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Supplement No. 14 — September 24, 1952

SUBJECT: 61.112
Instrument Competency

61.112-5 Proficiency Requirements

The Office of Aviation Safety announces amendments to the rules on proficiency requirements applicable to CAR 61.112. These rules were published in the Federal Register and adopted on January 5, 1952.

The amendments include a change to paragraph (f) Steep turns whereby the degree of left bank may be reduced to not less than 30° in certain types of aircraft when the range of vision from the safety observers' position would be obstructed. In addition, paragraph (x) Emergency procedures has been revised to require that a record be maintained of the emergency procedures accomplished, date performed, and grade received.

The above described amendments are incorporated in the attached new sheets which should be inserted in supplement No. 11, dated January 10, 1952, in lieu of the previous pages containing paragraphs (b) Taxiing, sailing, or docking through paragraph (x) Emergency procedures.

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for E. S. Hensley
Director, Office of
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Attachments

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maintained in the pilot's file which will indicate the date, condition under which equipment examination was given, and grade received.

(b) *Taxiing, sailing, or docking.* Attention shall be directed to the manner in which the pilot in command conducts taxiing, sailing, or docking with reference to the taxi instruction as issued by airport traffic control or other traffic control agency, and taxi instruction which may be published in the air carrier's operations manual, and general regard for the safety of the air carrier's and other equipment which may be affected by taxiing, sailing, or docking operation.

(c) *Run-up.* Attention to detail in the use of cockpit check list and cockpit procedure shall be observed on all six-month proficiency flights.

(d) *Take-off.* For those air carriers authorized take-off minimums of 200-1/2, the pilot being examined shall whenever practicable execute a take-off solely by reference to instruments, or at the option of the check pilot, a contact take-off may be made following which instrument conditions shall be simulated at or before reaching 100 feet with the subsequent climb conducted solely by reference to instruments. The check pilot shall observe the pilot's ability to maintain a constant heading during the take-off run, his proficiency in handling power, flap and gear operation during the critical period between take-off (off ground) and reaching five hundred feet. Should it become necessary for the check pilot to give assistance after becoming airborne, the maneuver shall be considered as unsatisfactory.

(e) *Climbs and climbing turns.* Climbs and climbing turns shall be performed in accordance with the airspeeds and power settings as prescribed by the air carrier or those set forth in the "Airplane Flight Manual." The use of proper climb speeds and designated rates of climb shall be considered in determining the satisfactory performance of this phase of the proficiency flight.

(f) *Steep turns.* Except as provided hereinafter, steep turns shall consist of at least forty-five degrees of bank. The turns shall be at least 180° of duration, but need not be more than 360°. Smooth control application, and ability to maneuver aircraft within prescribed limits, shall be the primary basis for judging performance. When information is available on the relation of increase of stall speeds vs. increase in angle of bank, such information shall be reviewed and discussed. As a guide, the tolerance of 100 feet plus or minus a given altitude shall be considered as acceptable deviation in the performance of steep turns. Consideration may be given to factors other than pilot proficiency which might make compliance with the above tolerances impractical. For example, where the range of vision from the safety observer's position is obstructed in certain types of aircraft while in a steep left turn, the degree of left bank in such instances may be reduced to not less than thirty degrees.

(g) *Maneuvers (minimum speeds).* Maneuvers at minimum speed shall be accomplished while using the prescribed flap settings as set forth in the Airplane Flight Manual. In addition, attention shall be directed to airplane performance as related to use of flaps vs. clean configuration while operating at minimum speeds. Attention shall be directed towards the pilot's ability to recognize and hold minimum controllable airspeed, to maintain altitude and heading, and to avoid unintentional approaches to stalls.

(h) *Approach to stalls.* Approach to stalls shall be demonstrated from straight flight and turns, with and without power. An approach to stall shall be executed in landing or approach configuration. The extent to which the approach to stall will be carried and the method of recovery utilized shall be dictated by (1) the type of aircraft being flown, (2) its reaction to stall conditions, and (3) the limitation established by the air carrier. Performance shall be judged on ability to recognize the approaching stall, prompt action in initiating recovery, and prompt execution of proper recovery procedure for the particular make and model of aircraft involved.

(i) *Propeller feathering.* Propeller feathering shall be performed. Such propeller feathering shall be accomplished in accordance with instructions set forth by the air carrier and be exercised at sufficient altitude to insure adequate safety for the performance of the operation. The pilot's ability to maintain altitude, directional control, and satisfactory airspeed shall be the desired prerequisites in accomplishing this maneuver. The manner in which the pilot manages his cockpit during propeller feathering shall also be noted.

(j) *Maneuvers (one or more engines out).* When performing maneuvers (one or more engines out) the aircraft shall be maneuvered with a loss of fifty per cent of its power units, such loss to be concentrated on one side of the aircraft. The loss of these power units may be simulated either by retarding throttles or by following approved feathering procedures. The pilot in command shall be required to maintain headings and altitude and to make moderate turns both toward and away from the dead engine or engines. Proficiency shall be judged on the basis of the pilot's ability to maintain engine-out airspeed, heading and altitude; to trim the airplane; and to adjust necessary power settings.

(k) *Rapid descent and pull-out.* This maneuver shall consist of the following steps: While the aircraft is under the normal approach configuration and being flown at a predetermined altitude, it will be assumed that the aircraft has arrived at a navigational fix and is cleared to descend immediately to a lower altitude. (The lower altitude shall be one which permits a descent of at least 1,000 feet.) Upon reaching the lower altitude, the aircraft shall be recovered from the rapid descent and flown on a predetermined heading and altitude for a predetermined period of time. At the end of the time interval, an emergency pull-out shall be executed which will involve a change of direction of at least 180°. Performance shall be judged on the basis of ability to establish a rapid descent at constant airspeed, stopping the descent at the minimum altitude specified without going below it, holding heading and altitude, and smooth pull-up and climb.

(l) *Ability to tune radio.*[1]
(m) *Orientation.*[1]
(n) *Beam bracketing.*[1]
(o) *Cone identification.*[1]
(p) *Loop orientation.*[1]

[1]NOTE: Subsections (l), (m), (n), (o), and (p) shall be accomplished in a satisfactory manner either during (1) a routine line check under the supervision of an authorized company check pilot, (2) in a simulated or synthetic trainer, or (3) during the six-month proficiency flight. A record shall be maintained in the pilot's file which shall indicate the date, method utilized, and grade received in the performance of these items.

(q) *Approach procedures.* An approach procedure shall be made in the aircraft on the let-down aid for which the lowest minimums on a system-wide basis are authorized and include, where possible, holding patterns and air traffic control instructions which might be used by the pilot in day-to-day operations. If at the time of six-month proficiency flight the let-down aid affording the lowest minimums is not in operation at the point the check is given, the landing aid which affords the next lowest minimums on a system-wide basis shall be used. Where a particular air carrier is authorized landing minimums based on instrument landing systems and ground control approach, the predominate landing aid on a system-wide basis shall be utilized. In some cases a particular air carrier may be authorized its lowest landing minimums on a let-down aid which is not installed and operating at locations where the air carrier's pilots are based. It shall be the responsibility of the air carrier in this case to conduct six-month proficiency flights at locations where such an aid is installed and operating. All other approaches for which a particular operator may be authorized to use, such as, ADF, LF/MR range, VOR, and VAR shall be made and may be conducted in a simulator or other approved type trainer. A record shall be maintained in the pilot's file which will indicate the date that these approaches were performed and the grade received. If these approaches (ADF, LF/MR range, VOR, and VAR) are not performed in a simulator or other approved type trainer, they shall be accomplished on the six-month proficiency flight.

(r) *Missed approach procedures.* [See subsection (s)].

(s) *Traffic control procedures.* Missed approach procedures and traffic control procedures shall be accomplished in a manner satisfactory to the authorized check pilot. The degree of satisfactory or unsatisfactory performance shall be predicated on the pilot's ability to (1) maneuver the aircraft while performing these procedures, (2) follow instructions either verbal or written which may be pertinent to the accomplishment of these procedures. Subsections (r) and (s) may be accomplished while performing subsection (q).

(t) *Cross-wind landing.* A cross-wind landing shall be performed when practicable. Traffic conditions and wind velocities will dictate as to whether a cross-wind landing is practicable. Performance shall be judged on the technique used in correcting for drift on final approach, judgment in the use of flaps, and directional control during roll-out.

(u) *Landing under regular approach conditions.* Landing under regular approach conditions shall necessitate a path of flight around the landing area which will require not more than a 180° turn but not less than a 90° turn. The pilot shall be judged on the basis of altitude and airspeed control and his ability to maneuver under the minimum ceiling and visibility conditions prescribed.

(v) *Take-offs and landings [with engine(s) failures].* If it is consistent with safety, traffic patterns, local rules and laws, a simulated engine failure shall be experienced during take-off. The simulated failure shall occur at any time after the aircraft has passed the V_1 speed pertinent to the particular take-off and when practicable before reaching 300 feet. When performing the landing, the aircraft shall be maneuvered to a landing

while utilizing 50 per cent of the available power units. The simulated loss of power shall be concentrated on one side of the aircraft. The pilot's ability to satisfactorily perform this maneuver shall be evaluated in the manner stated under subsection (i).

(w) *Judgment.* The pilot shall demonstrate judgment commensurate with experience required of a pilot in command of air carrier aircraft.

(x) *Emergency procedures.* The emergency procedures shall be applicable to the type of aircraft being flown and in accordance with the emergency procedures prescribed by the air carrier. A record shall be maintained in the pilot's file which will list the emergency procedures accomplished, date performed, and grade received.

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