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EN-ROUTE



IVAO - SLOVENIAN DIVISION
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Part 2 En-route (ENR)

ENR 1 General Rules and Procedures

ENR 1.1. General rules

General rules for virtual airspace of Slovenia are included in IVAO Rules and regulations: www.iviao.aero/rulregs.

ENR 1.2. Visual flight rules

VFR in Slovenia is applied according to VFR standards on the network. See IVAO Academy on: academy.iviao.aero.

ENR 1.3. Instrument flight rules

1. General

IFR in Slovenia is applied according IFR standards on the network. See IVAO Academy.

2. EUR RVSM

Flights shall be conducted in accordance with IFR when operated within or above EUR RVSM airspace.

Therefore, flights operating as General Air Traffic (GAT) within the FIR Ljubljana at or above FL290 shall be conducted with IFR.

ENR 1.4. ATS Airspace classification

1. Classification of airspaces

ATS Airspace is classified and designated in accordance with the following:

CLASS C

IFR and VFR flights are permitted, all flights are subject to ATS and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights.

CLASS D

IFR and VFR flights are permitted and all flights are subject to ATS, IFR flights are separated from other IFR flights and receive traffic information in respect of other VFR flights. VFR receives traffic information in respect of all other flights.

CLASS E

IFR and VFR flights are permitted; IFR flights are subject to ATS and are separated from other IFR flights. All receive traffic information as far as practical.

CLASS G

IFR and VFR flights are permitted and receive FIS if requested.

2. Introduction

- Within FIR Ljubljana the airspace is divided into four classes **C, D, E** and **G**. A, B and F are at the present not used, and are not described.

The airspace classes are described below with service provided within.

- **Speed limit for whole LJLA FIR is 250 KIAS below FL 100. ATC may approve high-speed if requested by pilot.**

- VMC described below for each airspace is “visibility and distance from clouds minima”. This is minimum visibility required for VFR flight in the one airspace and minimum distance from the clouds required for every VFR pilot to keep all the time.

- Transponder (with modes to C) required for all airspaces, exemption E for VFR and E, G for both – IFR and VFR.

3. CLASS C AND CLASS D – CONTROLLED AIRSPACE

Classes of airspace		
CLASS C		
Service provided	IFR	VFR
	ATC	ATC
Separation provided	YES	VFR from IFR VFR-VFR traffic advisory
Communication required	YES	YES
Transponder C mode required	YES	YES
ATC clearance	YES	YES
VMC	-	a) At and above FL100 – visibility 8KM; – fly 1500M horizontal and 300M vertical dist. from clouds all the time. b) Below FL100 – min. visibility: 5KM visibility – 1500M horizontal and 300M vertical distance from clouds.
CLASS D		
Service provided	IFR	VFR
	ATC	ATC, FIS
Separation provided	YES	Traffic advisory for VFR-IFR And VFR-VFR
Communication required	YES	YES
Transponder C mode required	YES	YES
ATC clearance	YES	YES
VMC	-	Same as in C airspace.

4. CLASS E AND CLASS G – UNCONTROLLED AIRSPACE

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 located below 2000 ft AGL and TMA Dolsko2, with G airspace below 9500 ft MSL. Exception 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 part of TMA Dolsko 1, CTA Mura 2 and TMA Maribor 2.

CLASS E		
Provided	IFR	VFR
	ATC, FIS	FIS
Separation	IFR-IFR, IFR-VFR advisory if practicable	Advisory if practicable
Communication	YES	YES
Transponder (up to C mode)	YES	NO
ATC clearance	YES	NO
VMC	-	Same as in C airspace.
CLASS G		
Provided	IFR	VFR
	FIS	FIS
Separation	NO	NO
Communication	YES	NO
Transponder	YES	NO
ATC Clearance	NO	NO

VMC	-	<p>a) At and above FL100: min. visibility 8 KM min. 1500M horiz. and 300M vert. dist. from clouds.</p> <p>b) Below FL 100 BUT ABOVE 900M AMSL or 300M GND (whichever is higher): min. 5KM vis. 1500M horiz. and 300M vert. dist. from clouds</p> <p>c) At or below 900M AMSL or 300M GND (whichever is higher): min. 1,5 KM vis., clear of cloud and insight of ground pr water. Remark: Helicopters are permitted to operate in less that 1.5KM vis.</p>
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ENR 1.5. Holding, approach and departure procedures

1. Holding pattern

Holding pattern shall be entered and flown as indicated below.

Flight level	Propeller a/c (IAS)	Jet aircraft (IAS)	
		Normal conditions	Turbulence conditions
Up to FL 140	170 KT	230 KT	280 KT (Mach 0.8) whichever is less
Above FL 140	240 KT		
Above FL 200 to FL 340	256 KT		
Above FL 340	0.83 Mach		0.83 Mach

2. Arriving Flights

- IFR flights entering and landing within a Terminal Control Area (TMA) will be cleared to a specified holding point and instructed to contact Approach Radar at a specific time, level and position. The terms of this clearance shall be adhered to until further instructions are received from Approach Radar. If clearance limit is reached before further instructions have been received, holding procedure shall be carried out at the level last authorized.

- Due to the limited airspace available, it is important that the approaches to the patterns and the holding procedures are carried out as accurate as possible.

Pilots are requested to inform ATC if for any reason the approach and/or holding can not be performed as required.

3. Departing flights

- IFR flights departing from controlled aerodromes will receive initial ATC clearance from the local Aerodrome Control Tower. The clearance limit will normally be the aerodrome of destination.
- IFR flights departing from uncontrolled aerodromes will not take-off without prior arrangements with the Area Control Centre concerned.
- Detailed instructions with regard to routes, turns, etc. will be issued after take-off.

ENR 1.6. Radar service and procedures

1. Radar service

- A radar unit normally operates as an integral part of the parent ATS unit and provides radar service to aircraft, to the maximum extent practicable, to meet the operational requirement. Many factors, such as radar coverage, controller workload and equipment capabilities, may affect these services, and the radar controller shall determine the practicability of providing or continuing to provide radar services in any specific case.

- A pilot will know when radar services are being provided because the radar controller will use the following call signs:

- a. aircraft under area control - "LJUBLJANA RADAR";
- b. aircraft under approach control - "LJUBLJANA APPROACH RADAR".

2. Radar system available

- BRN – station at Airport Ljubljana, with range 60 NM,
- KOR – station at Koralpe mountain in Republic of Austria, with range 160NM,
- VRH – station at Ljubljanski vrh mountain, with range 240NM,
- OLS – station at Oljska gora hill, with range 160NM and
- CHR – station at Airport Ljubljana, with range 200NM.

3. Radar control service

- In controlled airspace to aircraft operating within the CTA Dolsko, CTA Mura 1, CTA Mura 2. TMA Dolsko 1, TMA Dolsko 2, TMA Ljubljana 1 and TMA Ljubljana 2.

This services may include:

a	radar separation of arriving, departing and en-route traffic
b	radar monitoring of arriving, departing and en-route traffic to provide information on any significant deviation from the normal flight path
c	radar vectoring when required
d	assistance to aircraft in emergency
e	assistance to aircraft crossing controlled airspace
f	warnings and position information of other aircraft considered to constitute a hazard
g	information to assist in the navigation of aircraft

- The minimum horizontal radar separation is 5 NM, vertical 1000 FT.

- Ljubljana Flight Information — "LJUBLJANA INFORMATION" may use radar derived information in the provision for flight information service in class E and G airspace. Radar serves only as an aid to provide pilots with more accurate flight information. It does not mean that this aircraft is under radar control and it does not relieve the pilot in command from his responsibilities. The pilot has to make the final decision regarding any suggested alternation of the flight plan.

4. Radar failure

In the event of radar failure or loss of radar identification, separation between a/c will be increased. Procedural control will be used. The radar controller will inform pilots about the termination of radar service. Exemptions are occasions when exists assurance that the radar failure will be of a very limited duration.

5. Radio failure

- In case of controller's voice failure, instructions will continue on text (or chat, if nothing else operational).
 - Pilot's complete radio failure (voice, text and chat) shall be declared with squawk code 7600. Pilot in this case follows FP route, at the last assigned altitude by the controller, enters holding at DOL (LJLJ), MR (LJMB) or PZ (LJPZ), and continues descent for approach at the scheduled time.

6. Unlawful interference procedure

Pilots of aircraft in flight subject to unlawful interference shall set transponder code 7500 to make the situation known, unless circumstances warrant the use of code 7700.

7. ACAS Procedures

- Responsibility during Airborne Collision Avoidance System (ACAS) operation within the airspace of FIR Ljubljana:
 When a pilot deviated from an air traffic clearance or instruction in response to ACAS resolution advisory, the air traffic control service is not responsible for

preventing collision until the flight path is returned to the limits of air traffic control clearance or instructions.

ENR 1.7. 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 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...'
 No speed restrictions can be used after passing 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 progress. In case of tailwind, pilot must request circle-to-land by himself. Pilot may also request NDB approach, VOR/DME approach 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 TELSI, BERTA, ...

Maribor and Portoroz

- 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 in good weather conditions.

ENR 1.8. IFR Take off and departure

Ljubljana

In this process vectoring and Standard Departure (SID) usage are authorized. Pilot on initial contact with ATS asks for departure information or startup. At this point ATS may inform pilot about SID, he may expect.

At least 2 minutes before reaching threshold of RWY 13/31, ATC will inform pilot about the ATC clearance for the flight.

Maribor and Portoroz

Approach is non-radar service, and does not identify or vector traffic. At departure SIDs or directs are issued.

ENR 1.9. Missed approach and go-around

Ljubljana

a) When on a missed approach, the aircraft can be instructed to 'Continue missed approach as published'. (Chart LJLJ 3-1 for ILS, chart LJLJ 3-2 for VOR/DME or chart LJLJ 3-3 for NDB-Locator) Pilot will execute missed approach as published on the chart and enter holding at Dolsko (DOL VOR). Pilot will be informed about EAT (expected approach time) before entering the holding.

b) ATC can also vector pilot back into ILS, without holding at DOL. In this case ATC instructs the pilot: 'After Marker West (MWEST) turn left heading 180 and climb to altitude 6000 ft, (further by Radar).' ACFT 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 to altitude 4000 ft, to MR NDB and hold 145°/325° holding as published on the chart.

Portoroz

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

ENR 1.10. 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, located in **AIP AD**.

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.

ENR 1.11. 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.

ENR 1.12. 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. TWR has to be notified as soon as possible for emergency preparation and to clear the runway.

ENR 1.13. Radar failures

In case of Radar the ATC announces radar failure with:

‘All stations, radar failure occurred, working procedurally.’

Controller continues to work procedurally, without identifying traffic, and with callsign ‘Ljubljana Control’.

Pilots have to inform controller about their correct position by standard procedures (with reporting radial from a specific VOR and distance from it).

Reports of positions usually follow on 2 minutes, depends of ATC’s instructions.

ENR 1.14. 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 4161 - 4167		
SAR			7711 – 7727	

SSR codes for special purposes

- Code 2000 is a default squawk, always set by pilot of an IFR flight, starting a flight in controlled or uncontrolled airspace, until receiving another code by first available ATS.

- Code 7000 is always set by pilot of a VFR flight unless otherwise instructed by the ATC/FIC unit.

ENR 1.15. Altimeter setting procedures

1.General

Altimeter settings in Slovenia given by ATC are in hPa (mbar) units. Standard setting above the transition level (TL) is 1013 hPa.

Transition level in Ljubljana FIR is:

- a) for QNH 976 or less: FL130
- b) QNH between 997 and 1012: **FL120**
- c) QNH between 1013 and 1049: **FL110**
- d) QNH 1050 and greater: FL100

- Departing aircraft

Pilots departing from controlled aerodrome get altimeter setting info at startup. Pilots departing from uncontrolled aerodrome gets altimeter setting at the first contact with ATC unit. (QFE on request.)

- Arriving aircraft

Pilots get altimeter setting together with instruction for descent, when they are instructed to descent below the transition level.

- Vertical separation – en-route

Transition altitude of FIR Ljubljana is at 10500 FT MSL. The vertical separation during en-route flight in FIR Ljubljana below 10500 FT MSL, shall be expressed in terms of altitude.

Flight levels are expressed only above transition level.

- Cruising levels

Magnetic track							
From 000 to 179 degrees				From 180 to 359 degrees			
IFR		VFR		IFR		VFR	
FL	Feet	FL	Feet	FL	Feet	FL	Feet
0				0			
10	1000			20	2000		
30	3000	35	3500	40	4000	45	4500
50	5000	55	5500	60	6000	65	6500
70	7000	75	7500	80	8000	85	8500
90	9000	95	9500	100	10000	105	10500
110	11000	115	11500	120	12000	125	12500
130	13000	135	13500	140	14000	145	14500
150	15000	160	16000
etc.	etc.	275	27500	etc.	etc.	285	28500

ENR 2 Air Traffic Services Airspace

ENR 2.1. Slovenian airspace facilities

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

Name of FIR, Lateral and vertical limits	Unit providing service	Login name, Callsign, Language	Frequency Main Reserved 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
	FIS LJUBLJANA	LJLA_FSS Ljubljana Information (EN) (SLO)	118.475 MHz	Provides info to VFR traffic
	TWR LJUBLJANA	LJLJ_TWR Ljubljana Tower (EN) (SLO)	118.000 MHz 118.750 MHz	
	TWR CERKLJE	LJCE_TWR Cerklje Tower (EN) (SLO)	119.500 MHz 118.125 MHz	Limited activity (by DIV)
	GND LJUBLJANA	LJLJ_GND Ljubljana Ground (EN) (SLO)	121.625 MHz	If offline, contact TWR
	TWR/APP MARIBOR	LJMB_APP Maribor Approach (EN) (SLO)	119.200 MHz	Procedural ATS only
	TWR/APP PORTOROŽ	LJPZ_APP Portorož Approach (EN) (SLO)	124.875 MHz	Procedural ATS only

* Vertical sector limits are movable. Any changes are included in ATIS information.

ENR 2.2. Facility responsibilities and areas

See Charts LJLA 11-1 and 11-2

2.2.1. 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 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 must always call Ljubljana ATS.

2.2.2. 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.

2.2.3. Ljubljana Tower

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

2.2.4. 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.

2.2.5. Maribor Approach

Below FL125, covering TMA Maribor 1, TMA Maribor 2 and CTR Maribor. When not active, substituted by Ljubljana Radar.

2.2.6. Portorož Approach

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

ENR 2.3. ATS prefixes in use

Reconnecting after being dropped

- If network server fails, the controller may connect back with a 'number prefix', example: LJLA_1_CTR, if he was working as LJLA_CTR before the failure.

Assisting controllers or controllers on training

Controllers on training (or assisting controllers) for a specific facility are using 'training prefix' to hide their callsign in IvAp, for example: LJLJ_T_TWR, (also LJLJ_T_2_TWR, LJLJ_T_3_TWR, etc.) Pilots shall always call LJLJ_TWR for ATS.

Practical exams

Practical exams in Slovenia are in operations mainly at ACC facilities, where LJLA_X_CTR is the examiner of logged LJLA_CTR. In this case pilots always call LJLA_CTR for service.

ENR 3 Radio navigation aids/systems

Name of station	Id	Frequency
DOLSKO VOR/DME	DOL	112.70 MHz
BISTRICA VOR/DME	ILB	114.80 MHz
BISTRICA NDB	ILB	414 KHz
METLIKA NDB	MEL	394 KHz

ENR 4 Navigation Warnings

Use LJLA 11-2 chart to identify areas described

Prohibited, restricted and dangerous areas

Identification, name and lateral limits	Upper limit / Lower limit	Remarks (time of activity, type of restriction, nature of hazard, risk of interception)
<p>PROHIBITED AREA LJ P1 KRŠKO A circle with radius 1 KM/0.54 NM, centred at point: 45 56 59.02 N 015 30 42.56 E</p>	<p>5000 FT MSL / GND</p>	<p>Nuclear Power Plant</p>
<p>RESTRICTED AREA LJ R2 PIVKA - ILIRSKA BISTRICA 45 49 30.73 N 014 23 34.12 E -- 45 47 35.00 N 014 15 13.00 E -- 45 45 00.00 N 014 12 20.00 E -- 45 38 37.00 N 014 12 44.00 E -- 45 30 28.57 N 014 21 28.49 E -- 45 30 11.09 N 014 23 55.12 E -- 45 40 47.04 N 014 34 49.01 E -- A circle with radius 11 NM, centred at point: 45 38 59.03 N 014 19 43.12 E -- 45 49 30.73 N 014 23 34.12 E</p>	<p>Variable / GND</p>	<p>Gun-rocket firing Activation will be announced by NOTAM including relevant Upper limit.</p>
<p>RESTRICTED AREA LJ R3 PIVKA - ILIRSKA BISTRICA 45 49 30.73 N 014 23 34.12 E -- 45 47 35.00 N 014 15 13.00 E -- 45 45 00.00 N 014 12 20.00 E -- 45 38 37.00 N 014 12 44.00 E -- 45 30 28.57 N 014 21 28.49 E -- 45 30 53.06 N 014 09 37.22 E -- A circle with radius 11 NM centred at point: 45 38 59.03 N 014 19 43.12 E -- 45 49 30.73 N 014 23 34.12 E</p>	<p>Variable / GND</p>	<p>Gun-rocket firing Activation will be announced by NOTAM including relevant Upper limit.</p>
<p>DANGER AREA LJ D1 PIVKA - ILIRSKA BISTRICA A circle with radius 2 NM, centred at point: 45 38 30.00 N 014 18 20.00 E</p>	<p>7500 FT MSL / GND</p>	<p>Gun firing</p>