



LOW VISIBILITY OPERATION

1. Introduction

Low visibility procedures exist to support low visibility operations at aerodromes.

Low visibility procedures (**LVP**) means procedures applied at an aerodrome for the purpose of ensuring safe operations during lower than standard category I, other than standard category II, category II and III approaches and low visibility take-offs.

Do not confuse low visibility procedures with automatic landing AUTOLAND.

Low visibility procedures can exist even if automatic landing is not possible on the airfield or AUTOLAND is not performed by the aircraft.

AUTOLAND can be made during low visibility procedures if the aircraft crew is certified and airfield ground equipment is compatible.. AUTOLAND can be also performed during normal operation.

2. Controller requirements

When meteorological conditions deteriorate to such an extent that the cloud base drops to a certain level, or the horizontal visibility decreases below a certain value, then it might become necessary to establish Low Visibility Procedures at your airfield.

2.1. Need to establish Low Visibility Procedures

As ground or tower controller you need to have sufficient visibility in order to exercise control based on visual reference (not applicable if you are controlling only with IvAc Radar).

Pilots are required to have obtained the required visual reference on ground or for the approach they are flying at the published minima.

When the meteorological conditions have deteriorated to such an extent that either or both of these is no longer possible, Low Visibility Procedures should be introduced to be able to continue the operation.

Aerodromes providing precision instrument approaches which provide guidance below ILS Cat 1 or equivalent DA/DH are required to have additional procedures in place to ensure protection of signals transmitted by the ground based radio equipment which is used.

Radio protection of signals are non-applicable in IVAO as the signals corruption cannot be simulated, but the additional procedure can be followed (if possible) in order to protect all operations in low visibility conditions.

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2.1. LVTO Triggering conditions

Low visibility take-off (**LVTO**) procedures can start for any take-off with a RVR lower than 400 m.

2.2. LVP Triggering conditions

The point at which LVPs are implemented may vary from one aerodrome to another depending on local conditions and facilities available. It will usually be determined by a specific RVR or cloud base measurement.

Not all airfields may be equipped to establish Low Visibility Procedures. To check if an airfield is able to go into Low Visibility Procedures, read the local procedures.

In the IVAO Network, when the local procedures are unknown, low visibility procedures can start when the RVR is below 550 metres or the cloud base is below 200ft AAL (i.e. when weather conditions will go below category I ILS approach criteria).

2.3. Implications with introducing Low Visibility Procedures

Extra safety measures shall be taken with the introduction of Low Visibility Procedures.

The capacity of the airfield will be reduced dramatically as the controller shall:

- Increase separation between landing and departing traffic even on aerodromes with different runways for landing and taking-off.
- Conditional clearances can no longer be given.
- Give taxi clearances with precaution and monitor his ground radar because pilots may not be able to see each other until the very last moment.
- CAT II/III holding points shall now be used, instead of the normal holding points. The ILS sensitive area must be protected and extra distance from runway will prevent unwanted runway incursion.

Landing and departing traffic shall be provided with the most recent meteorological data.

The Runway Visual Range (RVR) is the most important parameter for pilots.

2.4. IVAO application

As IvAc is used like ground radar, the controller will be able to separate the aircraft perfectly without compromising safety even under low visibility operation. However, care must still be taken when giving taxi clearances.

Pay attention that pilot situational awareness is tremendously reduced in low visibility operation.

You can instruct the pilot to use CAT II/III holding points to protect the ILS sensitive area. Since the ILS equipment in our flight simulator is not sensitive to aircraft presence inside the protected area, you can use the CAT II/III holding points in order to have more free space in front of the runway to prevent unwanted runway incursion.

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3. Pilot requirements

Prior to commencing a low visibility operation, the pilot-in-command shall be satisfied that:

- The status of the visual and non-visual facilities is sufficient
- Appropriate LVPs are in force according to information received from air traffic services (ATS)
- Flight crew members are properly qualified (non-applicable in IVAO)

The pilots are supposed to know the landing capability of their aircraft, their own qualifications, the requirements, minima, and all other procedures and rules involved. It is highly likely that very few pilots at IVAO actually know everything.

3.1. Low visibility operation requirements

During low visibility operation, flight crew shall perform CAT II or CAT III operations.

These operations shall be only conducted if:

- the aircraft concerned is certified for operations with a decision height (DH) below 200ft, or no DH, and equipped in accordance with the applicable airworthiness requirements;
- a system for recording approach and/or automatic landing success and failure is established (non-applicable in IVAO)
- the DH is determined by means of a radio altimeter;
- the flight crew consists of at least two pilots (non-applicable in IVAO)
- all height call-outs below 200ft above the aerodrome threshold elevation are determined by a radio altimeter

3.2. Cloud base, RVR and Visual Reference

The Cloud base does not stop the pilots from flying a CAT I approach legally.

The RVR though is a legal requirement the pilot must have to fly the approach. A pilot can start flying the approach if the actual RVR is below the RVR he requires.

The pilot cannot proceed legally beyond the OM without a reported RVR that he requires.

The Visual Reference must also be obtained when reaching the decision height in order to continue the approach to land.

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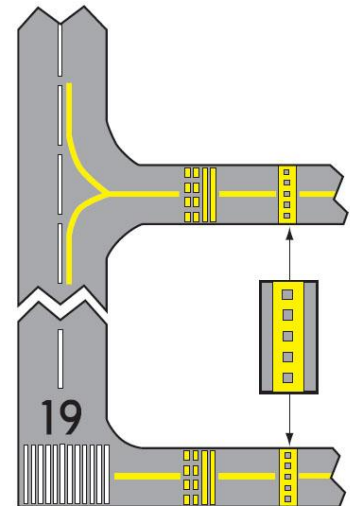
3.3. Low visibility on ground

3.3.1. Holding points

When the runway is CAT II/III equipped and has only one holding point mark, this holding point is compliant with the CAT II/III safeguarding.

When the runway is CAT II/III equipped and has more than one holding point, the closest holding point to the runway (marked the same as in the situation with only one holding point) can be only used outside low visibility operation (CAT I). The holding point situated further from the runway has a different marking as shown in the picture. This holding point is situated far enough from the runway in order to protect the ILS sensitive area and will be used during low visibility operation (CAT II/III).

Keep in mind that not all sceneries may have all the real CAT II/III holding points. Pilots may stop in a different place in function of their scenery. Many of them do not follow the ground charts information and prefer to respect the effective ground marking on their simulator.



3.4. Taxi

In real airfields, controllers can switch the green taxi lights, and the red stop bars ON/OFF, thus creating taxi routes with clear visual clues to the pilots. (not applicable in IVAO).

In some airfields, during low visibility operation, aircraft can call an external help in order to join the apron if they are not familiar with the airfield. The airfield controller will then send a follow me car, which can guide the aircraft on the ground.

IVAIO have the possibility to have a follow-me car using specific rules defined by HQ and divisions. Before connecting as a follow-me car, you shall respect all the required conditions.

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4. Approach Categories

As a controller you are supposed to know what approach category the equipment at your airfield can support.

The pilots are responsible to check which category they can fly with their aircraft, and which category they are authorized to fly by the local authorities and their company.

4.1. Category and visual reference

Precision Approach Category		Minimum DH	Minimum RVR required	Visual reference required by the pilot
Normal Operations	CAT I	DH \geq 200ft (60m)	RVR \geq 550m or VIS \geq 800m RVR \geq 1750ft or VIS \geq 2400ft	Approach light system elements. Threshold marking, threshold lights or identification lights Visual glideslope indications Touchdown zone, Runway edge lights.
Low Visibility Procedures	CAT II	100ft \leq DH < 200ft	RVR \geq 350 m RVR \geq 1200 ft	3 consecutive lights found in: <ul style="list-style-type: none"> • Approach ramp lights • Touchdown zone lights • Runway centre lights Lateral reference is required
	CAT III A	No DH or DH < 100 ft	RVR \geq 200m RVR \geq 700 ft	3 consecutive lights found in: <ul style="list-style-type: none"> • Approach ramp lights • Touchdown zone lights • Runway centre lights Lateral reference is not required
	CAT III B	No DH or DH < 50 ft	50 m \leq RVR < 200 m 150 ft \leq RVR < 700 ft	1 light at decision height if above 0ft No visual reference required in case of no DH
	CAT III C	No DH	No RVR requirements	No visual reference required

4.2. Category I ILS Approach

This is the normal approach category we use on a daily basis.

This usually is the approach that will provide the pilots with the lowest approach minima before low visibility procedures have to be flown.

4.3. Category II and Category III ILS Approaches

These different categories exist because not all aircraft are certified to meet the specifications for CAT III approaches, and the ground equipment is not certified for all of these types of approach.

There are very few aircraft certified to perform CAT III C procedures. Because it is very expensive there are therefore very few airports that provide this service.

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4.4. Runway Visual Range (RVR)

The RVR is a method used to report the visibility on the runway. Because of the high intensity lights and aircraft movement, the visibility measured on the runway can be higher than the measured meteorological visibility.

On real airfields, the RVR should be measured by means of instruments placed alongside the runway. RVR measurements are taken in 3 zones:

- Touchdown
- Midpoint
- Stop end

In IVAO, you cannot measure the real visibility on the runway. You will only have the METAR extracted from the real aviation weather broadcasting system.

In IVAO, any controller and any pilot shall read and interpret the RVR information on the METAR.

Example: EGSS 280950Z 0000KT 0300 **R22/0550V1000D** FG VV001 5/5 Q1014

In this example, the RVR on runway 22 is between 550m and 1000m even if the global visibility is 300m.

5. Hazards

On aerodromes where the ground marking and lighting is adequate, ground traffic at reasonable flow rates can often be sustained safely in reduced visibility.

Aircraft are at their most vulnerable during the landing and the take-off phases of flight. Making the necessary transition to visual reference during the final stages of an approach to land in poor visibility is critical and certain requirements must be met to reduce the risk of a Runway Excursion.

Low visibility take off also requires careful attention to correct runway alignment. A localizer signal of the runway ILS can be used for verification if available.

If a rejected take-off (RTO) is carried out, pilots must maintain awareness of the runway length remaining, using whatever external visual cues are available; relevant runway lighting, signage or markings may be available.

The risk of inadvertent runway incursion by taxiing aircraft is greatest at aerodromes with complex layouts and multiple runway access points. This risk can only be managed adequately by the application of procedures that provide the pilot with clear, unambiguous guidance on routing and holding points or ground traffic patterns.

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