

## Introduction

It is different - think of it as instrument flight i.e. everything is more critical - check everything at least twice or at least extra thoroughly. An incident, small in daytime could be a near emergency at night. No low flying - think in terms of safety altitude in the dark: wireless masts or hilltops can be treacherous. Bad weather and low clouds are not so apparent at night; also, not so many aerodromes are open for diversion. Very few in fact. However, for all that, there are some good points: fewer traffic problems, and aircraft are lighted so can be seen more easily. Normally, there is less turbulence. Overall, provided good weather checks are made and sound airmanship is observed, then there should be no problems. One good piece of advice: obtain a Radio Nav. certificate before starting a night rating.

Apart from these common-sense aspects, there are some legal and physiological considerations. The legal aspects concern aircraft equipment, aircraft lights, pilot licences and ratings, and the legality of the aerodrome(s) used. The physiological aspects are those already learned about in instrument flying plus one additional item: night vision.

## Requirements

Training for the Night Qualification must be in accordance with JAR FCL1. Training may be undertaken in a non-JAA state provided that the organisation is fully approved in accordance with JAR FCL1 by the UK Civil Aviation Authority.

Training for the Night Rating may be completed during the training for a JAR-FCL PPL(A) providing the specific requirements of JAR-FCL 1.125(b) have been met.

## Introduction To Night Flying

The first lesson, after a good pre-flight brief and some earlier guided study consists primarily of an 'Introduction To Night Flying'. As with most, if not all, flights this starts in the pilots briefing room - especially if it is intended to fly far from the local aerodrome. The preparation flight would cover the flight in general but especially a weather check; availability of other airfields both as regards operating hours and weather; details of the various aerodrome layouts and lighting systems that will be encountered; and any procedures to be adopted in the event of emergency. Depending on the organisation this could be a one-to-one

briefing or a mass briefing. This type of briefing would be carried out before every night flying sortie.

Basically, the first night flight 'Introduction To Night Flying' will include all the ground techniques, take-off (can be done by the student under guidance), circuit departure to the local flying area where all the features of night flying can be demonstrated and practised by the student. Local features will be pointed out, as will difficulty of estimating the range of such features. The student will be shown the necessity for keeping the turns and manoeuvres gentle. A rejoin would follow - preferably an overhead join to demonstrate the airfield layout and the lights, which delineate the runway and the taxiways etc. Then with ATC approval the aircraft would be descended into the circuit to show the pattern to be flown and any other features. Where permissible, an extended downwind leg will be flown so that after setting up the descent on base leg (but not lower than 600ft) an approach can be flown inbound, parallel to the surface, to demonstrate how the appearance of the approach lights, runway lights, and PAPI's, can vary and so help the pilot to fly the requisite (safe) approach path to the runway. A go-around will then be initiated, a further circuit flown, and a landing made. The student would participate as necessary and the aircraft taxied back for shut down.

### **Circuit Training**

After the first night flight, which would normally last only about 50 minutes, the student would move on to several sessions in the circuit - with an occasional departure from the circuit to provide both additional experience and a break from the intensive circuit training.

It should be noted that although the flying demands extra care and discipline from the student pilot, the procedures on the ground are equally demanding. For instance, walking around the aircraft parking area at night with propellers turning can be mighty dangerous. Another good reason for 'No Running Changes'.

The circuit training will be quite comprehensive in that the student will learn to make take-offs, approaches, and landings with max. and min. runway lights; with and without r/w approach lights; and with and without aircraft landing lights. In addition, before the pilot is allowed to make first night solo, go-around from various situations must be demonstrated and practised, also a simulated forced landing on to the runway from, say,

2000 ft. overhead plus thorough briefings on all the recognised emergencies but including extra ones such as loss of cockpit lighting. However, emergencies which might jeopardise the safety of the aircraft would not be practised. Instructors will appreciate that a wide variety of experience will be encountered: some students will have flown IMC others won't; so great care is taken in sending someone on a first night solo. No matter how good a pilot appears to be, he / she won't be sent off on first solo until the pilot has made at least two separate night flights on two separate evenings. It might take three or four flights, depending upon experience and the weather.

After the first night solo, opportunity will be made either on the same night or a subsequent night to allow the student to carry out a session on the circuit to log a further four or five take-offs and landings. As stated, the actual number flown should be recorded in the pilot's logbook.

### Navigation

After the instructor has demonstrated the procedure for night navigation, the student may carry out further solo if the course hours permit, including leaving and re-joining the circuit depending on the conditions prevailing. Clearly, it is desirable for the pilot to have R/Nav equipment available and the knowledge to use it if local D/F facilities are not available.

On completion of all requirements, the relevant CAA application form should be completed and signed and dispatched to the CAA. The logbook should also be certificated / signed. Both throughout the course, and thereafter, all night take-offs and landings should be logged so that it is a simple matter to check night currency. In order to maintain currency one of the three take-offs and landings (required for passenger carrying) in the previous 90 days must be at night, unless the licence holder has a full instrument rating (not IMC).

## Take Off and Landing - Night Circuits - Exercise 20

### Aim:

To teach how to fly the aircraft in the circuit at night to practise take-offs, circuit patterns, approach and landings under various conditions of lighting, including go-arounds. This follows 'Introduction to night flying!

### Airmanship:

More detailed pre-flight briefing needed - such flights need greater care at all times - diff. Environment re-lighting and a/c recognition - ensure that an accident doesn't become an emergency - never take an a/c off maintenance without a daylight air-test.

### Air Exercise:

<p style="text-align: center;"><b>Briefing</b></p> <p>Airfield layout and lighting Weather R/T and signals. Emergencies and diversions. Personal equip. E.g. torch. Review Pil. Order Book.</p>	<p style="text-align: center;"><b>Pr-Fl. Checks</b></p> <p>Even more care than day. Use torch (es). As normal but check all lights Don't skip fuel. Note other a/c position. Bon. &amp; Nav. Lights 'on'</p>	<p style="text-align: center;"><b>Start-up</b></p> <p>All lights on, but cockpit not too bright Shout 'clear prop'. After start, brakes holding. Alternator charge.</p>
<p style="text-align: center;"><b>Taxying</b></p> <p>Taxy light on Determine taxy path/ lights. Normal checks.. Taxy <u>slowly</u>, if in doubt <u>stop</u> Search a/r with light, but' don't dazzle other pilots</p>	<p style="text-align: center;"><b>Power Check</b></p> <p>Ensure a/c not 'creep' Remember a/c not clearly seen from the rear Not upset night vision N.B. If any doubt 'do not go</p>	<p style="text-align: center;"><b>Take-off checks</b></p> <p>As normal, but include 'Nav. Lights on'. Cockpit lights low Torch stowed 'ready' Good lookout before R/T call Taxy/ landing light on. Confirm run way lights.</p>

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<p><b>Take-off</b> Landing light 'on' Lined up (Check is R/w!) Note how the a/c sits in the R/w lights. (For ldg.) Use C/I lights or end L.H. Avoid light to keep straight Rotate usual IAS, don't hold nose down. Over to I.F. and ensure positive climb rate. N.B W/V limits less at night.</p>	<p><b>Climb-out</b> Especially if strong W/V climb straight ah/d to 6/800 ft before turning. Fly D.I. hdg, precision flight. Overbanking during turn Remain on insts. until ground refs. Help. Landing light out on the climbout.</p>	<p><b>Crosswind Leg</b> Remain I.F. unless the grd. Lights give ref. Fly pre-det. D.I. hdg. Note: Some airfields use 1,000 ft. Circuit sat night.</p>
<p><b>Downwind Leg</b> Pos. a/c ref lights and fly Pre-selected D.I. hdg. Remember diurnal wind effect. Note app. Lights, plan base leg turn-in. Normal R/T call &amp; checks: include nav. Lights etc. Lookout for aircraft &amp; don't over-concentrate on r/w lights.</p>	<p><b>Base Leg</b> Judge path by ref app.&amp; R/w lights. Again, use D.I. Monitor altimeter Aim to turn 'Final' not less than 550/600 ft. N.B. don't get low</p>	<p><b>Final App. &amp; Landing</b> Turn not less than 550ft. Fly correct IAS/ RT Control ht. By ref the App. Lights &amp; r/w light plus altimeter Ldg. light on at, say, 3/400 ft. Pwd. App. Pwd. Asst' landing. Judge ht. On touchdown by perspective of light &amp; not by the surface.</p>
<p><b>After Landing</b> Keep straight ref lights. Reduce speed before turn off. If roller, reduce flap.</p>	<p><b>Go-around</b> As normal, but use I.F. as req'd. Precision is necessary. Watch trim. Turn off ldg. light on the climbout</p>	