IVAO - SLOVENIAN AIR TRAFFIC CONTROL

ATC HANDBOOK

IVAO - SLOVENIAN DIVISION

FOR VIRTUAL PURPOSES ONLY

LAST AMDT :: MAR 2009

EFFECTIVE DATE :: 12-MAR-09

1. Facilities and responsibilities

1.1. Introduction

- The virtual airspace of Slovenia in IVAO network consists of one Flight Information Region (FIR), called Ljubljana.

- The FIR has several facilities established. The main facility, which takes control over the whole FIR, is Ljubljana Area (ACC), with callsign: Ljubljana Radar.
- This Radar can be split into more sectors - up to 3, with regard to traffic flow across the country. These sectors are Lower, Upper and Top sector.
- When only one sector of Radar is active, the Lower sector becomes Joint sector, and covers the whole country.

- At our 3 international airports, there are also three Air Traffic Services provided. These are: Ljubljana Tower, Maribor Approach and Portorož Approach.
- Both Approaches are procedural facilities, formally without radar support and working also as Tower facility.

- Apart from that services, also Ljubljana Flight Information Service (FIS or FIC) is established. Online as 'Ljubljana Information,' it provides weather and traffic info to the VFR traffic, flying in uncontrolled airspaces of Slovenia (class E and G).

1.2. Table of ATS provided

Radar ATS in Ljubljana FIR		
ACC Ljubljana Covers whole country in absence of other facilities		
Facility callsign	Network login codes available	Description
Ljubljana Approach Radar	**LJLA_CTR**	Covers whole LJLA FIR
Ljubljana Radar	**LJLA_U_CTR**	Second - Upper sector, controlling FIR above FL245, when open.
Ljubljana Radar	**LJLA_P_CTR**	Third – Top sector, covering FIR above FL350, when open.

Procedural facilities with only informational radar support	
Facility, providing info in uncontrolled airspace	
FIC Ljubljana Providing service to all en-route VFR traffic in the FIR	
Facility callsign	Network login codes available
Ljubljana Information	**LJLA_FSS**
Airport procedural facilities	
APP Maribor	
Maribor Approach	**LJMB_APP**
APP Portorož	
Portorož Approach	**LJPZ_APP**

Airport Service	
TWR Ljubljana	
Facility callsign	Network login codes available
Ljubljana Tower	**LJLJ_TWR**

1.3. Slovenian airspace facilities directory

The below table shows all valid facility frequencies in the Ljubljana FIR.

Name of FIR, Lateral and vertical limits	Unit providing service	Login name, Callsign, Language	Frequency **Main** Reserve Emergency	Remarks
1	2	3	4	5
FIR Ljubljana Covers the territory of the Republic of Slovenia Limited by state boundaries/ Ground	APP/ACC LJUBLJANA	**LJLA_CTR** Ljubljana Approach Radar (EN) (SLO)	**135.275 MHz** 136.000 MHz 121.500 MHz (EMG)	Covers whole FIR (joint sector), if no other facilities staffed.
	ACC LJUBLJANA	**LJLA_U_CTR** Ljubljana Radar (EN) (SLO)	**128.875 MHz** 121.500 MHz (EMG)	Covers Upper Airspace of FIR, above FL245.
	ACC LJUBLJANA	**LJLA_P_CTR** Ljubljana Radar (EN) (SLO)	**121.325 MHz** 132.725 MHz 121.500 MHz (EMG)	Covers Top sector of ACC, above FL350.
	FIC LJUBLJANA	**LJLA_FSS** Ljubljana Information (EN) (SLO)	**118.475 MHz**	Provides info to VFR traffic in E and G airspace. Procedural facility.
	TWR LJUBLJANA	**LJLJ_TWR** Ljubljana Tower (EN) (SLO)	**118.000 MHz** 118.750 MHz	
	TWR/APP MARIBOR	**LJMB_APP** Maribor Approach (EN) (SLO)	**119.200 MHz**	Procedural facility.
	TWR/APP PORTOROŽ	**LJPZ_APP** Portorož Approach (EN) (SLO)	**124.875 MHz**	Procedural facility.

Remark:
Table is informational. On the network ACC controllers may split their airspace with different FL boundaries, for example Lower sector from GND to FL305 and not 245. The situation depends on the number of traffic situated in each area. The neighbor controllers are informed about ACC sectors in Local agreement publication by director. If controller decides to split the airspace by different FLs than described, he should inform neighbor controllers online about it.

1.4. Facility responsibilities and areas

See Charts LJLA 11-1 and 11-2

1.4.1. Wien Radar

Wien and Zagreb transfer traffic directly to each other, without contacting Ljubljana, in case that traffic flies between LOVV and LDZO FIRs via TMA Mura and CTA Mura1, above FL130. Overflying these two sectors, pilot should call directly Wien Radar by our local agreement or no one, when Wien Radar is not active. This procedure is not valid in case traffic enters TMA Mura and CTA Mura1 from LHCC FIR inbound LJLA FIR. In this case pilot always calls Ljubljana ATS.

1.4.2. Ljubljana Radar

Covers entire controlled airspace of Slovenia, (class C, D) and substitutes other areas, normally controlled by APP/TWR, when local controls are not online.

Pilots flying VFR in E and G classes of airspace should contact Radar for traffic and weather info, when FIS is not active.

1.4.3. Ljubljana Tower

From the ground up to 3500 ft, covering area of CTR Ljubljana.

1.4.4. Ljubljana Information

Provides info for VFR traffic, flying in E airspace, below 8000 FT in TMA Dolsko 1, CTA Mura 2 and in G class of airspace.

1.4.5. Maribor Approach

Below FL125, covering TMA Maribor and CTR Maribor. When not active, substituted by Ljubljana Radar.

1.4.6. Portorož Approach

Below FL135, covering CTR Portorož and TMA Portorož. When not active, substituted by Ljubljana Radar.

1.5. ACC Frequency usage

More than one radio frequency is available for Ljubljana Radar. Ljubljana FIR can be split up to three different ACC sectors.

The configurations are shown in three tables:

Online is **one** Radar controller		
Uses frequency	Callsign	Sector
135.275 MHz (136.000 MHz)	Ljubljana Radar	Joint sector / GND - unlimited

Online are **two** Radar controllers		
Controller, who came online first, stays on:		
Frequency	Callsign	Covers
135.275 MHz (136.000 MHz)	Ljubljana Approach Radar	Lower sector / GND – FL245
Controller, who came online second, takes:		
128.875 MHz	Ljubljana Radar	Upper sector / FL250 - unlimited

Online are **three** Radar controllers		
Controller, who came online first, stays on:		
Frequency	Callsign	Covers
135.275 MHz (136.000 MHz)	Ljubljana Approach Radar	Lower sector / GND – FL245
Controller, who came online second, stays on:		
128.875 MHz	Ljubljana Radar	Upper sector / FL250 – FL345
Controller, who came online third, takes:		
121.325 MHz (132.725 MHz)	Ljubljana Radar	Top sector / FL350 – unlimited

Remarks:
- Even though formally ACC Lower sector is published as 'Ljubljana Approach Radar', controllers and pilots normally use simplified short callsign: 'Ljubljana Radar' for all Area facilities of the FIR.
- More ACC sectors are normally opened, when increased traffic is expected. Division director may always reorganize controllers online to different facilities than those they came online as.

1.6. ATS prefixes in use

Reconnecting after being dropped
- If network server fails, and a controller loses his connection to the network, he should reconnect back with the same callsign, check his ATIS and TS.
- If controller wasn't able to connect back to the network with the same callsign, he should connect with a 'number prefix', example: LJLA_1_CTR, if he was working as LJLA_CTR.

Controllers on training
Controllers on training for a specific facility must use a 'training prefix', and work with an instructor, for example: LJLJ_T_TWR. In this case Tower is a trainee, and LJLJ_TWR is his instructor.

Practical exams
Practical exams in Slovenia are in operations mainly at TWR/ACC facilities, where for example: LJLA_X_CTR is the examiner of logged LJLA_CTR examinee.

1.7. Facility choice

- Controller must choose a suitable facility within LJLA FIR regarding his ATC knowledge and division minimums.
- If possible, first controller online should connect as Ljubljana Radar, and the second controller as Ljubljana Tower. The rest of the controllers should then connect to Upper sectors of Radar or to Approach facilities.
- DIR may organize persons online into different facilities than they first came online as, regarding traffic flow or because of wrong choice of facilities regarding their knowledge.

1.8. Uncontrolled airspace

See Charts LJLA 11-1 and 11-2

- Within Ljubljana FIR, there are uncontrolled airspaces, which are under service by Ljubljana Information. If Information (FIS) is not online, none substitute it. VFR pilots, flying in E and G airspace can call FIS to have informational service provided. When FIS is not active, Radar gives weather and traffic info to VFR flights. VFR pilots, flying in E and G airspace, may be without transponder and FP.

Uncontrolled airspace locations in LJLA FIR (See Chart LJLA 11-2)	
Class	Location
G	G airspace is located in whole country of Slovenia, below 1000 ft AGL. Exceptions are: TMA Dolsko1, where G is below 2000 ft AGL and TMA Dolsko2, where G is below 9500 ft MSL. Exceptions are also Tower Zones – CTR Ljubljana, Maribor and Portorož, where whole airspace is controlled and no G airspace is located.
E	E airspace is situated in TMA Dolsko 1 and CTA Mura 2.

1.9. Squawk code allocations

Service	I F R		V F R	
	Domestic codes	International codes	Domestic codes	International codes
APP Maribor	**0046**			
APP Portorož	**0045**			
TWR Ljubljana			**3360 - 3366**	
FIS Ljubljana			**3300 – 3307**	**7003 – 7016**
ACC Ljubljana	**0040 – 0044** **0050 – 0056**	**6501 – 6517**		
SAR			**7711 – 7727**	

2. Air traffic control procedures in Slovenia

2.1. Facility coordination

2.1.1. - Ljubljana Tower ←→ Ljubljana Radar

IFR A/C departing:
- Tower must inform Radar about IFR A/Cs with flight plan sent.
- After that, Radar gives ATC clearance to Tower and pilot is offered ATC clearance from Tower after startup request.
- All IFR A/Cs startups are approved by ACC, if not otherwise coordinated with Tower.

- Clearance can be also issued directly by Tower and before startup with prior agreements with ACC only.
- After startup (or pushback when applicable) TWR must ask ACC to approve a departure of an aircraft, 1-2 minutes, before he reaches holding position or threshold.
- After an approval is received, A/C is cleared to take off.
- A/C is transferred to Radar, passing 1000 ft AGL – general case – IFR traffic.

IFR A/C arriving:
- ACC must inform TWR about arriving A/C at least 10 minutes before an A/C is entering into TWR's airspace.
- The second info from APP/CTR to TWR is 2 minutes before ILS of A/C is established/RWY is in sight.
- ACC transfers an A/C to TWR at the moment A/C reports established on the ILS / final track or has the RWY in sight.

VFR in pattern:
- For VFR traffic in traffic patterns, TWR doesn't need to inform ACC about it, since the traffic stays on TWR frequency all the time.
- No need for TWR to inform ACC about VFR traffic, which is departing from Ljubljana, and is not flying in controlled airspace.

VFR A/C departing:
- If traffic will fly in E or G airspace, Tower on CTR boundary instructs pilot to contact Information. Otherwise, if no FIS online, the controller will instruct pilot: 'Frequency change is approved, Radar active for Info.'

VFR A/C arriving:
- FIS (ACC) transfers A/C to Tower, when pilot is ready for approach, usually on entry points S3, NE, W1 etc... If pilot didn't call Information, he will call Tower himself, when ready.

2.1.2. - Maribor Approach ←→ Ljubljana Radar

- Both controllers inform each other about traffic inbound their airspace 5-10 min before traffic is transferred.
- Transfers are made 2-5 min before traffic comes to the boundary.
- Traffic to APP is usually routed via VALLU and transferred to APP 2 min before pilot reaches VALLU, on altitude 8000 ft, unless requested otherwise by APP.

2.1.3. - Portorož Approach ←→ Ljubljana Radar

- IFR traffic inbound Portorož from ACC is transferred 2-5 minutes before boundary, usually 2 min before Bistrica VOR, descending to altitude 8000 feet, if APP does not issue a different request to ACC.
- ACC must inform APP about traffic at least 10 min before traffic enters TMA Portorož.
- APP transfers departing traffic to ACC 2 minutes before boundary, usually via Bistrica. APP cannot approve higher altitude to the traffic departing, then APP sector includes without approval of ACC.
- Both controllers inform each other about traffic inbound their airspace 10 min before the transfer.

2.2. Standard procedures

2.2.1. Approach to international aerodrome

Ljubljana

In the process of descent and approach vectoring or Standard Arrival (STAR) usage is authorized. In the process of separating aircraft, the following procedures are to be used:

-speed regulations are used to maintain separation during approach, with phrases: ‘Do not exceed speed 200’ or ‘Continue with minimum approach speed/high-speed until...’ According to DOC 4444, no speed restrictions can be used after 4 NM final – in this case OM.

-route extension is used by vectoring aircraft for ‘delay action’, to be nr. X for approach.

– For approaches to RWY 13, also ILS approach RWY 31 is in use. In case of severe tailwind, pilot can request circling approach for runway 13 from ATC, but it cannot be issued by ATC without pilot's approval.
– Pilot may also request NDB-Locator, VOR/DME or visual approach, if VMC conditions allow it. Pilot approaching Ljubljana may ask for visual approach RWY 13/31 in good weather conditions, at entry points GIMIX, NIPEL, TELSI, etc.

Maribor and Portorož

- No vectoring is used for approach. Pilot follows standard procedures as published on charts. ATC maintains separation with altitudes, holdings, and speed restrictions.
- When entering into TMA, pilot can ask for visual approach if weather conditions allow it.

2.2.2. IFR Take off and departure

Ljubljana

In this process vectoring and Standard Departure (SID) usage are authorized. All aircraft are to be handed off to Ljubljana Radar after being airborne. Instructions for vectoring departure for runway 31 are “after departure climb straight ahead to MWEST, then turn left heading 180, climbing 6000ft, further by radar”. If the aircraft is departing from runway 13 on vectoring departure, the instructions are “after departure follow runway heading, climbing 6000ft”.

Maribor and Portorož

Approach is no-radar service, and does not identify or vector traffic. At departure SIDs or directs are issued.

2.2.3. Missed approach and go-around

Ljubljana

a) When on a missed approach, the aircraft can be instructed to ‘Continue missed approach as published’. (Charts LJLJ 3-1, 3-2 and 3-3) Pilot will execute missed approach as published on the chart and enter holding at Dolsko, where he will wait for further controller’s instructions. Controller must also inform pilot about EAT, (expected approach time) when pilot should expect to be vectored back into (ILS) approach.

b) ATC can also vector pilot back into ILS, without holding at Dolsko. In this case ATC instructs the pilot: ‘After minima, climb straight ahead to Marker West (MWEST), turn left heading 180 climbing altitude 6000 ft, (further by Radar).’ Airplane is then vectored back into the ILS by Radar.

c) When making a go-around, the aircraft follows the same procedures as for a missed approach.

Maribor

In case of missed approach pilot follows published procedure on Chart LJMB 3-1. Pilots without charts must be instructed by ATC to climb 3500 ft and turn right to MR locator and hold as published on the chart.

Portorož

For missed approach pilots are instructed to climb 2700 ft to PZ locator and hold. (Chart LJPZ 3-1)

2.2.4. Traffic En-route

VFR traffic

- VFR traffic in TMA Dolsko1 should stay below 8.000 ft all the time being en-route. The airspace above 8.000 ft is formally reserved for IFR traffic.

- ATC usually approves climbing to higher altitude, if traffic situation allows this. Pilot, asking to climb above 8.000 ft, should be equipped with transponder up to mode C.
- All VFR traffic should avoid airspace of TMA Ljubljana1, due to IFR traffic activity. To avoid this airspace, pilot follows recommended VFR route via Celje, Radeče, Trebnje, Velike Lašče, Planina,... using 'VFR+GPS' chart.

IFR traffic

- Minimum en-route altitude for all IFR traffic is 8.000 ft in TMA Dolsko1.
- IFR without a route filed, cannot fly IFR in Slovenia.

2. Low visibility procedures

Low visibility procedures are divided in three phases:

- **preparation phase**
  - is commenced when RVR below 800m and
  - ceiling below 300ft
- **operations phase**
  - is commenced when RVR below 550m and
  - ceiling below 200ft
  - pilots are informed on first contact with phrase: "Low visibility procedures in operation"
- **termination phase**
  - commenced when RVR equal or greater than 800m and
  - ceiling equal or greater than 300ft
  - controller must inform all aircraft on frequency with phrase: "Low visibility procedures cancelled at time XXYY Zulu"

2.2.6. Agreements with neighboring FIR's

See **Letter of agreements** publication.

2.2.7. Other special procedures

a) **Low approach** is a low pass of the airport. The procedures are to be the same as with a missed approach.

2.2.8. Emergency procedures

All aircraft are to be given full support and help if an emergency situation arises. The aircraft are to be given full priority and a fast way to the nearest suitable airport. The tower is to be notified as soon as possible for emergency preparation and to clear the runway.

2.2.9. Radar failures

In case of Radar failure in ACC facility, caused by server lag, controller can try to connect to another server. If after reconnection controller still does not see traffic on the radar screen, he announces radar failure with:

'All traffic, station calling, radar failure occurred, working procedurally.'

If radar failure lasts more than one minute, or several failures are happening frequently, controller must continue to work procedurally, without identifying traffic, and with callsign 'Ljubljana Control'.

Controller must find the correct aircraft's position by standard procedures (with asking pilots to report radial from a specific VOR and distance from it).
Airplanes, approaching airport under control, the controller may instruct to approach procedurally and report their position each x minutes.
If the controller after radar failure cannot handle the number of airplanes for approach, holdings are recommended.

3. Controller's knowledge minimums and promotions

3.1. Knowledge

- Contact SI-DIR for all information, concerning ATC training.
- Check ATC document on **www.ivao.si** ("Novinci")

3.2. Controller's promotion

Please, see ATC Rating requirements on **www.ivao.si** (Documents).

3.3. Facility Rating Assignment Minimums (FRAS)

The 'FRAS' – minimal rating limits in Slovenia are established for:

Facility type	Minimal rating for independent work online	Voice (TS)
LJLJ Tower	**C1**	**required**
LJMB/LJPZ Approach	**C1**	**required**
Information	**S3**	**recommended**
Radar (all sectors)	**C2**	**required**

3.4. Foreign candidates for ATS in Slovenian division

According to the IVAO Rules and Regulations 5.1.2., foreign controllers without knowledge about the Slovenian airspace shall not connect to any valid ATS position simultaneously, without prior application to the Slovenian Division staff (MC, TC or DIR). Foreign controllers intending to provide ATC in Slovenia and keeping a membership of their original division, shall firstly pass the ATC practical exams in their home division,

before applying to Slovenia. With the intention to provide ATC in our division, both division directors shall agree before starting. Slovenian local instructor or training coordinator will check the knowledge of local procedures and complete additional training with the foreign controller if required. The written approval to start the ATC will be after instructor's or training coordinator's approval given by SI-DIR.

4. Other rules and advices

4.1. IvAc settings advices

Use default settings and download IvAc sectorfile and colorscheme pack from www.ivao.si/atc.php.
Other:
- Range rings: OFF
- Aircraft time-lines: on 2 minutes
- Auto assume hand-offs

4.2. ATIS

- Facility name
- Additional info (TL, TA, + RWY in use for APP ATIS…) is optional. Controller tells the info not included in ATIS to the pilot during control.
- ATIS remarks: Operational time can be included - example: ***'Service until 1200Z.'***

4.3. Handoffs

- H/O request to another ATC: 2 minutes before A/C reaches the national border/boundary with another active ATC.
- ATC should give a command to switch a frequency one minute before A/C reaches the boundary of the FIR above.
- See also handoff agreement publication.

4.4. Transition level and altitude within LJLA FIR

TA	**10.500** ft MSL	
TL	**QNH ≥ 1050**	**FL 100**
	1050 > QNH ≥ 1013	**FL 110**
	976 ≤ QNH < 1013	**FL 120**
	QNH < 976	**FL 130**

5. Amendments of this handbook

ATC handbook was created in September 2004 and changed with the second amendment on 5th of August 2005, with **effective date on 10th of August 05**. After the last AMDT all controllers were asked to replace the handbook with the new edition. For more information about exact changes of the document, see 'ATC Handbook amendments' publication on IVAO-SI web page.

Change of this document was also made on **26th of November 05**, which was:
- 1.3 - additional frequency for Ljubljana TWR added
- HQ pages updated from .org to .aero prefixes
- 2.1.1. – Estimate reporting changed to 10min
- 3.1. – Controller's promotions updated

Amendment on **31st of March 06**:
- 3.1. – Controllers promotions updated

Amendment, effective on **15th of August 06**:
- Three decimal ATS frequencies implemented.
- New Ljubljana TWR domestic squawk codes defined.

Amendment, effective on **09th of September 06**:
- Correction of Ljubljana FIS definition for VFR information service. FIS covers all en-route VFR traffic outside Tower CTR zones in D airspaces as well. Exception is still C airspace, covered by ACC (no VFR permitted unless special approval issued).

Amendment, effective on **01st of January 09**:
- Minor corrections due to AIRAC 0812 update, LVP (Low Visibility Procedures) change, ...
- IVAO-SI webpage URL update
- Transition levels (TL) update

Amendment, effective on **15st of January 09**:
- New LJPZ TWR/APP frequency.

Amendment, effective on **12th of March 09:**
- Corrections due to AIRAC 0903 update
- Standard vectoring departure procedure for runway 13 implemented
- Ljubljana CTR levels changed

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