Annex II to ED Decision 2019/005/R

'AMC and GM to Part-ORA — Issue 1, Amendment 6'

The Annex to ED Decision 2012/007/R of 19 April 2012 is hereby amended as follows:

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

(a) deleted text is ~~struck through~~;

(b) new or amended text is highlighted in blue;

(c) an ellipsis '[…]' indicates that the remaining text is unchanged.

(1) AMC2 ORA.ATO.125 is amended as follows:

(a) Point (k)(1) is amended as follows:

'(1) with the exception of courses approved for ZFTT, certain training exercises normally involving take-off and landing in various configurations should be completed in the aeroplane rather than in an FFS. ~~For MPAs where the student pilot has more than 500 hours of MPA experience in aeroplanes of similar size and performance, these should include at least four landings of which at least one should be a full-stop landing, u~~Unless otherwise specified in the OSD established in accordance with Regulation (EU~~C~~) No 748/2012 ~~1702/2003~~, ~~when available.~~this take-off and landing training should include:

(A) at least four landings in the case of MPAs where the student pilot has more than 500 hours of MPA experience in aeroplanes of similar size and performance or, in all other cases, at least six landings;

(B) at least one full-stop landing; and

(C) one go-around with all engines operating.

~~In all other cases the student should complete at least six landings.~~ This aeroplane training may be completed after the student pilot has completed the FSTD training and has successfully undertaken the type rating skill test, provided it does not exceed 2 hours of the flight training course.';

(b) Points (k)(2) and (k)(3) are amended as follows:

'(2) courses approved for ZFTT

(i) During the specific simulator session before line flying under supervision (LIFUS), consideration should be given to varying conditions, for example:

(~~i~~A) runway surface conditions;

(~~ii~~B) runway length;

(~~iii~~C) flap setting;

(~~iv~~D) power setting;

(~~v~~E) crosswind and turbulence conditions; and

(~~vi~~F) maximum take-off mass (MTOM) and maximum landing mass (MLM).

(~~3~~ii) ~~the~~ At least one landing~~s~~ should be conducted as full-stop landing~~s~~. The session should be flown in normal operation. Special attention should be given to the taxiing technique.~~:~~

(iii) ~~a~~A training methodology should be agreed with the competent authority that ensures the trainee is fully competent with the exterior inspection of the aeroplane before conducting such an inspection un-supervised;

(~~i~~iv) ~~t~~The LIFUS should be performed as soon as possible after the specific FFS session;

(~~iii~~v) ~~t~~The licence endorsement should be entered on the licence after the skill test, but before the first four take-offs and landings in the aeroplane. At the discretion of the competent authority, provisional or temporary endorsement and any restriction should be entered on the licence.

(vi) Where a specific arrangement exists between the ATO and the commercial air transport operator, the operator proficiency check (OPC) and the ZFTT specific details should be conducted using the operator's standard operating procedures (SOPs).';

(c) A new point (k)(3) is inserted as follows:

'(3) All training exercises should be designed to remain within the training envelope as determined by the ATO (Note: Further guidance regarding the training envelope can be found in GM1 ORA.ATO.125 point (f)).';

(d) New points (la) and (lb) are inserted as follows:

'(la) Additional UPRT training as per point FCL.725.A(c)

UPRT as per point FCL.725.A(c) should include the elements and components in table 1.

Table 1: Elements and respective components of upset prevention training

Elements and components		**TK instruction**	**FSTD/ Aeroplane training**
A.	**Aerodynamics**		
1.	General aerodynamic characteristics	•	
2.	Aeroplane certification and limitations	•	
3.	Aerodynamics (high and low altitudes)	•	•
4.	Aeroplane performance (high and low altitudes)	•	•
5.	AoA and stall awareness	•	•
6.	Stick shaker or other stall-warning device activation (as applicable)	•	•
7.	Stick pusher (as applicable)	•	•
8.	Mach effects (if applicable to the aeroplane type)	•	•
9.	Aeroplane stability	•	•

10.	Control surface fundamentals	•	•
11.	Use of trims	•	•
12.	Icing and contamination effects	•	•
13.	Propeller slipstream (as applicable)	•	•
B.	**Causes of and contributing factors to upsets**		
1.	Environmental	•	
2.	Pilot-induced	•	
3.	Mechanical (aeroplane systems)	•	
C.	**Safety review of accidents and incidents relating to aeroplane upsets**		
1.	Safety review of accidents and incidents relating to aeroplane upsets	•	
D.	**G-load awareness and management**		
1.	Positive/negative/increasing/decreasing G-loads	•	•
2.	Lateral G awareness (sideslip)	•	•
3.	G-load management	•	•
E.	**Energy management**		
1.	Kinetic energy vs potential energy vs effect of thrust-drag ratio on the total energy	•	•
F.	**Flight path management**		
1.	Relationship between pitch, power and performance	•	•
2.	Performance and effects of differing power plants (if applicable)	•	•
3.	Manual and automation inputs for guidance and control	•	•
4.	Type-specific characteristics	•	•
5.	Management of go-arounds from various stages during the approach	•	•
6.	Automation management	•	•
7.	Proper use of rudder	•	•
G.	**Recognition**		
1.	Type-specific examples of physiological, visual and instrument clues during developing and developed upsets	•	•
2.	Pitch/power/roll/yaw	•	•
3.	Effective scanning (effective monitoring)	•	•
4.	Type-specific stall protection systems and cues	•	•
5.	Criteria for identifying stalls and upsets	•	•
H.	**System malfunction** (including immediate handling and subsequent operational considerations, as applicable)		
1.	Flight control defects	•	•

2.	Engine failure (partial or full)	•	•
3.	Instrument failures	•	•
4.	Loss of reliable airspeed (see also point (lb) of this AMC)	•	•
5.	Automation failures	•	•
6.	Fly-by-wire (FBW) protection degradations	•	•
7.	Stall protection system failures including icing alerting systems	•	•

(lb) Flight path management (manual or automatic, as appropriate) during unreliable airspeed indication and other failures at high altitude in aeroplanes with a maximum cruising altitude above FL300

The following training elements should be integrated into type rating training courses for aeroplanes with a maximum cruising altitude above FL300:

Element	**TK instruction**	**FSTD / Aeroplane training**
Basic flight physics principles concerning flight at high altitude, with a particular emphasis on the relative proximity of the critical Mach number and the stall, pitch behaviour, and an understanding of the reduced stall angle of attack when compared with low altitude flight.	•	•
Interaction of the automation (autopilot, flight director, auto-throttle/auto-thrust) and the consequences of failures inducing disconnection of the automation.	•	•
Consequences of an unreliable airspeed and other failures indication at high altitude and the need for the flight crew to promptly identify the failure and react with appropriate (minimal) control inputs to keep the aircraft in a safe envelope.	•	•
Degradation of FBW flight control laws/modes and its consequence on aircraft stability and flight envelope protections, including stall warnings.	•	•
Practical training, using appropriate simulators, on manual handling at high altitude in normal and in non-normal flight control laws/modes, with particular emphasis on pre-stall buffet, the reduced stall angle of attack when compared		•

with low altitude flight, and the effect of pitch inputs on the aircraft trajectory and energy state.		
The requirement to promptly and accurately apply the stall recovery procedure, as provided by the aircraft manufacturer, at the first indication of an impending stall. Differences between high-altitude and low-altitude stalls must be addressed.	•	•
Procedures for taking over and transferring manual control of the aircraft, especially for FBW aeroplanes with independent side-sticks.	•	•
Task sharing and crew coordination in high workload/stress conditions with appropriate call-out and acknowledgement to confirm changes to the aircraft flight control law/mode.	•	•

(2) The new GM1 ORA.ATO.125 is inserted:

'GM1 ORA.ATO.125 Training programme

UPSET PREVENTION AND RECOVERY TRAINING (UPRT)

(a) General

The objective of the UPRT is to ensure that pilots are competent to prevent or recover from a developing or developed aeroplane upset. Prevention training prepares pilots to avoid upsets whereas recovery training prepares pilots to prevent an accident once an upset condition has developed.

(b) Human factors

Threat and Error Management (TEM) and Crew Resource Management (CRM) principles should be integrated into the UPRT. In particular, the surprise and startle effect as well as the importance of resilience development should be emphasised.

Training should also emphasise that an actual upset condition may expose pilots to significant physiological and psychological challenges, such as visual illusions, spatial disorientation and unusual G-forces, with the objective of developing strategies to deal with such challenges.

(c) Development of training scenarios

During the development of training scenarios, the ATO should ensure that all of the following is avoided:

(a) negative training and negative transfer of training; and

(b) training utilising predictive scenarios.

Please refer to Revision 2 of the Airplane Upset Recovery Training Aid (AURTA) for further guidance on the development of training scenarios.

(d) Additional guidance

Specific guidance to the UPRT elements and exercises is available in:

(1) the latest revision of the ICAO Doc 10011 ‘Manual on Aeroplane Upset Prevention and Recovery Training’;

(2) Revision 3 of the Airplane Upset Prevention and Recovery Training Aid (AUPRTA); and

(3) the Flight Safety Foundation publication ‘A Practical Guide for Improving Flight Path Monitoring’, November 2014.

(e) Training platform

(1) When designing a training course, ATOs should select aeroplanes that are suitable for all the required training exercises. Where certain exercises require particular capabilities, then an ATO may consider the use of different aeroplanes for different exercises. Examples include basic UPRT or instrument flight training and the advanced UPRT course.

(2) For basic UPRT training conducted during the CPL or ATP courses, it is not anticipated that aerobatic category aeroplanes will be required or that aircraft need to be certificated for intentional spins. Aeroplanes with a maximum bank angle limitation may not be suitable for exercises such as steep turns or recovery from spiral dive.

(3) For the advanced UPRT course (FCL.745), the use of an aeroplane certificated in the aerobatic category will provide the greatest safety margin. Aeroplanes certificated in the normal or utility category may also be suitable provided the exercises used during the training take into account the capabilities of the aeroplane and are planned to remain within the training envelope for the aeroplane, as determined by the ATO (see point (f)).

(f) Training envelope

The training envelope is the envelope within which all training exercises will be carried out. It should be specified by the ATO in terms of the range of attitudes, speed and g-loads that can be used for training, taking into account:

(1) the training environment;

(2) the capabilities of the instructors; and

(3) in the case of training in FSTDs, the limitations of the FSTD (as per GM3 FCL.010 for the FSTD training envelope); and

(4) in the case of training in aeroplanes, the capabilities and certification of the aircraft, while considering a margin of safety in order to ensure that unintentional deviations from the training envelope will not exceed aircraft limitations. Different training envelopes may be specified for different aeroplane types even within a single training course.’