lookout is a vital ingredient of all flight operations. Therefore, in the following air exercises, the relevant aspects of airmanship are to be stressed at all times.

(j) If the privileges of the FI(G) certificate are to include instruction for night flying, Exercise 39 of the flight instruction syllabus should be undertaken at night in addition to that undertaken by day either as part of the course or subsequent to the issue of the certificate.

(k) The student instructor should learn how to identify common errors and how to correct them properly, which should be emphasised at all times.

(l) The student instructor should be trained to keep in mind that, wherever possible, flight simulation should be used to demonstrate to student pilots the effects of flight into DVE and to enhance their understanding and need for avoidance of this potentially fatal flight regime.

(m) The student instructor should attain flying skills that allows them to recover from student errors and land safely in the event of an actual engine failure during training.

These include:

- (1) precision forced landings from above the landing point when flying into wind (360-degree turn) and downwind (180-degree turn);

- (2) precision powered approaches at a slower-than-normal approach speed to land with very little ground roll in a small area;
- (3) take-off and air-taxi at the slowest speed possible (accurate control at the slow end of the flight envelope of the gyroplane);
- (4) flying and landing dead stick;
- (5) taking off and flying in strong winds and crosswinds close to the approved limits of the particular gyroplane model;
- (6) advanced rotor handling on the ground to include building up rotor rpm from a slow rotor speed using airflow and slowing down a rotor in relatively strong winds without the aid of a rotor brake;
- (7) safely entering each of the unusual attitude manoeuvres and knowing the safe flight limits of each attitude;
- (8) rounding out significantly high with low airspeed and being able to safely recover to land;
- (9) taking off and climbing with insufficient airspeed approaching the edges of the 'do not fly' region of the height/velocity curve and recovering to land;
- (10) taking off with limited power to demonstrate to a student what limited power take-offs feel like.

CONTENTS OF THE FLIGHT INSTRUCTION SYLLABUS

IMPORTANT: Where the student instructor holds an instructor certificate for fixed-wing aircraft or helicopters, there must be sufficient time allocated and significant emphasis given to highlight the differences between a gyroplane and the other type(s) of aircraft. This applies to the flight envelope, the coordination of controls and instructional techniques since often the differences can appear similar but are actually not. Flight instructor knowledge and skills related to aeroplanes or helicopters cannot automatically be transferred to flying/instructing in a gyroplane.

LONG BRIEFINGS AND AIR EXERCISES

EXERCISE 1: INTRODUCTION TO THE GYROPLANE

(a) Long-briefing objectives:

- (1) safety considerations around an airfield;
- (2) introduction to the gyroplane;
- (3) key differences between a gyroplane and a helicopter;
- (4) key differences between a gyroplane and a fixed-wing aircraft;
- (5) key differences between a gyroplane and a delta-wing aircraft;
- (6) initial preparation for the introductory flight;

- (i) fitness of pilot/passenger to fly;
- (ii) importance of lookout;
- (iii) in-cockpit communication (standby, traffic, repeat instructions);
- (iv) explanation of the cockpit layout;
- (v) internal and external checks before flight;
- (vi) suitability of weather for introductory flight;
- (vii) the flight content (handover of controls);
- (7) passenger safety brief and emergency routines;
- (8) differences when occupying the instructor seat

Note: Items (a)(3) to (5) are particularly important as a significant number of student pilots will have experience with fixed-wing aircraft and/or helicopters. Due consideration must be given to the differences.

(b) Air exercise:

- (1) Appropriate demonstrations and hands-on control related to the previous experience and expectations of the student pilot.

EXERCISE 2: BASIC SKILLS 1 — LOOKOUT, SPEED, DIRECTION

(a) Long-briefing objectives:

- (1) the six basic skills of flying: lookout, speed, direction, trim, height, balance;
- (2) the primary controls, instruments and the gyroplane cockpit;
- (3) straight and level cruise flight: attitude; visual references;
- (4) the lookout technique;
- (5) the stick and the axes of rotation: pitch, roll;
- (6) maintain correct and constant airspeed, use of the airspeed indicator;
- (7) changing direction, limited angle of bank;
- (8) recap in-cockpit communication: who has control; standby; repeat instructions.

(b) Air exercise:

- (1) lookout technique and what to say when traffic is seen;
- (2) straight and level flight, determining the attitude of the gyroplane;
- (3) handover of control — procedure;
- (4) sensitivity of the stick and boundaries for pitch-up /down roll left/right in early exercises;
- (5) technique for glancing at the instruments during lookout; interpret ASI;

- (6) the procedure for holding a constant chosen speed (limited speed ranges suitable for early training exercises);
- (7) gentle turns to follow features (no requirement for additional power);
- (8) the importance of being relaxed when flying and building situational awareness.

EXERCISE 3: BASIC SKILLS 2 — TRIM, HEIGHT, BALANCE

(a) Long-briefing objectives:

- (1) pitch and roll trim: principles and how it works (as applicable to a given gyroplane model);
- (2) use of the throttle for adjusting height: terminology, idle/max/cruise power;
- (3) use of the pedals for adjusting balance; explanation of flying in balance; yaw;
- (4) the danger of over-controlling: avoiding pilot-induced oscillation (PIO);
- (5) reinforcing where a student should be looking when flying.

(b) Air exercise:

- (1) trimming the gyroplane;
- (2) interpret altimeter and vertical speed indicator;
- (3) gentle adjustments of height using the throttle;
- (4) interpret the balance indicator;
- (5) use of the pedals to keep the gyroplane in balance.

EXERCISE 4: START-UP, TAXI, SHUTDOWN

(a) Long-briefing objectives:

- (1) introduction to risk mitigation using threat and error management;
- (2) pre-flight planning:
 - (i) pilot and passenger preparation;
 - (A) IMSAFE (illness, medication, stress, alcohol, fatigue, eaten);
 - (ii) aircraft preparation;
 - (A) check of maintenance status,
 - (B) daily inspection in accordance with the AFM,
 - (C) checks before flight in accordance with the AFM;
 - (iii) weather preparation;
 - (A) interpreting weather forecasts,
 - (B) interpreting weather by looking from the airfield,

<ul style="list-style-type: none">(C) personal weather limits;(iv) flight content preparation;<ul style="list-style-type: none">(A) NOTAMs,(B) fuel planning,(C) mass and balance;(iv) external factors and pressures that add risks to the flight;(3) terminology relating to an airfield;(4) ground handling of a gyroplane;(5) pre-start checks and starting the engine;(6) taxi procedure and additional checks on initial taxi;(7) warming the engine and engine checks before the flight;(8) pre-runway procedure;(9) post-runway procedure;(10) engine shutdown procedure;(11) after flight action;(12) end-of-day actions. <p>(b) Air exercise:</p> <ul style="list-style-type: none">(1) emergency actions should someone approach the gyroplane with the engine running;(2) pre-start and start-up procedure;(3) initial taxi and general taxi procedure (rotor stationary);(4) use of RT when the gyroplane is on the ground;(5) engine power checks;(6) pre-runway actions;(7) actions after the runway has been vacated;(8) engine shutdown procedure. <p>Note: The student instructor should be taught to introduce the concept of this exercise in parallel with Exercises 5 to 25. The topics should be introduced incrementally in line with the student pilot's workload.</p> <p>EXERCISE 5: UNDERSTANDING POWER CHANGES</p> <p>(a) Long-briefing objectives:</p> <ul style="list-style-type: none">(1) energy management in a gyroplane;<ul style="list-style-type: none">(i) fuel (engine rpm);(ii) airspeed (kinetic);

(iii) height (potential);

(iv) rotor energy (stored);

(2) the effect of mass, weather, rotor/propeller cleanliness on the gyroplane's performance;

(3) introduction to the power curve, and engine rpm requirements for different cruise speeds;

(4) the effect of propeller slipstream on yaw/balance;

(5) the effect of engine roll on torque;

(6) the effect of power change on pitch and the relation to the centre of gravity;

(7) the need to coordinate stick and pedal with throttle changes to maintain speed, a disc level attitude and balance.

(b) Air exercise:

(1) establish the datum cruise power for a given speed on a given day;

(2) build muscle memory:

(i) setting key throttle positions by sound and feel;

(ii) maintain balance with power changes;

(iii) maintain disc level attitude with power changes;

(iv) trim adjustments with power changes for constant speed;

(3) transition to the climb at a constant speed, in balance and trim, climb attitude;

(4) transition to the descent at a constant speed, in balance and trim, descent attitude;

(5) level out from a climb/descent at a constant speed, in balance and trim.

Note: During these exercises, student pilots should move from reacting to instruments (when controls are moved individually) to pre-empting the consequential actions in roll, pitch and yaw as power is (significantly) adjusted.

EXERCISE 6: COORDINATED MEDIUM-LEVEL TURNS

(a) Long-briefing objectives:

(1) the forces in a turn;

(2) the procedure for a level turn, maintaining speed and balance;

(3) the limitations of a compass during a turn.

(b) Air exercise:

(1) reinforcement of lookout in a turn;

(2) medium-level turns left and right at a constant speed, maintaining balance;

(3) turning to a given compass heading.

EXERCISE 7: CORRECTING FOR WIND**(a) Long-briefing objectives:**

- (1) wind terminology;
- (2) airspeed and ground speed;
- (3) drift and wind correction angles;
- (4) the difference between track and heading;
- (5) the technique for flying a straight track in a crosswind;
- (6) determining the direction of the wind during flight.

(b) Air exercise:

- (1) determine the wind signals from visual clues;
- (2) determine an appropriate wind correction angle to fly in a straight track, disc level, and in balance.

Note: This exercise will almost definitely be briefed/flown out of sequence as it requires appropriate wind conditions.

EXERCISE 8: ACCURATE HEIGHT AND SPEED**(a) Long-briefing objectives:**

- (1) the relationship between energy, height and speed;
- (2) the technique for fine-tuning flying at an accurate height;
- (3) consolidating the coordinated control movements for adjusting speed, height and direction.

(b) Air exercise:

- (1) maintaining height in particularly thermic conditions;
- (2) making fine adjustments to the controls to achieve accurate flying.

Note: This exercise does not introduce new exercises but reinforces to the student the need for accurate flying (lookout/speed/direction/trim/height/balance) as it will be required in the circuit pattern, particularly coordinating controls and taking into account lift and sink conditions.

EXERCISE 9: CLIMBING AND DESCENDING PERFORMANCE**(a) Long-briefing objectives:**

- (1) the effect of power on the rate of climb and descent;
- (2) the effect of airspeed on the rate of climb and descent;
- (3) the procedure for climbing and levelling out;
- (4) the procedure for descending and levelling out;

(5) the technique for accurately levelling out at a given altitude.

(b) Air exercise:

(1) full-power climbs at a constant speed;

(2) level out from a full-power climb at a given altitude, with accurate level, speed and balance;

(3) idle-power descents at a constant speed;

(4) level out from an idle-power descent at a given altitude, with accurate level, speed and balance;

(5) smooth transition from a high-power climb to a low-power descent maintaining speed and balance throughout;

(6) smooth transition from a low-power descent to a high-power climb maintaining speed and balance throughout.

EXERCISE 10: CLIMBING AND DESCENDING TURNS

(a) Long-briefing objectives:

(1) reinforce the differences in pedal coordination for balance when turning left and right with high power (climbing turns) and low power (idle-power descents);

(2) the effect of the angle of bank on the rate of climb and descent.

(b) Air exercise:

(1) level turns, initiate a climbing turn, level out while maintaining the turn;

(2) level turns, initiate a descending turn, level out while maintaining the turn;

(3) straight high-power climb, introduce a turn, continue on initial heading;

(4) straight idle descent, introduce a turn, continue on initial heading.

Note: Turns should be practised both to the left and to the right, should be 360 degrees, with constant speed and balance maintained throughout.

EXERCISE 11: SIGNIFICANT SPEED CHANGES, FAST FLIGHT

(a) Long-briefing objectives:

(1) the procedure for making speed changes with significant acceleration and deceleration;

(i) acceleration attitude;

(ii) deceleration attitude;

(2) fast flight;

(i) consequences of exceeding VNE;

(ii) differences in control responsiveness;

(iii) differences in vibration at speed.

(b) Air exercise:

- (1) significant acceleration from cruise to fast flight, constant height and balance;
- (2) significant deceleration from fast flight to cruise, constant height and balance;
- (3) gentle turns at fast flight, constant height and speed.

Note: Fast flight is considered at the speed where a constant altitude can be maintained with the power close to maximum continuous. Care must be taken to never allow the student to exceed VNE.

EXERCISE 12: FLYING THE CIRCUIT PATTERN

(a) Long-briefing objectives:

- (1) the terminology associated with the circuit pattern;
- (2) considerations when flying the circuit pattern;
 - (i) high density of other traffic;
 - (ii) maintaining suitable separation from other aircraft;
- (3) pre-landing checks;
 - (i) pilot/passenger security;
 - (ii) aircraft configured as per flight manual;
 - (iii) wind check (correct runway, type of landing);
 - (iv) flight situational awareness;
- (4) final approach and positioning for landing;
- (5) the go-around procedure;
- (6) use of RT in the circuit pattern.

(b) Air exercise:

- (1) flying the circuit pattern, maintaining good situational awareness;
- (2) go-around at 300 ft above the runway;
- (3) pre-landing checks;
- (4) RT, as appropriate for the airfield.

Note: This exercise is likely to be flown in parallel with the previous lessons as training flights return to the airfield after the general handling exercises.

EXERCISE 13: ACTIVE ROTOR MANAGEMENT

(a) Long-briefing objectives:

- (1) active rotor handling, taxi with rotor turning;
- (2) starting the rotor prior to take-off — pre-rotation;

- (3) setting off and building rotor speed using airflow;
 - (i) the need for an initial power setting that is unlikely to be full power;
 - (ii) stick forces during take-off;
 - (iii) importance of stick back before applying significant power;
- (4) the wheel balance attitude;
- (5) stepping the rotor after landing;
- (6) what to do when the rotor rpm falls below the critical threshold.

(b) Air exercise:

- (1) recap the lining-up procedure;
- (2) pre-rotation and setting-off procedure;
- (3) maintaining directional control during rotor speed acceleration;
- (4) understanding how the stick forces change during the take-off;
- (5) understanding the reduction in rotor acceleration with forward stick position;
- (6) the importance of monitoring rotor rpm during this stage of the take-off;
- (7) establishing the wheel balance attitude;
- (8) stopping the gyroplane;
 - (i) using the rotor disc to slow the gyroplane;
 - (ii) stick position after stopping;
 - (iii) when it is appropriate to use the wheel brake;
- (9) taxiing with rotor turning, stick positioned in relation to the wind.

EXERCISE 14: TAKE-OFF — WIND ON THE RUNWAY HEADING

(a) Long-briefing objectives:

- (1) critical checks immediately prior to commencing the take-off run;
 - (i) passenger/pilot ready for take-off;
 - (ii) aircraft engine final check;
 - (iii) wind direction, is it still as required;
 - (iv) runway clear, crosswind clear;
- (2) the gyroplane 'lift/unstick' from the runway;
- (3) the height/velocity curve and the need to remain close to the ground during airspeed build-up;
- (4) the stick forces and the need to trim during the airspeed build-up;
- (5) the low-hops flight profile, flying at a height of approximately 1 metre;
- (6) the high-hops flight profile, flying at a height of approximately 50 metres;

(7) landing ahead and rejecting take-offs.

(b) Air exercise:

(1) student lift and airspeed acceleration;

(i) with the instructor transitioning to a landing on the remaining runway;

(ii) with the student transitioning to a landing on the remaining runway;

(iii) low hop on cruise power, student landing on remaining runway;

(iv) high hop, student landing on remaining runway.

(2) take-off and climb out;

(3) checks when climbing through 300ft;

(i) passenger check (especially tandem gyroplane);

(ii) aircraft performance check;

(iii) weather check (clear of obstructions);

(iv) flight path and situational awareness.

Note: It is vital that the student learn to remain in control throughout the take-off and is comfortable to land ahead before continuing with the climb-out part of the exercise. Rejecting take-offs should be trained until the student is capable of rejecting a take-off safely, otherwise pilots will favour climbing out in situations that should be aborted for safety reasons.

EXERCISE 15: TAKE OFF — DIFFERENT CONDITIONS

(a) Long-briefing objectives:

(1) crosswind considerations;

(2) rough ground considerations;

(3) take-off performance:

(i) factors affecting take-off performance;

(ii) acceptable method or maximising take-off performance;

(A) higher pre-rotation;

(B) quicker application of high power;

(iii) noting a ground reference feature as take-off abortion point;

(iv) the danger of climbing out with insufficient airspeed to clear an obstacle. 'fools confidence', a significant contributing factor to gyroplane accidents;

(v) noting there is no additional 'short field' take-off technique in a gyroplane.

(4) strong wind considerations;

(5) slope considerations;

(6) immediate-departure take-offs, pre-rotating prior to lining up.

(b) Air exercise:

(1) take-off with crosswind from the left;

(2) take-off with crosswind from the right;

(3) take-off in a strong wind;

(4) rough ground take-off technique;

(5) immediate-departure take-off technique;

(6) emulating take-off with poor performance characteristics (see Note 1).

Note 1: This exercise is done to allow the student feel what the gyroplane will do when there is insufficient power to climb out safely. The purpose is to teach the student recognise the problem and make the decision to land ahead.

Note 2: This exercise will be flown on different days as it requires different wind conditions that are extremely unlikely to happen on a single day and in sequence. If, in the absence of particular wind conditions, take-offs in the wind conditions cannot be trained, the relevant parts of this exercise should be subject to an extensive briefing between the student and instructor during this exercise as well as during Exercise 17.

EXERCISE 16: LANDING — WIND ON THE RUNWAY HEADING

(a) Long-briefing objectives:

(1) the basics of the approach to landing;

(2) checks when descending through 300 ft;

(i) passenger standby;

(ii) aircraft settled — constant power and airspeed;

(iii) wind — prepare to anticipate drift;

(iv) runway clear or initiate go-around procedure;

(3) use of the controls during landing;

(i) throttle — rate of descent and angle of descent;

(ii) fore/aft stick — airspeed;

(iii) left/right stick — position over the ground;

(iv) pedals — aligning the wheels with the runway direction;

(4) extending the touchdown point to be close to a runway exit point;

(5) recovering from an inadvertent gaining of height during the final stages of landing caused by gusting winds or incorrect movement of the controls;

(6) consideration of the approach profile in relation to other traffic that may not be familiar with the descent profiles available in a gyroplane flight envelope.

(b) Air exercise:

(1) approach to a nominated reference point;

- (i) go-around at 300 ft, with a constant airspeed;
- (ii) descent through 300 ft and make appropriate checks;
 - (A) go-around with a constant airspeed at a height as low as the student is comfortable;
 - (B) continue practising until the student pilot is comfortable with flying a few feet above the runway.
- (2) when the student is comfortable at flying a few feet above the runway, land ahead;
- (3) flying the approach with different power settings, including idle power.

Note: The instructor should avoid asking the student to go around at specific heights below 300 ft so that the student concentrate on judging the height above the ground visually and not by reference to the altimeter.

EXERCISE 17: LANDING — DIFFERENT CONDITIONS

- (a) Long-briefing objectives:
 - (1) considerations when landing in crosswinds;
 - (2) considerations when landing in light winds or no wind;
 - (3) the significant hazards of attempting to land downwind due to the rotor disc;
 - (4) considerations when landing in a strong wind;
 - (5) considerations when landing in soft or uneven ground.
- (b) Air exercise:
 - (1) landing in a crosswind from the right;
 - (2) landing in a crosswind from the left;
 - (3) landing in no wind or in light wind conditions;
 - (4) landing in a strong wind, close to the runway heading;
 - (5) landing in strong crosswind, opting to land cross-runway into the wind;
 - (6) landing on soft or uneven ground.

EXERCISE 18: PRECISION LANDING

- (a) Long-briefing objectives:
 - (1) the technique for a precision landing (power available);
 - (2) the importance of maintaining airspeed until immediately prior to touchdown.
- (b) Air exercise:
 - (1) high-power approach, shallow approach angle;
 - (2) low-power approach, steep approach angle.

EXERCISE 19: PRECISION LANDING — IDLE POWER**(a) Long-briefing objectives:**

- (1) the technique for a precision landing (idle power or no power available) using a close-in base leg and altering the radius of the final turn to get to the correct landing area;
- (2) the importance of maintaining sufficient airspeed when close to the ground.

(b) Air exercise:

- (1) glide approaches to touch down at a given point on the runway;
 - (i) straight-in approach;
 - (ii) using a single turn from the base leg;
 - (iii) using descending turns in a figure of 8 pattern perpendicular to the runway heading; balance must be maintained throughout.

EXERCISE 20: DEPARTING AND ARRIVING AT AIRFIELDS**(a) Long-briefing objectives:**

- (1) procedure when departing from the airfield;
- (2) procedure when arriving at the airfield;
- (3) airfield joining techniques:
 - (i) overhead join;
 - (ii) joining from the dead side of the airfield;
 - (iii) joining from the live side of the airfield.

(b) Air exercise:

- (1) departing from the airfield;
- (2) arriving from the airfield;
- (3) joining procedures appropriate to the airfield.

Note: This exercise may be included in parallel with any other exercises that are flown outside the airfield ATZ as student workload permits.

EXERCISE 21: SLOW FLIGHT AT CONSTANT ALTITUDE (HELICOPTER MODE)**(a) Long-briefing objectives:**

- (1) the backside of the power curve and behind the power curve;
- (2) HASEL checks (Height, Area, Secure, Engine, Lookout) before unusual manoeuvres;
- (3) the technique for slow flight;

(4) flying stationary, at altitude, in relation to a ground reference (into wind).

(b) Air exercise:

(1) HASEL checks;

(2) slow flight into the wind;

(3) slow flight downwind;

(4) flying stationary in reference to a ground feature.

Note: The term 'helicopter mode' is a turn of phrase to indicate that a gyroplane has slow flight characteristics that are consistent with light helicopters and outside the flight envelope of fixed-wing aircraft. These exercises are all flown at a safe altitude.

EXERCISE 22: FLIGHT AT THE MINIMUM AIRSPEED ON IDLE POWER (PARACHUTE MODE)

(a) Long-briefing objectives:

(1) the technique for establishing slow flight on idle power;

(2) the importance of maintaining airflow over the rudder to avoid loss of control;

(3) the technique for regaining airspeed with minimum height loss when power is available;

(4) the technique for regaining airspeed with minimum height loss when power is not available;

(5) the tendency of a gyroplane to rotate around its vertical axis if rudder authority is lost due to the dissymmetry of propeller thrust when there is a high rate of descent and the power is idle;

(6) the recovery technique if the gyroplane starts to enter a rotation around its vertical axis.

(b) Air exercise:

(1) initiate a descent on idle power and an airspeed close to the minimum airspeed possible for the model of gyroplane used while maintaining rudder authority;

(2) recover from the slow-air-speed descent, with minimum height loss:

(i) with power available;

(ii) when no power is available;

(iii) instructor demo: inadvertent entry into loss of rudder authority — student recovery.

Note: The term 'parachute mode' is a turn of phrase to indicate that a gyroplane has the capability to descend in a controlled manner at very low airspeed when power is not available. This is not dissimilar to a parachute. This can be a key concept used in emergency handling. These exercises are all flown at safe altitude.

EXERCISE 23: GROUND REFERENCE TURNS

(a) Long-briefing objectives:



- (1) reminder of throttle and pedal coordination during turns to maintain height and balance;
- (2) high bank angle turns;
- (3) the technique for turning around a ground reference feature at a constant radius to counter the effect of wind.

(b) Air exercise:

- (1) high bank turns to the left and to the right;
- (2) turning around a ground reference feature with significant wind:
 - (i) 360-degree turns around the feature;
 - (ii) changing direction of the turn;
 - (iii) flying an S shape with constant radius along a line feature (180-degree turns).

EXERCISE 24: UNUSUAL ATTITUDES

(a) Long-briefing objectives:

- (1) why unusual attitudes occur: distraction and fixation;
- (2) recognising unusual attitudes;
- (3) the unusual attitude recovery technique;
- (4) the unusual attitude recovery exercises.

(b) Air exercise:

- (1) reminder of the HASEL checks;
- (2) distracted, head inside the cockpit:
 - (i) sudden pull-up in pitch, recover;
 - (ii) powered descent towards VNE, recover;
- (3) fixated, head outside the cockpit, looking at the ground:
 - (i) slow-air-speed spiral descent, turning with the pedals, recover;
 - (ii) fast-air-speed spiral descent, close to VNE, recover.

Note: Unusual attitudes are created by the instructor and recovered by the student.

EXERCISE 25: LOW FLYING

(a) Long-briefing objectives:

- (1) the legal requirements relating to low flying;
- (2) the hazards related to low flying;
- (3) the pilot's limitations related to recovering from an emergency associated with low flying.

(b) Air exercise:

- (1) flying low, with a suitable safety margin, to demonstrate how significantly reduced the margin or error is, with low height;
- (2) analysing:
 - (i) the difficulty in seeing wires and masts;
 - (ii) loss-of-line-of-sight radio communications;
 - (iii) lack of time in the event of an engine failure;
 - (iv) noise and nuisance implications.

EXERCISE 26: CONSOLIDATION, EN-ROUTE AIRMANSHIP**(a) Long-briefing objectives:**

- (1) consolidation of the pre-flight planning process;
- (2) en-route checks:
 - (i) pilot and passenger (stress, hunger, illness, tiredness);
 - (ii) aircraft (vibrations, engine, fuel);
 - (iii) weather (as expected/forecast, escape route);
 - (iv) flight situational awareness (location, airspace, radio).

(b) Air exercise:

- (1) en-route checks.

Note: The flying element of this exercise is incorporated into other general handling flights as student workload permits. The pre-flight planning aspects of this exercise are likely to be included in parallel with all previous flights. This exercise exists to state that the complete pre-flight planning process should be competently done by the student by this point in the syllabus.

EXERCISE 27: IN-FLIGHT EMERGENCIES**(a) Long-briefing objectives:**

- (1) preparing for emergencies:
 - (i) possible emergency scenarios;
 - (ii) categories of emergencies;
 - (iii) how threat and error management reduces the likelihood of incidents;
 - (iv) standard emergency procedures;
 - (v) ensuring that a catastrophic failure is mitigated;
 - (vi) emergency RT calls.

(b) Air exercise:

- (1) simulated fire in the air;

- (2) simulated fire on the ground;
- (3) simulated bird strike or sudden noise;
- (4) simulated violent shaking of the gyroplane;
- (5) simulated limited engine power (slightly below the power required to maintain a constant altitude);
- (6) simulated trim failure (where applicable):
 - (i) excessive rear trim;
 - (ii) excessive forward trim;
 - (iii) excessive roll trim;
- (7) simulated rudder control failure;
- (8) simulated stick failure;
- (9) simulated throttle stuck on high power.

EXERCISE 28: PRECAUTIONARY LANDING

(a) Long-briefing objectives:

- (1) awareness that poor in-flight planning during a precautionary landing increases the risk of accidents;
- (2) reasons for making a precautionary field landing;
- (3) criteria for the selection of an ideal field for landing;
- (4) precautionary landing technique.

(b) Air exercise:

- (1) surveying of field suitability for precautionary landing;
- (2) simulating the reasons for a precautionary landing;
- (3) practising the approach for precautionary landings.

EXERCISE 29: FORCED LANDING

(a) Long-briefing objectives:

- (1) the phraseology that should be used when simulating forced landings;
- (2) recap of the necessary skills already learned to make forced landings;
 - (i) Exercise 7: always being aware of the wind direction;
 - (ii) Exercise 10: descending turns on idle power;
 - (iii) Exercise 19: glide approaches;
 - (iv) Exercise 22: slow flight on idle power (parachute mode);
 - (v) Exercise 25: the hazards of low-level flying;

- (vi) Exercise 28: field selection for landing;
 - (3) options for positioning for the field, above 300 ft AGL;
 - (4) options for positioning for the field, below 300 ft AGL;
 - (5) flying defensively, thinking ahead for landing areas, in relation to the wind direction.
- (b) Air exercise:
- (1) preselected fields and starting position;
 - (i) use slower than normal cruise speed to position at a key point on the field;
 - (ii) fly a path at the correct airspeed for landing to the field;
 - (iii) go around at an appropriate height;
 - (2) simulated restart in flight;
 - (3) simulated emergency RT calls;
 - (4) simulated forced landings, without prior notice;
 - (5) fly the routes defensively, verbalising options in the event of a forced landing.

EXERCISE 30: FORCED LANDING AROUND THE AIRFIELD

- (a) Long-briefing objectives:
- (1) engine failure on take-off:
 - (i) when still on the ground;
 - (ii) during the airspeed build-up phase;
 - (iii) during the climb-out;
 - (2) preparing for engine failures around the circuit pattern:
 - (i) crosswind;
 - (ii) downwind;
 - (iii) base leg;
 - (iv) final approach.
- (b) Air exercise:
- (1) recap of the aborted take-off technique;
 - (2) simulated engine failure:
 - (i) as the gyroplane is lifting;
 - (ii) during the airspeed build-up phase;
 - (iii) during climb-out;
 - (iv) crosswind;

(v) downwind;

(vi) base leg;

(vii) final approach (when it is not possible to reach the runway).

Note: When simulating engine failure in the circuit pattern, the emphasis should be on the proper initial reaction by the student pilot. It is not so important to continue at low level, as this is likely to be restricted due to noise abatement procedures.

EXERCISE 31: PRE-SOLO CHECK FLIGHT

(a) Long-briefing objectives:

(1) prerequisite for the first solo flight.

(b) Air exercise:

(1) simulated first solo flight (no hands-on control from the instructor unless required to save the aircraft from incident).

EXERCISE 32: FIRST SOLO

(a) Long-briefing objectives:

(1) differences in power requirements when flying solo;

(2) differences in handling characteristics when flying solo.

(b) Air exercise:

(1) first solo flight.

EXERCISE 33: SOLO CONSOLIDATION

(a) Long-briefing objectives:

(1) readiness for solo flight:

(i) personal weather criteria;

(ii) decision-making by the student pilot, to be confirmed by the instructor;

(iii) only flying in accordance with the brief unless safety is compromised.

(b) Air exercise:

(1) solo flight in the local area, exercises determined by the instructor.

EXERCISE 34: EN-ROUTE NAVIGATION

(a) Long-briefing objectives:

(1) pre-flight planning for cross-country flights;

(2) considerations when flying a route;

(3) weather deterioration;

(4) procedure when unsure of position;

(5) dead reckoning;

(6) flying with GPS;

(7) en-route RT.

(b) Air exercise:

(1) flying planned routes at the discretion of the instructor.

EXERCISE 35: LANDING OUT

(a) Long-briefing objectives:

(1) pre-flight planning when landing at different airfields.

(b) Air exercise:

(1) landing at different airfields at the discretion of the flight instructor.

EXERCISE 36: SOLO NAVIGATION

(a) Long-briefing objectives:

(1) always flying to plan unless safety is compromised.

(b) Air exercise:

(1) flying planned routes solo at the discretion of the flight instructor.

EXERCISE 37: QUALIFYING CROSS-COUNTRY FLIGHT(S)

(a) Long-briefing objectives:

(1) the prerequisite for qualifying cross-country flight(s).

(b) Air exercise:

(1) flying the qualifying cross-country flight(s).

EXERCISE 38: PREPARING FOR THE SKILL TEST

(a) Long-briefing objectives:

(1) the content of the skill test.

(b) Air exercise:

(1) flying the skill test programme.

EXERCISE 39: NIGHT FLYING (if night instructional qualification is required)

(a) Long-briefing objectives:

(1) night VMC minima;

- (2) rules about airspace control at night and facilities available;
- (3) rules about aerodrome ground, runway, landing site and obstruction lighting;
- (4) aircraft navigation lights and collision avoidance rules;
- (5) physiological aspects of night vision and orientation;
- (6) dangers of disorientation at night;
- (7) dangers of weather deterioration at night;
- (8) instrument systems or functions and errors;
- (9) instrument lighting and emergency cockpit lighting systems;
- (10) map marking for use under cockpit lighting;
- (11) practical navigation principles;
- (12) electronic navigation aid principles;
- (13) planning and use of safety altitude;
- (14) danger due to icing conditions, avoidance and escape manoeuvres.

(b) Air exercise:

- (1) Dual instruction by sole reference to instruments simulating inadvertent entry into IMC:
 - (i) interpretation and use of the EFIS;
 - (ii) straight and level flight;
 - (iii) rate-1 turns left and right;
 - (iv) turns to specific headings;
 - (v) maintain a heading for a significant period of time;
 - (vi) standard climbs to specific altitudes;
 - (vii) standard descents to specific altitudes;
 - (viii) glide descents;
 - (ix) maintaining trim and balance;
 - (x) unusual attitudes:
 - (A) nose high and banked,
 - (B) nose low and banked;
 - (xi) emergencies:
 - (A) initial response when inadvertently entering IMC,
 - (B) simulated engine failure in flight;
- (2) flying by night:
 - (i) standard night flying:
 - (A) circuit flying at night,

<p>(B) navigating to a specified location;</p> <p>(ii) emergencies:</p> <p>(A) initial response when inadvertently entering IMC,</p> <p>(B) simulated engine failure in flight (initial actions only);</p> <p>(iii) unusual attitudes at night:</p> <p>(A) nose high and banked,</p> <p>(B) nose low and banked.</p>
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FCL.940.FI FI — Revalidation and renewal

(a) Revalidation

- (1) To revalidate ~~their~~ FI certificate, the holder~~s~~ shall fulfil at least two ~~out~~ of the following three requirements before the expiry date of the FI certificate:
 - (i) they have completed:
 - (A) in the case of an FI(A), ~~and~~ an FI(H) ~~and an FI(G)~~, at least 50 hours of flight instruction in the appropriate aircraft category as, ~~FIs, TRIs, CRIs, IRIs, MIs~~ or examiners. If the privileges to instruct for the BIR and the IR are to be revalidated, 10 of those 50 hours shall be flight instruction for a BIR or an IR and shall have been completed within the last 12 months immediately preceding the expiry date of the FI certificate;
 - (2) For at least each alternate revalidation, in the case of FI(A), ~~or~~ FI(H) ~~or FI(G)~~, or each third revalidation, in the case of FI(As), ~~the~~ holder~~s~~ of the relevant FI certificate shall pass an assessment of competence in accordance with point FCL.935.

AMC1 FCL.940.FI; FCL.940.IRI — Revalidation and renewal

[...]

FI — Revalidation and renewal

FI CERTIFICATE: REVALIDATION AND RENEWAL FORM

[...]

F. GYROPLANES²⁷

INSTRUCTIONAL FLYING EXPERIENCE	
Instructors applying for revalidation of the FI certificate should enter the instructional hours flown during the preceding 36 months.	
Total instructional hours (preceding 36 months):	
Total instructional hours (preceding 12 months):	
FLIGHT INSTRUCTOR REFRESHER SEMINAR	
1	This is to certify that the undersigned attended an FI seminar
2	Attendee's personal particulars:
Name(s):	Address:
Licence number:	Expiration date of FI(As) certificate:
3	Seminar particulars:
Date(s) of seminar:	Place:
4	Declaration by the responsible organiser:
I certify that the above data are correct and that the FI seminar was carried out.	
Date of approval:	Name(s) of organiser: (capital letters)
Date and place:	Signature:
5	Declaration by the attendee:
I confirm the validity and correctness of the data under 1 through 3.	
Attendee's signature:	
PROFICIENCY CHECK	
(Name(s) of applicant) has given proof of flight instructional ability during a proficiency check flight. This was done to the required standard.	
Flying time:	Gyroplane or FFS used:
Main exercise:	

²⁷ NPA 2020-14 'Simpler, lighter and better Part-FCL requirements for general aviation' proposes the deletion of Sections D and E of this AMC. In coordination with RMT.0678, this new Section for the FI(G) form may be renamed 'Section D'.

Name(s) of the FIE:	Licence number:
Date and place:	Signature:

SUBPART K — EXAMINERS

SECTION 2 — SPECIFIC REQUIREMENTS FOR FLIGHT EXAMINERS — FE

FCL.1005.FE FE — Privileges and conditions

[...]

- (d) FE(G). The privileges of an FE for gyroplanes are to conduct skill tests and proficiency checks for the PPL(G), provided that the FE has completed at least 1 000 hours of flight time as a pilot on gyroplanes, including at least 250 hours of flight instruction, of which up to 100 hours may be flight instruction conducted as FI(A) or FI(H).

SECTION 7 — SPECIFIC REQUIREMENTS FOR THE FLIGHT INSTRUCTOR EXAMINER — FIE

FCL.1005.FIE FIE — Privileges and conditions

[...]

- (c) FIE(As) and FIE(G). The privileges of an FIE on airships and gyroplanes are to conduct assessments of competence for the issue, revalidation or renewal of instructor certificates of airships in the applicable aircraft category, provided that the relevant instructor certificate is held.

FCL.1010.FIE FIE — Prerequisites

[...]

- (d) FIE(G). Applicants for an FIE certificate for gyroplanes shall:
- (1) hold the FI(G) instructor certificate;
 - (2) have completed 2000 hours of flight time as a pilot on gyroplanes; and
 - (3) have completed at least 100 hours of flight time instructing applicants for an FI(G) certificate, In the case of applicants holding a valid FIE(A) or FIE(H) certificate, this requirement is reduced to 50 hours.

AMENDMENTS TO THE APPENDICES TO ANNEX I (PART-FCL)

Appendix 1 — Crediting of theoretical knowledge**CREDITING OF THEORETICAL KNOWLEDGE IN THE SAME OR IN ANOTHER CATEGORY OF AIRCRAFT — BRIDGE INSTRUCTION AND EXAMINATION REQUIREMENTS****1. LAPL and PPL**

[...]

1.5. By way of derogation from point 1.2, for the issue of a PPL(G), the holder of a PPL(A) or a PPL(H) shall be credited in full towards the theoretical knowledge instruction and examination requirements in the following subjects:

- (a) Air Law and ATC Procedures,
- (b) Human Performance,
- (c) Meteorology,
- (d) Communications,
- (e) Operational Procedures,
- (f) Flight Performance and Planning,
- (g) Navigation.

[...]

Appendix 9 — Training, skill test and proficiency check for the MPL, the ATPL, the type and class ratings, and the proficiency check for the BIR and the IRs

[...]

F. Specific requirements for the gyroplane category

1. In the case of skill tests or proficiency checks for a gyroplane class or type rating²⁸, the test is defined:

- (a) for the PPL, as per FCL.235,
- (b) for the FI, as per FCL.235.

²⁸ Depending on the certification process for the PAL-V, a class or type rating can be the outcome. For the meantime, a placeholder for a possible class/type rating related to gyroplanes is included.

AMENDMENTS TO ANNEX VI (PART-ARA)

SUBPART GEN — GENERAL REQUIREMENTS

SECTION I — GENERAL

List of acronyms used throughout this Annex

The following provides a list of acronyms used throughout this Annex:

(A) aeroplane

(H) helicopter

(G) gyroplane

[...]

Appendix I to ANNEX VI (PART-ARA) — Flight crew licence

Competent Authority name and logo	Requirements
<p>[...]</p> <p>This licence complies with ICAO standards, except for the LAPL, PPL(G) and BIR privileges, or when accompanied by an LAPL medical certificate.</p> <p>[...]</p> <p>EASA Form 141 Issue 3 issue-2</p>	<p>(no change)</p>

AMENDMENTS TO ANNEX VIII (PART-DTO)

DTO.GEN.110 Scope of the training

[...]

(5) for gyroplanes:

(a) theoretical knowledge instruction for the PPL(G);

(b) flight instruction for the PPL(G);

(c) training towards a class or type rating²⁹;

²⁹ Depending on the certification process for the PAL-V, a class or type rating can be the outcome. For the meantime, a placeholder for a possible class/type rating related to gyroplanes is included.

(d) training towards night rating.

[...]

Amendments to Commission Delegated Regulation (EU) 2020/723 of 4 March 2020 laying down detailed rules with regard to the acceptance of third-country certification of pilots and amending Regulation (EU) No 1178/2011³⁰

SECTION 4

ACCEPTANCE OF CLASS AND TYPE RATINGS

Article 10

Conditions for acceptance of class and type ratings

[...]

(d) has no less than:

- (i) for aeroplane class ratings, 100 hours of flight experience as a pilot in that class;
- (ii) for aeroplane type ratings, 500 hours of flight experience as a pilot in that type;
- (iii) for single-engine helicopters with a maximum certificated take-off mass of up to 3 175 kg, 100 hours of flight experience as a pilot in that type;
- (iv) for all other helicopters, 350 hours of flight experience as a pilot in that type;
- (v) for gyroplane class or type rating, 100 hours of flight experience as a pilot in that class or type³¹.

³⁰ OJ L 170, 2.6.2020, p. 1.

³¹ Depending on the certification process for the PAL-V, a class or type rating can be the outcome. For the meantime, a placeholder for a possible class rating related to gyroplanes is included.

3.2. Draft Air Operations Regulation

Commission Regulation (EU) No 965/2012 is amended as follows:

COVER REGULATION

Article 1 Subject matter and scope

1. This Regulation lays down detailed rules for air operations with aeroplanes and **helicopters rotorcraft**, including ramp inspections of aircraft of operators under the safety oversight of another State when landed at aerodromes located in the territory subject to the provisions of the Treaties.
2.
[...]
8. This Regulation shall not apply to commercial operations with gyroplanes, or operations conducted under instrument flight rules with gyroplanes.

Article 2 Definitions

For the purposes of this Regulation:

[...]

- (1f) 'gyroplane' means a heavier-than-air aircraft supported in flight chiefly by one or more non-engine-driven rotors,
- (1g) 'rotorcraft' means a heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors; rotorcraft includes helicopters and gyroplanes,

[...]

Article 5 Air operations

[...]

4. Operators of other-than-complex motor-powered aeroplanes and helicopters, **as well as operators of gyroplanes**, involved in non-commercial operations, including non-commercial specialised operations, shall operate the aircraft in accordance with the provisions set out in Annex VII.
5. Training organisations referred to in Article 10a of Regulation (EU) No 1178/2011 and having their principal place of business in a Member State shall, when conducting flight training into, within or out of the Union, operate:

- (a) complex motor-powered aeroplanes and helicopters in accordance with the provisions specified in Annex VI;
- (b) other aeroplanes and ~~helicopters~~ rotorcraft in accordance with the provisions specified in Annex VII.

[...]

Article 6 Derogations

[...]

3. By way of derogation from Article 5 of this Regulation and without prejudice to point (b) of Article 18(2) of Regulation (EU) 2018/1139 and to Subpart P of Annex I to Commission Regulation (EU) No 748/20121 concerning the permit to fly, the following flights shall continue to be operated under the requirements specified in the national law of the Member State in which the operator has its principal place of business, or, where the operator has no principal place of business, the place where the operator is established or resides:
- (a) flights related to the introduction or modification of aeroplane or ~~helicopters~~ rotorcraft types conducted by design or production organisations within the scope of their privileges;
 - (b) flights carrying no passengers or cargo, where the aeroplane or ~~helicopters~~ rotorcraft is ferried for refurbishment, repair, inspections, delivery, export or similar purposes, provided that the aircraft is not listed on an air operator certificate or on a declaration.

[...]

- 4a. By way of derogation from Article 5(1) and (6), the following operations with other-than-complex motor-powered aeroplanes and helicopters, **as well as the following operations with gyroplanes**, may be conducted in accordance with Annex VII:
- (a) cost-shared flights by private individuals, on the condition that the direct cost is shared by all the occupants of the aircraft, pilot included and the number of persons sharing the direct costs is limited to six;
 - (b) competition flights or flying displays, on the condition that the remuneration or any valuable consideration given for such flights is limited to recovery of direct costs and a proportionate contribution to annual costs, as well as prizes of no more than a value specified by the competent authority;
 - (c) introductory flights, parachute dropping, sailplane towing or aerobatic flights performed either by a training organisation having its principal place of business in a Member State and referred to in Article 10a of Regulation (EU) No 1178/2011, or by an organisation created with the aim of promoting aerial sport or leisure aviation, on the condition that the aircraft is operated by the organisation on the basis of ownership or dry lease, that the flight does not generate profits distributed outside of the organisation, and that whenever non-members of the organisation are involved, such flights represent only a marginal activity of the organisation.

Annex I Definitions for terms used in Annexes II to VIII

[...]

- (30) 'critical phases of flight' in the case of aeroplanes or gyroplanes means the take-off run, the take-off flight path, the final approach, the missed approach, the landing, including the landing roll, and any other phases of flight as determined by the pilot-in-command or commander;

[...]

- (82) 'non-hostile environment' means an environment in which:

- (a) a safe forced landing can be accomplished;
- (b) the helicopters rotorcraft occupants can be protected from the elements; and
- (c) search and rescue response/capability is provided consistent with the anticipated exposure.

In any case, those parts of a congested area with adequate safe forced landing areas shall be considered non-hostile;

[...]



GM2 Annex I Definitions

ABBREVIATIONS AND ACRONYMS

[...]

R Rotorcraft

[...]

ANNEX VII (PART-NCO)

SUBPART A — GENERAL REQUIREMENTS

GM1 NCO.GEN.105 Pilot-in-command responsibilities and authority

GENERAL

[...]

(b) the operation and safety of the aircraft:

- (1) for aeroplanes and gyroplanes, from the moment it is first ready to move for the purpose of flight until the moment it comes to rest at the end of the flight and the engine(s) used as primary propulsion unit(s) is/are shut down;

[...]

NCO.GEN.115 Taxiing of aeroplanes or gyroplanes

An aeroplane or a gyroplane shall only be taxied on the movement area of an aerodrome if the person at the controls:

(a) is an appropriately qualified pilot; or

(b) has been designated by the operator and:

- (1) is trained to taxi the aeroplane or the gyroplane;
- (2) is trained to use the radio telephone, if radio communications are required;
- (3) has received instruction in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) signals and instructions, phraseology and procedures; and
- (4) is able to conform to the operational standards required for safe aeroplane or gyroplane movement at the aerodrome.

AMC1 NCO.GEN.115 Taxiing of aeroplanes or gyroplanes**GYROPLANES — SAFETY-CRITICAL ACTIVITY**

When a person is designated by the operator to taxi a gyroplane on the movement area of an aerodrome, and that person is not an appropriately qualified pilot, the rotor of the gyroplane should be secured in its parking position.

GM1 NCO.GEN.115 Taxiing of aeroplanes or gyroplanes**SAFETY-CRITICAL ACTIVITY**

- (a) Taxiing should be treated as a safety-critical activity due to the risks related to the movement of the aeroplane or the gyroplane and the potential for a catastrophic event on the ground.
- (b) Taxiing is a high-workload phase of flight that requires the full attention of the pilot-in-command.

GM1 NCO.GEN.115(b)(4) Taxiing of aeroplanes or gyroplanes**SKILLS AND KNOWLEDGE**

The person designated by the operator to taxi an aeroplane or a gyroplane should possess the following skills and knowledge:

- (a) positioning of the aeroplane or the gyroplane to ensure safety when starting the engine;
- (b) getting ATIS reports and taxi clearance, where applicable;
- (c) interpretation of airfield markings/lights/signals/indicators;
- (d) interpretation of marshalling signals, where applicable;
- (e) identification of suitable parking areas;
- (f) maintaining lookout and right-of-way rules and complying with ATC or marshalling instructions, when applicable;
- (g) avoidance of adverse effect of propeller slipstream or jet wash on other aeroplanes aircraft, aerodrome facilities and personnel;
- (h) inspection of taxi path when surface conditions are obscured;
- (i) communication with others when controlling an aeroplane or a gyroplane on the ground;
- (j) interpretation of operational instructions;
- (k) reporting of any problem that may occur while taxiing an aeroplane or a gyroplane; and

- (l) adapting the taxi speed in accordance with prevailing aerodrome, traffic, surface and weather conditions.



SUBPART B — OPERATIONAL PROCEDURES

NCO.OP.120 Noise abatement procedures —aeroplanes and helicopters

[...]

NCO.OP.125 Fuel/energy and oil supply —aeroplanes and helicopters

[...]

AMC1 NCO.OP.125(b) Fuel/energy and oil supply**PLANNING CRITERIA — FINAL RESERVE FUEL/ENERGY**

[...]

(b) for rotorcraft helicopters:

[...]

AMC2 NCO.OP.125(b) Fuel/energy and oil supply —aeroplanes and helicopters

[...]

AMC3 NCO.OP.125(b) Fuel/energy and oil supply —aeroplanes and helicopters

[...]

GM1 NCO.OP.125(b) Fuel/energy and oil supply —aeroplanes and helicopters

[...]

GM2 NCO.OP.125(b) Fuel/energy and oil supply —aeroplanes and helicopters

[...]

NCO.OP.155 Smoking on board — ~~aeroplanes and helicopters~~

[...]

AMC1 NCO.OP.160 Meteorological conditions**APPLICATION OF AERODROME FORECASTS (TAF & TREND) — ~~AEROPLANES AND HELICOPTERS~~**

[...]

GM1 NCO.OP.160 Meteorological conditions**CONTINUATION OF A FLIGHT — ~~AEROPLANES AND HELICOPTERS~~**

[...]

GM2 NCO.OP.160 Meteorological conditions**EVALUATION OF METEOROLOGICAL CONDITIONS — ~~AEROPLANES AND HELICOPTERS~~**

[...]

NCO.OP.175 Take-off conditions — ~~aeroplanes and helicopters~~

[...]

AMC1 NCO.OP.175 Take-off conditions — ~~aeroplanes and helicopters~~

[...]

NCO.OP.207 Approach and landing conditions — gyroplanes

Before commencing an approach to land, the pilot-in-command shall be satisfied that, according to the information available, the weather at the aerodrome or the operating site and the condition of the runway intended to be used do not prevent a safe approach, landing or missed approach.

AMC1 NCO.OP.207 Approach and landing conditions — gyroplanes

The in-flight determination of the landing distance suitability should be based on the latest available meteorological report.

SUBPART D — INSTRUMENTS, DATA AND EQUIPMENT

SECTION 2 — HELICOPTERS ROTORCRAFT

NCO.IDE.H.100 Instruments and equipment — general

- (a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements if they are:
- (1) used by the flight crew to control the flight path;
 - (2) used to comply with NCO.IDE.H.190;
 - (3) used to comply with NCO.IDE.H.195; or
 - (4) installed in the helicopters rotorcraft.
- (b) The following items, when required under this Subpart, do not need an equipment approval:
- (1) independent portable lights;
 - (2) an accurate time piece;
 - (3) first-aid kit;
 - (4) survival and signalling equipment;
 - (5) sea anchor and equipment for mooring;
 - (6) child restraint device;
 - (7) a simple PCDS used by a task specialist as a restraint device.
- (c) Instruments and equipment or accessories not required under Annex VII (Part-NCO), as well as any other equipment that is not required under this Regulation, but carried on a flight, shall comply with the following requirements:
- (1) the information provided by those instruments, equipment or accessories shall not be used by the flight crew members to comply with Annex II to Regulation (EU) 2018/1139 or with points NCO.IDE.H.190 and NCO.IDE.H.195 of Annex VII;
 - (2) the instruments and equipment shall not affect the airworthiness of the helicopters rotorcraft, even in the case of failures or malfunction.

[...]

GM1 NCO.IDE.H.100(a) Instruments and equipment — general

APPLICABLE AIRWORTHINESS REQUIREMENTS

The applicable airworthiness requirements for **the** approval of instruments and equipment required by this Part are the following:

- (a) Regulation (EU) No 748/2012 for ~~helicopters~~ **rotorcraft** registered in the EU; and
- (b) **A**irworthiness requirements of the State of registry for ~~helicopters~~ **rotorcraft** registered outside the EU.

GM1 NCO.IDE.H.100(c) Instruments and equipment — general

NOT REQUIRED INSTRUMENTS AND EQUIPMENT THAT DO NOT NEED TO BE APPROVED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS, BUT ARE CARRIED ON A FLIGHT

[...]

- (b) The failure of additional non-installed instruments or equipment not required by this Part or by the applicable airworthiness requirements or any applicable airspace requirements should not adversely affect the airworthiness and/or the safe operation of the ~~helicopters~~ **rotorcraft**. Examples may be the following:
 - (1) portable electronic flight bag (EFB);
 - (2) portable electronic devices carried by crew members; and
 - (3) non-installed passenger entertainment equipment.

NCO.IDE.H.105 Minimum equipment for flight

A flight shall not be commenced when any of the ~~helicopter's~~ rotorcraft instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

- (a) the ~~helicopters~~ rotorcraft is operated in accordance with the MEL, if established; or
- (b) the ~~helicopters~~ rotorcraft is subject to a permit to fly issued in accordance with the applicable airworthiness requirements.

NCO.IDE.H.115 Operating lights

~~Helicopters~~ Rotorcraft operated at night shall be equipped with:

- (a) an anti-collision light system;
- (b) navigation/position lights;
- (c) a landing light;
- (d) lighting supplied from the ~~helicopter's~~ rotorcraft electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the ~~helicopter~~ rotorcraft;
- (e) lighting supplied from the ~~helicopter's~~ rotorcraft electrical system to provide illumination in all passenger compartments;
- (f) an independent portable light for each crew member station; and
- (g) lights to conform with the International Regulations for Preventing Collisions at Sea if the ~~helicopter's~~ rotorcraft is amphibious.

AMC1 NCO.IDE.H.115 Operating lights

LANDING LIGHT FOR HELICOPTERS

For helicopters, ~~the~~ the landing light should be trainable, at least in the vertical plane, or optionally be an additional fixed light or lights positioned to give a wide spread of illumination.

NCO.IDE.H.120 Operations under VFR — flight and navigational instruments and associated equipment

- (a) ~~Helicopters~~ Rotorcraft operated under VFR by day shall be equipped with a means of measuring and displaying the following:
- (1) magnetic heading;
 - (2) time in hours, minutes and seconds;
 - (3) barometric altitude;
 - (4) indicated airspeed; and
 - (5) slip.
- (b) ~~Helicopters~~ Rotorcraft operated under VMC at night, or when the visibility is less than 1 500 m, or in conditions where the ~~helicopters~~ rotorcraft cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a), equipped with:
- (1) a means of measuring and displaying the following:
 - (i) attitude;
 - (ii) vertical speed; and
 - (iii) stabilised heading; and
 - (2) a means of indicating when the supply of power to the gyroscopic instruments is not adequate.
- (c) ~~Helicopters~~ Rotorcraft operated when the visibility is less than 1 500 m, or in conditions where the ~~helicopters~~ rotorcraft cannot be maintained in a desired flight path without reference to one or more additional instruments, shall be, in addition to (a) and (b), equipped with a means of preventing malfunction of the airspeed indicating system required in (a)(4) due to condensation or icing.

AMC1 NCO.IDE.H.120 & NCO.IDE.H.125 Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment

INTEGRATED INSTRUMENTS

- (a) Individual equipment requirements may be met by combinations of instruments, by integrated flight systems or by a combination of parameters on electronic displays. The information so available to each required pilot should not be less than that required in the applicable operational requirements, and the equivalent safety of the installation should be approved during the type certification of the ~~helicopters~~ rotorcraft for the intended type of operation.
- (b) The means of measuring and indicating turn and slip, ~~helicopters~~ rotorcraft attitude and stabilised ~~helicopters~~ rotorcraft heading may be met by combinations of instruments or by

integrated flight director systems, provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

NCO.IDE.H.125 Operations under IFR — flight and navigational instruments and associated equipment

~~Helicopters~~ Rotorcraft operated under IFR shall be equipped with:

[...]

AMC1 NCO.IDE.H.120(a)(4) & NCO.IDE.H.125(a)(4) Operations under VFR & operations under IFR — flight and navigational instruments and associated equipment

CALIBRATION OF THE INSTRUMENT INDICATING AIRSPEED

- (a) The instrument indicating airspeed should be calibrated in knots (kt).
- (b) In the case of ~~helicopters~~ rotorcraft with an MCTOM below 2 000 kg, calibration in kilometres per hour (km/h) or in miles per hour (mph) is acceptable when such units are used in the AFM.

NCO.IDE.H.135 Flight crew interphone system

~~Helicopters~~ Rotorcraft operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.

AMC1 NCO.IDE.H.135 Flight crew interphone system

GENERAL

- (a) The flight crew interphone system should not be of a handheld type.
- (b) A headset consists of a communication device which includes two earphones to receive and a microphone to transmit audio signals to the ~~helicopter's~~ rotorcraft's communication system. To comply with the minimum performance requirements, the earphones and microphone should match the communication system's characteristics and the flight crew compartment environment. The headset should be adequately adjustable in order to fit the pilot's head. Headset boom microphones should be of the noise-cancelling type.
- (c) If the intention is to utilise noise-cancelling earphones, the pilot-in-command should ensure that the earphones do not attenuate any aural warnings or sounds necessary for alerting the flight crew on matters related to the safe operation of the ~~helicopters~~ rotorcraft.

NCO.IDE.H.140 Seats, seat safety belts, restraint systems and child restraint devices

- (a) ~~Helicopters~~ Rotorcraft shall be equipped with:
- (1) a seat or berth for each person on board ~~that~~~~who~~ is aged 24 months or ~~older~~~~more~~, or a station for each crew member or task specialist on board;
 - (2) a seat belt on each passenger seat and restraining belts for each berth, and restraint devices for each station;
 - (3) for ~~helicopters~~ rotorcraft first issued with an individual CofA after 31 December 2012, a seat belt with an upper torso restraint system for each passenger ~~that~~~~who~~ is aged 24 months or ~~older~~~~more~~;
- [...]

AMC1 NCO.IDE.H.140 Seats, seat safety belts, restraint systems and child restraint devices

CHILD RESTRAINT DEVICES (CRDs)

- (a) A CRD is considered to be acceptable if:
- (1) it is a supplementary loop belt manufactured with the same techniques and the same materials of the approved safety belts; or
 - (2) it complies with (b).
- (b) Provided the CRD can be installed properly on the respective ~~helicopter~~ rotorcraft seat, the following CRDs are considered acceptable:
- [...]

NCO.IDE.H.145 First-aid kit

- (a) ~~Helicopters~~ Rotorcraft shall be equipped with a first-aid kit.

[...]

GM1 NCO.IDE.H.145 First-aid kit

LOCATION AND USE

The location of the first-aid kit is normally indicated **by using** internationally recognisable signs.

The **first-aid kit** **FAK** 'should be **easily** **readily** accessible for use' in **helicopter** **rotorcraft** operations should be understood as the first-aid kit being **either** accessible **either** in flight or immediately after landing.

[...]

NCO.IDE.H.155 Supplemental oxygen — non-pressurised **helicopters** **rotorcraft**

Non-pressurised **helicopters** **rotorcraft** operated when an oxygen supply is required in accordance with NCO.OP.190 shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the required oxygen supplies.

NCO.IDE.H.160 Hand fire extinguishers

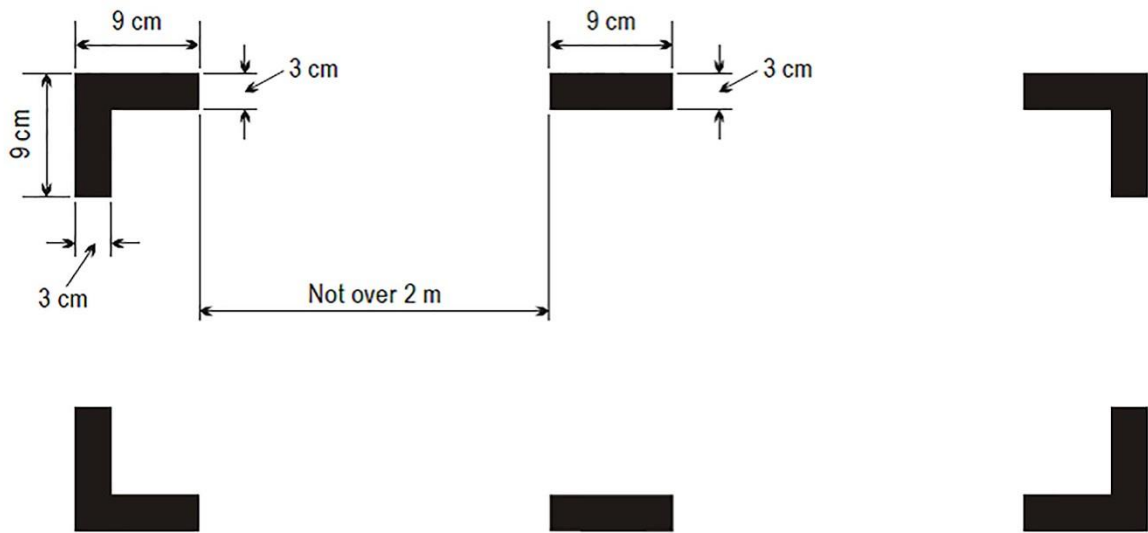
- (a) **Helicopters** **Rotorcraft**, except ELA2 **helicopters** **rotorcraft**, shall be equipped with at least one hand fire extinguisher:

[...]

NCO.IDE.H.165 Marking of break-in points

If areas of the **helicopter's** **rotorcraft** fuselage suitable for **breaking in** **break-in** by rescue crews in an emergency are marked, such areas shall be marked as shown in Figure 1.

Figure 1 — Marking of break-in points



NCO.IDE.H.170 Emergency locator transmitter (ELT)

- (a) **Helicopters Rotorcraft** certified for a maximum passenger seating configuration above six shall be equipped with:
- (1) an automatic ELT; and
 - (2) one survival ELT (ELT(S)) in a life-raft or life-jacket when the **helicopter rotorcraft** is operated at a distance from land corresponding to more than 3 minutes flying time at normal cruising speed.
- (b) **Helicopters Rotorcraft** certified for a maximum passenger seating configuration of six or less shall be equipped with an ELT(S) or a personal locator beacon (PLB), carried by a crew member or a passenger.
- (c) ELTs of any type and PLBs shall be capable of transmitting simultaneously on 121,5 MHz and 406 MHz.



NCO.IDE.H.175 Flight over water

- (a) ~~Helicopters~~ Rotorcraft shall be equipped with a life-jacket for each person on board or equivalent individual flotation device for each person on board younger than 24 months, which shall be worn or stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided, when:
- (1) flying over water beyond autorotational distance from land where, in case of the critical engine failure, the helicopter is not able to sustain level flight; or
 - (2) flying over water beyond gliding distance from land where, in case of critical engine failure, the gyroplane is not able to sustain level flight; or
 - ~~(2)~~(3) flying over water at a distance of land corresponding to more than 10 minutes flying at normal cruising speed, where, in case of the critical engine failure, the ~~helicopter~~ rotorcraft is able to sustain level flight; or
 - ~~(3)~~(4) taking off or landing at an aerodrome/operating site where the take-off or approach path is over water.
- (b) Each life-jacket or equivalent individual flotation device shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.
- (c) The pilot-in-command of a ~~helicopter~~ rotorcraft operated on a flight over water at a distance from land corresponding to more than 30 minutes flying time at normal cruising speed or 50 NM, whichever is less, shall determine the risks to survival of the occupants of the ~~helicopter~~ rotorcraft in the event of a ditching, based on which he/she shall determine the carriage of:
- (1) equipment for making the distress signals;
 - (2) life-rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency; and
 - (3) life-saving equipment, to provide the means of sustaining life, as appropriate to the flight to be undertaken.
- (d) The pilot-in-command shall determine the risks to survival of the occupants of the ~~helicopter~~ rotorcraft in the event of a ditching, when deciding if the life-jackets required in (a) shall be worn by all occupants.

AMC1 NCO.IDE.H.175 Flight over water

[...]

RISK ASSESSMENT

- (a) When conducting the risk assessment, the pilot-in-command should base his/her decision, as far as is practicable, on the Implementing Rules and AMCs applicable to the operation of the ~~helicopter~~ rotorcraft.

[...]



NCO.IDE.H.180 Survival equipment

Helicopters Rotorcraft, operated over areas in which search and rescue would be especially difficult, shall be equipped with such signalling devices and life-saving equipment, including means of sustaining life, as may be appropriate to the area overflown.

AMC1 NCO.IDE.H.180 Survival equipment

GENERAL

Helicopters Rotorcraft operated across areas in which search and rescue would be especially difficult should be equipped with the following:

[...]

AMC2 NCO.IDE.H.180 Survival equipment

ADDITIONAL SURVIVAL EQUIPMENT

- (a) The following additional survival equipment should be carried when required:
- (1) 500 ml of water for each four, or fraction of four, persons on board;
 - (2) one knife;
 - (3) first-aid equipment; and
 - (4) one set of air/ground codes.
- (b) If any item of equipment contained in the above list is already carried on board the **helicopter rotorcraft** in accordance with another requirement, there is no need for this to be duplicated.

NCO.IDE.H.185 All **helicopters rotorcraft** on flights over water — ditching

Helicopters Rotorcraft flying over water in a hostile environment beyond a distance of 50 NM from land shall be either of the following:

[...]

NCO.IDE.H.190 Radio communication equipment

- (a) Where required by the airspace being flown, **helicopter rotorcraft** shall be equipped with radio communication equipment capable of conducting two-way communication with those aeronautical stations and on those frequencies to meet airspace requirements.
- (b) Radio communication equipment, if required by (a), shall provide for communication on the aeronautical emergency frequency 121,5 MHz.
- (c) When more than one communication~~s~~ equipment unit is required, each shall be independent of the other or others to the extent that a failure in any one will not result in failure of any other.
- (d) When a radio communication system is required, and in addition to the flight crew interphone system required in NCO.IDE.H.135, **helicopter rotorcraft** shall be equipped with a transmit button on the flight controls for each required pilot and/or crew member at his/her working station.

NCO.IDE.H.195 Navigation equipment

- (a) **Helicopters Rotorcraft** operated over routes that cannot be navigated by reference to visual landmarks shall be equipped with navigation equipment that will enable them to proceed in accordance with:
 - (1) the ATS flight plan, if applicable; and
 - (2) the applicable airspace requirements.
- (b) **Helicopters Rotorcraft** shall have sufficient navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment shall allow safe navigation in accordance with (a), or an appropriate contingency action, to be completed safely.
- (c) **Helicopters Rotorcraft** operated on flights in which it is intended to land in IMC shall be equipped with navigation equipment capable of providing guidance to a point from which a visual landing can be performed. This equipment shall be capable of providing such guidance for each aerodrome at which is intended to land in IMC and for any designated alternate aerodromes.
- (d) For PBN operations the aircraft shall meet the airworthiness certification requirements for the appropriate navigation specification.
- (e) **Helicopters Rotorcraft** shall be equipped with surveillance equipment in accordance with the applicable airspace requirements.

AMC1 NCO.IDE.H.195 Navigation equipment

NAVIGATION WITH VISUAL REFERENCE TO LANDMARKS

Where ~~helicopters~~ rotorcraft, with the surface in sight, can proceed according to the ATS flight plan by navigation ~~to~~ with visual reference to landmarks, no additional equipment is needed to comply NCO.IDE.H.195(a)(1).

GM1 NCO.IDE.H.195 Navigation equipment

APPLICABLE AIRSPACE REQUIREMENTS

For ~~helicopters~~ rotorcraft that are being operated under European air traffic control, the applicable airspace requirements include the Single European Sky legislation.

NCO.IDE.H.200 Transponder

Where required by the airspace being flown, ~~helicopters~~ rotorcraft shall be equipped with a secondary surveillance radar (SSR) transponder with all the required capabilities.

AMC1 NCO.IDE.H.200 Transponder

GENERAL

- (a) The secondary surveillance radar (SSR) transponders of ~~helicopters~~ rotorcraft being operated under European air traffic control should comply with any applicable Single European Sky legislation.

[...]

SUBPART E — SPECIFIC REQUIREMENTS

GM1 NCO.SPEC.100 Scope

LIST OF SPECIALISED OPERATIONS

- (a) Specialised operations include the following activities:
- (1) helicopter external loads operations;
 - (2) ~~helicopters~~ rotorcraft survey operations;

[...]

GM1 NCO.SPEC.105 Checklist

DEVELOPMENT OF CHECKLISTS

[...]

(b) aircraft and equipment:

- (1) the category of aircraft to be used for the activity should be indicated, e.g. helicopter/**gyroplane**/aeroplane, single-/multi-engined;
- (2) all equipment required for the activity should be listed;

(c)

[...]

NCO.SPEC.172 Performance and operating criteria — gyroplanes

When operating a gyroplane at a height of less than 150 m (500 ft) above a non-congested area, for operations of gyroplanes that are not able to sustain level flight in the event of a critical engine failure, the pilot-in-command shall have:

- (a) established operational procedures to minimise the consequences of an engine failure; and
- (b) briefed all crew members and task specialists on board on the procedures to be carried out in the event of a forced landing.

4. Impact assessment (IA)

Proportionate impact assessment justifications for the proposed amendments are already provided in Chapter 2.



5. Proposed actions to support implementation

EASA will consider the most appropriate method(s) to support the implementation of this proposal by applying one or more of the following actions, as appropriate:

- Focused communication for Advisory Body meeting(s) (MAB/SAB/TeB/TEC/COM)
(Advisory Body members)
- Detailed explanations/clarifications on the EASA website
(Primarily targeted audience: industry, competent authorities)
- Dedicated thematic workshop/session
(Primarily targeted audience: industry, competent authorities)



6. References

6.1. Related regulations

- Aircrew
 - Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 311, 25.11.2011, p. 1)
 - Commission Delegated Regulation (EU) 2020/723 of 4 March 2020 laying down detailed rules with regard to the acceptance of third-country certification of pilots and amending Regulation (EU) No 1178/2011 (OJ L 170, 2.6.2020, p. 1)
- Air OPS
 - Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1)

6.2. Related decisions

- Aircrew
 - Decision No 2011/016/R of the Executive Director of the European Aviation Safety Agency of 15 December 2011 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council 'Acceptable Means of Compliance and Guidance Material to Part-FCL'
 - Decision No 2012/006/Directorate R of the Executive Director of the Agency of 19th April 2012 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 1178/2011 of 3 November 2011 laying down technical requirements and administrative procedures related to civil aviation aircrew pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council 'Acceptable Means of Compliance and Guidance Material to Part-ARA'
- Air OPS
 - Decision No 2012/015/Directorate R of the Executive Director of the Agency of 24th October 2012 on Acceptable Means of Compliance and Guidance Material to Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council 'Guidance Material to Annex I — Definitions'
 - Decision 2014/019/R of the Executive Director of the Agency of 24 April 2014 adopting Guidance Material to Regulation (EU) No 965/2012 'GM to Regulation (EU) No 965/2012'
 - Decision 2014/016/R of the Executive Director of the Agency of 24 April 2014 adopting Acceptable Means of Compliance and Guidance Material to Part-NCO of Regulation (EU) No 965/2012 and repealing Decision 2013/022/R of the Executive Director of the Agency of 23 August 2013 'AMC and GM to Part-NCO — Issue 2'

7. Quality of the NPA

EASA welcomes your feedback on the quality of this NPA with regard to the following aspects by stating: I fully agree, I agree, Neutral, I disagree or I strongly disagree along with a brief justification if you (strongly) disagree:

7.1. The technical quality of the draft proposed regulatory material is appropriate

[Please choose one of the options below and enter it as a comment in CRT along with a brief justification if you (strongly) disagree.]

I fully agree / I agree / Neutral / I disagree / I strongly disagree

7.2. The clarity and readability of the text is appropriate

[Please choose one of the options below and enter it as a comment in CRT along with a brief justification if you (strongly) disagree.]

I fully agree / I agree / Neutral / I disagree / I strongly disagree

7.3. Any other comments on the quality (please specify)

Note: Your comments on this Section will be considered for internal quality assurance and management purposes only and will not be published in the related CRD.

