ICA OOPS Low Visibility Operations (LVO) Sub Group Initial Meeting April 2013

Presented to: Aeronautical Charting Forum IPG
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By: April 23, 2013
Overview for Today

• The Overarching Low Visibility Ground Operations Goal
• Primary Initial ICAO Ops Panel Goals
  – Harmonized international policies
  – Standardized charting and symbols
• Research Efforts That may Assist Goals
• Discussion
The Overarching Goal

• As Close as we can get to:

ZERO/ZERO VISIBILITY
GATE TO GATE
GATE to GATE In Zero-Zero Visibility
ELVO Program
Destination 2025

Future Technologies

LVO/SMGCS/LVP Infrastructure PHASE II

Moving Map POC ±3 Feet PHASE II

LVO/SMGCS Taxi Chart NASA/LANGLEY PHASE II **GIS Database

*EFVS POC* PHASE III

GIS Database

LVO/SMGCS Low Visibility Procedures Airports 10Kt Taxi Speed
First Ops Panel Goal

Harmonized international policies
U.S. Inconsistencies

- Low Visibility Hold Point Markings—“Pink Spots, Geographic Position Markings”
- Runway Holding Position Markings and Approach Hold Lines
European Inconsistency

- Milan, IT
- Taxiway “W” Spots
- Geographic Position Markings are black signs with yellow & black Letters/Numbers
From the European All Weather Operations Guidance Manual Edition 4

Figure 3.1 The relationship between ICAO Visibility Conditions.

Note 1 — For taxiing, this value is normally taken as visibilities equivalent to an RVR of less than 400 m but more than 75 m. The value of 400 m is provided as an example in Doc 7030. Criteria for determining the transition between visibility conditions are a function of local aerodrome and traffic characteristics. See 3.2.3 and 3.2.4 for more details of the transition between visibility conditions.

Note 2 — This value is normally taken as an RVR of 75 m or less.

3.2.3 The transition from Visibility Condition 1 to Visibility Condition 2 occurs when meteorological conditions deteriorate to the point that personnel of control units are unable to exercise control over traffic on the basis of visual surveillance and in practice defines the entry to Reduced Aerodrome Visibility Conditions (RAVC). The transition will be different for each aerodrome, depending on factors such as the location and height of the ATC tower and the size and layout of the manoeuvring area. Reduced ground visibility will normally be the determining factor for this transition. However at some locations, such as those with tall control towers, low cloud may be a prevalent factor requiring consideration. The process of determining the boundary between Visibility Condition 1 and Visibility Condition 2, and
<table>
<thead>
<tr>
<th>MET</th>
<th>Visibility Condition</th>
<th>Procedures</th>
<th>Approach Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VISIBILITY CONDITION 1</td>
<td>Tower visibility 100% Ground visibility 100%</td>
<td>INTERNATIONAL 1</td>
</tr>
<tr>
<td></td>
<td>VISIBILITY CONDITION 2a</td>
<td>Pilot/vehicles see and avoid. Extra procedures/restrictions ensure ELOS for tower control.</td>
<td>LVO/SMGCS LVP prep</td>
</tr>
<tr>
<td></td>
<td>VISIBILITY CONDITION 2b</td>
<td>Pilot/vehicles see and avoid. Extra procedures/restrictions/equipage and LVO/SMGCS LVP ops ensure ELOS for tower control.</td>
<td>LVP (LVO/SMGCS Level 1) - Equipage, procedures, training, qualifications, restrictions CAT III requirements</td>
</tr>
<tr>
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<td>VISIBILITY CONDITION 3</td>
<td>LVP (LVO/SMGCS Level 2)</td>
<td>SA CAT I</td>
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<td>VISIBILITY CONDITION 4</td>
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<td>SA CAT II</td>
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<td>CAT III</td>
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<td>CAT III</td>
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Aerodrome Specific:
- <550m/<1800ft
- CG <75m/<300ft
- <350m/<1200ft
- <150m/<500ft
- <75m/<300ft
1. Entry into Vis Condition 2: This value is locally determined depending on the size of the aerodrome, however the airports have to be under LVP/LVO/SMGCS operations by 1800 ft RVR/ 550 m.

2. LVP/LVO/SMGCS prep. Determined locally, but should be completed before the airport goes below 1800 ft RVR/ 550 m.
Footnote 3: Visibility Condition 2a Requirements

- At less than Category I ILS visibility conditions reduced number of aircraft operations
- Category II ILS conditions restrictions/qualifications/training apply
- Obstacle Free Zone protection

Equivalent Level of Safety [ELOS] to Air Traffic full visual control of aerodrome achieved
Footnote 4: Visibility Condition 2b Requirements

In addition to Vis Condition 2a restrictions

• Category III ILS conditions restrictions/qualifications/training in place

• Low Visibility Procedures/Low Visibility Operations/Surface Movement Guidance Control System LVP/LVO/SMGCS invoked

• Increased LVP/LVO/SMGCS airport infrastructure applied

ELOS to Air Traffic Visual Control achieved
Second Ops Panel Goal

Standardized charting and symbols
**Charting Variances**

### Inconsistent Stop Bar & Guard Light Jepp Symbols

- **Stop Bar**
- **Runway Guard Lights**
- **RWY Guard Lights**
- **Elevated Guard Lights Only**
- **Runway Guard Lights Elevated**
- **Elevated Runway Guard Light**
- **Runway Guard Lights (Not Installed Yet)**
- **Taxiway Clearance Bar Lights**

- **In-Pavement & Elevated RWY Guard Lights**
- **In-Pavement & Elevated RWY Guard Lights**
- **In-Pavement & Elevated RWY Guard Lights**
- **Holding Position Markers & In-Pavement Guard Lights**
- **Runway Guard Lights In-Pavement**
- **RWY Guard Lights**
- **(RWy Guard lights exist on all Twys that intersect a Rwy)**
Joint FAA/NASA Langley/VOLPE Research

Figure 4. NASA Langley Research Flight Deck (Note: EFBs relocated)
International Picture

- 144 Category III ILS served airports worldwide
- 65 European Category III ILS served airports 4000 hours per year LVO at less than
- 64 U.S. Cat III ILS served airports averaging 2500 hours per year LVO at less than 1000 ft RVR/300 m
- 15 other airports in various locations
Background

• 16 years in U.S. of Cat III ILS airports under LVO/SMGCS operations with 2500 hours average per year at less than 1000 ft RVR/300 m

• New Order 8000.94 resolving inconsistent policies defines responsibilities of AVS, ARP & AJO and key points of LVO/SMGCS program

• 2012 Joint FAA/NASA Langley/VOLPE research providing data on RVR 300 ft/75m LVO operations and charting
We Want You!

The United States Federal Aviation Administration is looking for pilots to participate in an LVO/SMGCS Symbol Study.

Qualification:
Airline Transport Pilot
CAT III experience

Survey Duration:
About 45 minutes to complete

All Pilots Interested, Please Contact
Andrea Sparko @ (617) 494-3363
Andrea.sparko@dot.gov
or
Stephanie Chase @ (617) 494-6348
Stephanie.chase@dot.gov

**50 Random Pilots Who Complete The Survey Will Receive a $50 Gift Certificate to Amazon.com**
• Questions
• Discussion