

# Low Visibility Operations (LVO)

The correct use of LVO is not a mandatory part of S1 training.

## Introduction

In normal operations, pilots fly an ILS approach up to the so-called CAT1 minimum which usually sits 200ft above the runway threshold. Not later than at the minimum, the crew must have certain runway markings or the runway lighting in sight in order to be able to continue the approach. If this is not the case at the minimum, the aircraft must go around. ILS (and more recently also GLS/GBAS) CAT2 and CAT3 approaches are therefore available for poor weather conditions. In order for these to be carried out, the aircraft requires certain equipment (e.g. a radio altimeter), the crew must be trained and approved for this and the airfield must have a correspondingly precise and approved ILS system. In addition, the provision of CAT2 and CAT3 procedures requires certain operational procedures on the part of air traffic control and the aerodrome operator. These are explained in the following chapters. If CAT 2/3 procedures are activated, this is referred to as **Low Visibility Operations (LVO)** or **Low Visibility Procedures (LVP)**.

## Requirements and activation

LVPs are active as soon as one of the following two criteria is met

- Ceiling < 200 feet
- Runway visual range (RVR) ≤ 600 meters

The ceiling is the lowest cloud base with a coverage of more than 50%, i.e. BKN or OVC. Sometimes no cloud base can be measured (e.g. due to dense fog). In this case, the vertical visibility is used. This is given in the format VVxxx. Here are a few examples:

- VV010 = vertical visibility 1000 feet
- VV002 = vertical visibility 200 feet
- VV/// = Vertical visibility not measurable. This value is to be interpreted as vertical visibility less than 100 feet

The runway visual range is a value determined by a measuring system that differs from the ground visibility determined by a weather observer. In terms of horizontal visibility, only the RVR is relevant for the provision of LVOs. Further information on RVR can be found [here](#).

The following rules apply to airports with several runways: LVOs always affect the entire airfield. Even if the RVR is well over 600 meters on one runway but 550 meters on the other, Low Visibility Procedures apply to all runways and taxiways.

## Measures for LVO

### Switch ATIS

Pilots are informed about Low Visibility Operations via ATIS (LOW VISIBILITY PROCEDURES IN OPERATION CAT II AND III AVAILABLE). Without this information (or other agreements), pilots are not permitted to carry out approaches with minima of less than 200 feet. To transmit this information in ATIS, the suffix &lvp must be added to the ATIS Maker URL (the suffix may vary depending on the regional group and airfield). Further information on the subject of ATIS can be found in the knowledgebase article of the same name and in particular in the FIR-ATIS articles linked there.

### Clear only up to CAT 2/3 holding points

Both the localizer and the glideslope signal are electromagnetic waves in the MHz range and are therefore subject to the physical phenomena of interference and reflection. The signals can be altered by sources of interference, resulting in so-called bends or scalloping. For CAT1 approaches, pilots can visually detect possible major inaccuracies in the signal below the minimum and then initiate a missed approach or manually correct the approach and land. This is not possible for CAT2/3 approaches, which may not have a minimum at all. Sources of interference must therefore be eliminated where possible.

As large metallic objects, aircraft on the runway are also sources of interference. Accordingly, they must have a certain distance from the runway in order to keep the ILS signal as precise as possible. This particularly sensitive area around the runway is called the "sensitive area" and must be free of obstacles and sources of interference.

The "normal" CAT 1 holding points lie within this area, which is why other holding points are necessary for LVPs. These are the so-called CAT 2 holding points. On ground radar maps, you will generally find two holding points at the takeoff intersections. The CAT 1 holding point is closer to the runway, the CAT 2 holding point a little further away.

Accordingly, the following phrase must be used on the radio when clearing to the holding point: *"DLH414, TAXI TO **CAT II HOLDING POINT** RUNWAY 26R via N A15".*

Correspondingly, during LVP the runway is only considered vacated by an arriving aircraft when the aircraft is completely behind the CAT 2/3 holding point. Otherwise the runway is not considered clear in terms of separation.

At some airports, the Landing Clearance Line (LCL) procedure is permitted. In this case, the runway is considered cleared when the aircraft has completely overrun the so-called landing clearance line (usually located 102 m from the center of the runway). This procedure is sometimes even more restricted (e.g. only for WTC M or L). Details on whether the procedure is permitted at your airfield, where the landing clearance line is located and how to work with it can be found in the SOP of your training airport.

Important: Depending on the SOP of the respective airport the sensitive area must be clear when the next approach reaches the 2-mile final approach. If the sensitive area is not clear when the following approach is at 2 miles, the approaching aircraft must be instructed to go around. When using the Landing Clearance Line procedure, the Landing Clearance Line must be crossed before the following approach is at 0.6 NM final approach or 200ft AGL. Whether these procedures are used on Vatsim can be found in the respective tower SOPs.

## Tell the RVR

Not every RVR allows for legal landings. This depends on various factors. These include the certification of the airline, the aircraft, the crew, but also the type of approach. In order for a pilot to know whether he is currently still allowed to land, he must receive the latest RVR at two points in time:

- At the approach clearance (by the approach controller): "DLH123, cleared ILS approach runway 25L, RVR 800 meters"
- Before the 4 NM final approach again (can also be given with the landing clearance): "DLH123, RVR runway 25L 600 meters, wind 210 degrees, 4 knots, runway 25L cleared to land"

As there is no source for live RVRs on VATSIM, the RVR is read out of the METAR instead. Sometimes it is also possible that there is only one RVR for the opposite direction (e.g. 08R instead of 26L) in the METAR. This is then used. If there is no RVR at all in the METAR for a particular runway, it can be assumed that the RVR is greater than 2,000 meters.

## Discontinuation of certain procedures

Some procedures depend on aircrafts' visual contact or that the tower controller sees the aircraft from his window. We also simulate this on Vatsim in good weather. However, at least under LVO, the visibility is so poor that the following procedures are no longer permitted:

- Conditional line-ups
- Multiple line-ups
- Reduced runway separation (limits are already higher)
- VFR / SVFR (limits are already higher) - exception: pilot confirms that he is simulating VMC
- Visual separation in the vicinity of aerodromes
- Taxiing on unlit taxiways (if explained in the airport's SOPs)

Furthermore, instructions such as "Expedite taxi" or "Expedite vacating the runway" should be avoided, as it is generally not possible for the pilot to taxi faster due to poor visibility.

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