

# ZAGREB FIR SECTOR MANUAL



FOR SIMULATION PURPOSES ONLY

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## Revision Information

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1	29/03/2017	Original issue	M. Bošnjak
2	02/04/2017	GEN, ACC info add	M. Bošnjak
3	15/06/2017	Info revision	M. Bošnjak
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5	10/03/2018	SECSI add, LDOS rev	M. Bošnjak
6	30/03/2019	TA/TRL, LDDU major rev, RNAV add, misc.	M. Bošnjak
7	27/06/2019	LDZD RWY change, MAG VAR, RNAV proc, misc.	M. Bošnjak
8	01/04/2020	LDZA major rev, phraseology examples, misc	M. Bošnjak

## Introduction

This manual is intended to be used by air traffic controllers on the IVAO network (hereinafter the Network) when controlling in Zagreb Flight Information Region (LDZO FIR). The manual provides information regarding operating procedures and standard practices in Croatian airspace.

Controllers are expected to follow IVAO Rules and Regulations at all times so as to create a comfortable, efficient and fun environment on the Network for themselves and for the pilots. Moreover, controllers must have sufficient knowledge in order for them to control a certain position on the Network. Knowledge of the Manual and the Croatia AIP will be checked during practical ATC exams in the Croatian Division.

Some ATC positions may be restricted by the Facility Rating Assignment system (FRA) in order to maintain controller's proficiency level. Controllers are not allowed to connect on the FRA restricted position if their rating is below the requested one. You can check active FRA restrictions on the main IVAO website under the Controllers tab.

All training documentation for controllers on the Network can be found on these links:

[Student controller documentation \(AS1-AS3\)](#)

[Aerodrome controller documentation \(ADC\)](#)

[Approach controller documentation \(APC\)](#)

[Area centre controller documentation \(ACC\)](#)

[Senior controller documentation \(SEC\)](#)

Real-life documentation regarding phraseology in Croatia is provided by the HKZP (Crocontrol) and it supersedes phraseology examples published by the Network:

[Voice communication procedures in Croatia](#) (opens in PDF format)

Real-life charts and AIP information are provided by the HKZP (Crocontrol); controllers are required to familiarise themselves with the information provided before connecting to the Network as an active ATC position in Croatia:

[Croatia AIP](#)

[VFR Manual Croatia](#)

## General

### Air traffic control units

- Following units exist in Zagreb FIR:

ground GND (LDZA only), tower TWR, approach APP, area centre control ACC

- Following ATC units are manned by one person (one frequency):

LDOS TWR/APP – Osijek Tower/Approach frequency is 118.800 (procedural control). On the Network LDOS APP unit is responsible for TWR/APP service at LDOS.

**NOTE:** Rijeka and Lošinj arrivals and departures shall be handled by LDPL APP.

### Airspace classification

- Zagreb FIR encompasses airspace classes:

C, D, G See **Appendix B**

**NOTE:** IFR flights are not permitted in G airspace in Zagreb FIR

### Units of measurement

Distance used in navigation, position reporting, etc. - generally in excess of 2 nautical miles	Nautical Miles / tenths
Relatively short distances such as those relating to aerodromes (e.g. runway lengths)	Metres
Altitudes, elevations and heights	Feet
Horizontal speed including wind speed	Knots
Vertical speed	Feet per minute
Wind direction for landing and taking off	Degrees Magnetic
Wind direction except for landing and taking off	Degrees True
Visibility including runway visual range	Kilometres or metres
Altimeter setting	Hectopascal
Temperature	Degrees Celsius
Weight	Metric tonnes or Kilogrammes
Time	Hours and minutes beginning at midnight UTC



## Radar services

- The radar separation minima shall be as follows:

Zagreb Area Control - 5 NM

Dubrovnik Approach Control - 5 NM

Split Approach Control - 5 NM

Zadar Approach Control - 5 NM

Zagreb Approach Control - 5 NM

Pula Approach Control - 5 NM

- In the event of radar failure or loss of radar identification, instructions will be issued to restore non-radar standard separation. If the aircraft's radio is completely unserviceable, the pilot should carry out the procedures for radio failure in accordance with provisions from Regulations on Rules of the Air and ATS. If radar identification has already been established, the radar controller will vector other identified aircraft clear of its track until such time as the aircraft leaves radar cover.
- In emergency situations, the pilot shall maintain the last assigned code, unless otherwise instructed. In addition to, the pilot may select Mode A, Code 7700, whenever they believe that would be the best course of action, in view of the nature of the situation. A pilot experiencing the radio communication failure shall operate the SSR transponder to Mode A, Code 7600 and take actions prescribed for such a situation.

## Assignment of transponder codes

- Following squawk codes will be assigned to aircraft flying inside Zagreb FIR:

6520 – 6577	IFR International
7020 – 7077	IFR Domestic
0030 – 0070	Military
0001 – 0077	VFR

- Controllers using IVAC1 shall use the squawk generator to assign the above-stated codes. The link is provided below:

[Zagreb FIR squawk generator](#)

## Altimeter setting procedures

- Transition altitude is specified as 10,000 ft MSL.
- Vertical positioning of aircraft when at or below the transition altitude is expressed in terms of altitude, whereas such positioning at or above the transition level is expressed in terms of flight levels. While passing through the transition layer, vertical positioning is expressed in terms of altitude when descending and in terms of flight levels when ascending.
- Flight level zero is located at the atmospheric pressure level of 1013.25 hPa (29.92 in).
- Transition level is dependent on the local QNH value. Transition level must be reported by the local ATC unit in the ATIS or, if ATIS is unserviceable, verbally by the controller when giving descent clearance to an altitude for the first time. Transition level value is as follows:

FL105	QNH UNL – 1032
FL110	QNH 1031 – 1014
FL115	QNH 1013 – 996
FL120	QNH 995 – 978
FL125	QNH 977 – 960

## Operational language in RTF communication

- Primary language for RTF communication between ATC and pilots is English.
- Croatian may be used as the primary language only for VFR flights if both the ATC and the pilot are able to speak Croatian. ATC shall immediately revert to using English phraseology if there is a possibility for confusion of foreign pilots operating in Croatian airspace – spatial awareness (e.g. if there is a VFR flight operating in Croatian and another VFR operating in English only).
- Croatian is usually used as the primary language for military flights while performing domestic missions. Military flights performing missions designated by NATO will use English phraseology and callsigns while operating in Croatian airspace.
- For examples of phraseology usage refer to **Appendix D**.

## Definition of altitudes in the Manual

- Altitudes expressed in this manual are **MSL** (Mean Sea Level, using QNH setting), unless stated explicitly by adding abbreviation AGL to indicate Above Ground Level.

## VFR flights

### General

- Unless authorised by Zagreb ACC, VFR flights within Zagreb FIR shall not be operated above FL195 and/or at transonic and supersonic speeds.
- Authorisation for VFR flights to operate above FL290 shall not be granted in areas where a vertical separation minimum (RVSM) of 300 m (1 000 ft) is applied above FL290.
- For departure and arrival from/to controlled and uncontrolled airports in Croatia, VFR traffic shall use VFR reporting points prescribed on the charts or in the VFR Manual Croatia.

### Traffic circuit training flights

- Standard altitude for all traffic circuit training flights in Croatia, if not otherwise specified in the AIP, is **1500 ft** (approximately 1000 ft AGL).
- Mandatory reporting positions are downwind and final.
- All non-standard traffic circuit phraseology regarding positions in the circuit must include word RIGHT to indicate a right-hand side circuit (non-standard circuit).

### VFR routes

- Aircraft operating as VFR shall prefer using Recommended VFR Routes in Croatia when flying outside of CTRs (domestic or international VFR). These routes are named: ADRIA, VELEB and PANON with a number afterwards to identify the specific route (e.g. ADRIA1). Chart with Recommended VFR Routes can be found in the VFR Manual Croatia (section VFR supplements).
- Beside the routes, as mentioned above, aircraft shall use VFR reporting points to enter/exit aerodrome control zone (CTR). Aircraft shall contact responsible ATC unit at least 5 minutes before entering the airspace (via the reporting points) – consult VFR Manual Croatia (Part 3 Aerodromes, AD 2 Aerodromes)

## Zagreb Airport (LDZA)

### Runway

04/22 MAG BRG 043°/223°  
dimensions 3252 m x 45 m

04 TORA TWY B 2900 m  
TWY C 2150 m

22 TORA TWY D 2450 m  
TWY E 2900 m

- RWY 04 is equipped with CAT II/III ILS, RWY 22 is equipped with CAT I ILS. RNAV procedures (SID, STAR and approach) available for both RWYs – consult with AIP and check aircraft equipment before clearance issuance.

### ATS communication facilities

LDZA APP	Zagreb Radar	120.700	
LDZA TWR	Zagreb Tower	118.300	Croatian: Zagreb Toranj
LDZA GND	Zagreb Ground	121.850	From 8 to 16 h local
ATIS	Zagreb ATIS	124.575	

### LVP

- Runway exit for RWY 04 is equipped with green/yellow coded taxiway centre line lights. Aircraft landing on RWY 04 must exit only via TWY E, where end of green/yellow centre line lights indicates the boundary of the LOC sensitive area. Departing aircraft are required to use the following CAT II/III holding position: RWY 04, Holding position on TWY A. **Intersection take-off is not permitted.**
- Taxiing is normally restricted to one aircraft ARR and one aircraft DEP movement at a time.
- Pilots shall report landing and after passing the end of the colour coded green/yellow taxiway centreline lights, RWY vacating (leaving LOC sensitive area). Pilots shall report when airborne on TWR frequency.
- The preparation phase (phase I) will be implemented when the RVR falls below 1000 m and/or the ceiling is at /or below 300 ft with downwards tendency and CAT II/III operations are anticipated. In this phase protection of sensitive areas is not yet provided.
- The operations phase (phase II) will be activated when the RVR falls below 550 m and the ceiling is at /or below 200 ft. Protection of sensitive areas is provided.
- Pilots will be informed by ATIS or RTF on first contact by the following standard message: **“Low Visibility Procedures in operation.”**
- LVP will be terminated when the RVR is greater than 800 m and the ceiling is above 300 ft and a continuing improvement of these conditions is expected. Pilots will be informed by RTF using the following standard message: **“Low Visibility Procedures cancelled at time...”**

## Departure

- There are two aprons in Zagreb, the old apron (west) and the new apron (east).
- General aviation apron is located adjacent to the west apron.
- Pushback is not required on the west apron – all positions are taxi-in and taxi-out. Pushback is required on the east apron (stands E1-E11, jetway is installed on stands E1-E8). Stands E1 and E2 are domestic, stands E3-E8 are international.
- **NOTE:** East apron – TWY **G** is the entry TWY. TWY **H** is the exit TWY.
- Aircraft taxiing out of parking positions on the west apron will always make a right turn regardless of the departure runway.
- Holding point A is the main holding point for RWY 04, all departing aircraft will taxi to holding point A unless otherwise instructed. Holding point E is the main holding point for RWY 22, aircraft shall be cleared for take-off from intersection E, unless the pilot specifically requests full length departure. In this case, instruct to backtrack via E.
- Initial climb for all SIDs in Zagreb is **6000 ft**. When issuing an ATC clearance, controller is not required to specify the initial climb.
- RNAV SIDs are in use – check aircraft equipment before issuing ATC clearance
- Immediately after departure, if LVP are not in operation, pilot shall change frequency from LDZA TWR to LDZA APP (or LDZO ACC if APP not online) without any ATC instruction. If connected as LDZA TWR, remark in the ATIS shall be: **“After departure contact Zagreb Radar on 120.700 (or other applicable frequency, or monitor UNICOM 122.800)”**
- VFR flights (light aircraft) may depart using intersections B (RWY 04) and D (RWY 22) with ATC approval only.
- **NOTE:** Only 2 (two) VFR aircraft can perform traffic circuit training flights simultaneously inside Zagreb CTR. More aircraft can be authorised to perform traffic circuit training flights by the TWR controller in special circumstances (if there are no IFR departures/arrivals and during ATC exams).
- VFR flights leaving CTR will leave via the published VFR reporting points.

## Arrival

- Arriving aircraft shall be vectored to intercept the ILS for RWY 04 or RWY 22 (or any other approach type).
- If RWY 04 is the arrival runway, aircraft can be cleared direct to PIS (Pisarovina NDB, frequency 424).
- If RWY 22 is the arrival runway, aircraft can be cleared to direct to ZAG (Zagreb VOR, frequency 113.7).
- Vectoring shall be provided in such manner that the aircraft intercepts localizer at least 2 NM before intercepting glideslope.
- Glideslope intercept altitude for ILS 04 is 3000 ft and for ILS 22 3500 ft. Descent instructions must be given with regard to the published SMAC (Surveillance Minimum Altitude Chart) in the manner that arriving aircraft are able to intercept glideslope at the above-mentioned altitudes while being vectored for the approach.
- Maximum localizer intercept course is **+/- 30°** in regard to the MAG CRS of the respective localizer. (applicable to all airports)
- RNAV STARs and approach procedures are available – check aircraft equipment before issuing clearance.

- If RNAV approach is to be expected, the following message shall be included in ATIS remark: “**Expect ILS or RNAV approach**” by TWR and APP unit.
- RNAV STARs are published with vertical profiles – aircraft need to be cleared by ATC to follow this vertical profile by phrase: “**Cleared XXXXX1Z arrival, descend via STAR**” – vertical profile following in Zagreb FIR is usually not given, descent clearances are therefore given by the respective ATC unit.
- If using RNAV approaches, aircraft must reach the IAF (Initial Approach Fix) for the respective approach at the prescribed altitude.
- Aircraft may be cleared direct to RNAV approach IAF – when issuing descent instructions, the TAA (Terminal Arrival Altitude) shall be respected.
- Aircraft shall be cleared for RNAV approach before reaching the IAF.
- Aircraft will vacate RWY 04 via TWYs C, D or E, if LVP are not in operation. Aircraft will vacate RWY 22 via TWYs C or B. If LVP in operation, aircraft will vacate via E.
- After vacating the runway, ATC will not provide parking position number for the west apron parking stands. Instruction for the **east apron stands** shall be: “**C/S, taxi via \_\_ and \_\_ to stand E\_**”. In the real-life aircraft would be guided by the follow-me car to their parking position. Pilots shall report *on stand* only when on the east apron.

## Split Airport (LDSP)

### Runway

05/23 MAG BRG 049°/229°  
dimensions 2550 m x 45 m

05 TORA TWY A 1635 m

23 TORA TWY B 1580 m

- RWY 05 is equipped with CAT I ILS. Special circle-to-land procedure for RWY 23. RNAV (GNSS) approaches available for both runways – check aircraft equipment before clearance issuance.
- **HIRO** (High intensity runway operations) in effect – minimize RWY occupancy times.

### ATS communication facilities

LDSP APP	Split Radar	120.875	
LDSP TWR	Split Tower	124.675	Croatian: Split Toranj
ATIS	Split ATIS	125.300	

### Departure

- All parking positions are taxi-in and taxi-out. Pushback is not required.
- Pilots will be instructed to “**Backtrack and line-up RWY 05 via A**” or “**Backtrack and line-up RWY 23 via B**” after taxi clearance, unless the pilot requests or confirms that he/she is able to perform an intersection departure (usually only light aircraft).
- ATC operates on the basis that each aircraft, when instructed to backtrack and line-up, is ready for immediate departure.
- Initial climb for SIDs in Split is specified as **5000 ft**.
- After departure pilots need to be instructed to contact LDSP APP.
- Aircraft can only perform traffic circuit on the SE side of the airport due to terrain (right-hand traffic circuit RWY 05 or left-hand traffic circuit RWY 23).
- **NOTE:** Only 2 (two) VFR aircraft can perform traffic circuit training flights simultaneously inside Split CTR.
- VFR flights leaving CTR will leave via the published VFR reporting points.

### Arrival

- Arriving aircraft shall be vectored in order to intercept the ILS for RWY 05 or the inbound CRS for VOR-B approach RWY 23. If visual approach is accepted by the pilot, vectoring will be provided until airfield is in sight.
- If arriving from N or NE, aircraft may be cleared direct to SPL (Split VOR, frequency 115.7) – be levelled 5000 ft overhead for the prescribed ILS procedure or for vectoring.
- Glideslope intercept altitude for ILS 05 is 2800 ft. Descent instructions need to be given regarding the published SMAC (Surveillance Minimum Altitude Chart). Aircraft can be instructed to descend either to 2500 ft (if shorter approach is desired) or to 3000 ft.
- RWY 23 **cannot** be used as the arrival runway during night.

- ILS Z approach for RWY 05 is the primary procedure to be used (with ILS Y being the backup procedure).
- If RWY 23 is the arrival runway and VOR-B approach is in use, the following procedure applies: aircraft will be vectored to OSGOL, RILNO at 4000 ft or directly to LASUL to be levelled 2500 ft at LASUL (pay attention to the SMAC). If vectored via OSGOL or RILNO at 4000 ft the following instruction will be given: **“Descend 2500 ft, cleared VOR-B approach RWY 23 via OSGOL/RILNO, report established on inbound radial”**. If vectored via LASUL (2500 ft overhead) the following instruction will be given: **“Cleared VOR-B approach RWY 23, report established on inbound radial”**. When the aircraft is established on the inbound radial the ATC has the option to ask the pilot whether he/she has the RWY in sight. If they do have the RWY in sight before reaching DME 5.0 from SPL (FAF), the VOR-B procedure could be cancelled and the visual approach via RORKA could be executed (requires ATC approval, see procedure below). Then, the aircraft shall be transferred to LDSP TWR. In case the RWY is not in sight or visual approach is not desired, LDSP APP will transfer the aircraft to TWR when established on the inbound radial.
- If visual approach for RWY 23 is more desired, VOR-B approach will not be executed. Aircraft will be vectored to OSGOL, RILNO or LASUL at 4000 ft. When visual contact with the airfield is established, aircraft will be instructed to descend to 2500 ft and thereafter cleared for the visual approach via RORKA (visual reporting point – it is **not** in the navigation database) using the following clearance: **“Cleared visual approach RWY 23 via RORKA, report before turning to final (or report downwind)”**. Then, the aircraft shall be transferred to LDSP TWR.
- RNAV approaches are available for both runways.
- If RNAV approach is to be expected, add remark in ATIS if **RWY 05** is active: **“Expect ILS or RNAV approach”**. If **RWY 23** is active add this remark in ATIS: **“Expect visual or RNAV approach”**.
- When RWY 23 is in use, during daytime, RNAV VISUAL RWY 23 will be considered as primary approach (announced by ATIS or ATC).
- If ATIS information announces RNAV VISUAL approach RWY 23 to be expected, pilots unable to accept this approach, shall advise LDSP APP or other applicable ATC unit on first contact.
- **Executing RNAV VISUAL approach RWY 23:** Obstacle clearance during the visual part of the approach is responsibility of pilot flying. After receiving clearance to execute RNAV VISUAL RWY 23, pilot flying is expected to: not later than passing RORKA must be in visual reference to terrain with minimum visibility of 10 km (5.4 NM) and ceiling above 2500 ft AMSL and to continue with visual part of procedure, or, from RORKA follow the prescribed instrument missed approach procedure for LDSP RNAV VISUAL RWY 23. Visual approach segment waypoints, related distances, speed limit and bearing are for improved situational awareness only.
- Aircraft must be cleared for RNAV approach prior to reaching the IAF.
- Aircraft must be levelled on prescribed altitudes before being cleared for the RNAV approach RWY 05 – **4000 ft** overhead IAFs **IRBUL** and **GOTRI**; **3000 ft** for IAF **KEMIX**.
- HIRO operation RWY 05 – aircraft shall vacate the RWY via TWY B.
- HIRO operation RWY 23 – aircraft shall vacate the RWY via TWY A.



- If the aircraft has passed the designated TWY, the pilot should make a 180° turn on the RWY (before reaching the turning bay) and vacate the RWY without delay.
- If a pilot of an arriving aircraft needs full RWY length, he/she must notify ATC as soon as possible.
- After vacating the runway, ATC will not provide parking position number. In the real-life aircraft would be guided by the follow-me car to their parking position. **Do not** request pilots to “~~report on blocks~~”.

### Water Airports Resnik (LDSR) and Port Split (LDST)

- Airports are exclusively VFR.
- Located inside Split CTR. Two-way radio communication with LDSP TWR (departures and arrivals) and LDSP APP (arrivals outside of LDSP CTR) is required.
- Water airports do not have ATS provider on the ground (water). Port of Split Authority is responsible for the movement of the aircraft when on ground (water). Departure clearance is required for the airspace above the aerodrome.
- For further information consult VFR Manual Croatia.
- Landing clearance shall be issued in the following format: “**Cleared to land direction \_\_ (05, 23, etc.), wind \_\_/\_\_, report landed**”.

## Dubrovnik Airport (LDDU)

### Runway

11/29 MAG BRG 114°/294°  
dimensions 3299 m x 45 m

11 TORA TWY B 2270 m

TWY C 1800 m

TWY D 1350 m

29 TORA TWY E 2400 m

TWY D 1780 m

TWY C 1340 m

- RWY 11 is equipped with CAT I ILS. VOR-A and circle-to-land procedure RWY 29. RNAV approaches available for both RWYs (GNSS for RWY 11, RNP for RWY 29) – check aircraft equipment before clearance issuance.
- **Preferential RWY 11**

### ATS communication facilities

LDDU APP	Dubrovnik Radar	123.600	
LDDU TWR	Dubrovnik Tower	129.500	Croatian: Dubrovnik Toranj

### Departure

- All parking positions (except 1A, 16A and 19A) are taxi-in and push-out – which means that pushback is required. Parking positions 1-10 and 15-20 are taxi-out if one of the adjacent stands is not occupied. Standard pushback instruction shall be: **“Start-up and pushback approved RWY \_\_, QNH \_\_”**.
- If RWY 11 is departure runway, the main holding point is A. Holding points B and C can be used for VFR flights (light aircraft) only if the pilot accepts intersection departure.
- If RWY 29 is departure runway, aircraft will be instructed to **“Taxi to holding point F (E) RWY 29, (backtrack and line-up RWY 29)”**, unless the pilot requests or confirms that he/she is able to perform an intersection departure. Holding point D can be used for VFR flights only.
- Initial climb for SIDs in Dubrovnik is specified as **8000 ft**.
- Departure information shall be given, when requested by pilots, instead of the ATIS (for all controlled airports in Croatia). Departure information format is as follows: **“Departure RWY \_\_, wind \_\_/\_\_, QNH \_\_, temp \_\_, dew point \_\_, (*optionally: visibility or RVR \_\_, time \_\_*)”**.
- After departure pilots need to be instructed to contact LDDU APP.
- Aircraft can only perform traffic circuit on the S side of the airport due to terrain (right-hand traffic circuit RWY 11 or left-hand traffic circuit RWY 29).
- **NOTE:** Only 2 (two) VFR aircraft in traffic circuit simultaneously allowed.
- VFR flights leaving CTR shall leave via the published VFR reporting points.
- TWY F is not yet implemented on any of LDDU sceneries, use TWY E instead.

## Arrival

- RWY 11 is preferential in LDDU. Most common approach in use is ILS RWY 11.
- In case RNAV approach is being used (RWY 11 or RWY 29) aircraft is to be instructed to the IAF (PILAP for RWY 11, OLEGU for RWY 29). Descent instructions need to follow published SMAC to allow the aircraft to level off **5000 ft** overhead **PILAP** or **4000 ft** overhead **OLEGU**. Aircraft must be cleared for the approach before reaching the IAF.
- Aircraft can be vectored to intercept the localizer for RWY 11. In this case, aircraft can be instructed to descend to 5000 ft and cleared for the ILS when at least DME 15.0 from DBK VOR (115.4).
- Aircraft can be cleared direct to KLP (Koločep NDB, frequency 318) to be levelled 4000 ft overhead in order to be given a final vector to intercept the ILS.
- Aircraft can be cleared for NERRA8A arrival and thereafter cleared for straight-in ILS approach (pay attention to minimum procedure altitudes and the SMAC).
- Glideslope intercept altitude for ILS 11 is 4000 ft. Descent instructions need to be given regarding the published SMAC. Exception for ILS interception is **5000 ft** when at least DME 15.0 from DBK VOR.
- In case RWY 29 is active for arrival, ATC has multiple choices: RNAV (RNP), VOR-A approach, vectoring for visual approach RWY 29 or circling with prescribed tracks RWY 29. Priority should be given to the RNAV approach.
- Circling with prescribed tracks RWY 29 **cannot** be used during night.
- Before executing circling approach RWY 29 aircraft must be cleared for instrument approach for RWY 11 (VOR, locator or LOC (GS out) approach) – refer to the procedure chart. Following phraseology applies (in this example LOC (GS out) approach is used): “**Cleared localizer glideslope out approach RWY 11, report RWY in sight**”. The pilot then descends to circling MDA (2170 ft for C and D category). When the RWY is in sight ATC instruction is: “**Cleared circling approach RWY 29, contact TWR on \_\_\_**” (if TWR is not online instruction for the pilot could be to report downwind RWY 29 instead of *contact TWR*).
- Aircraft will vacate RWY 11 via TWYs C, D, E or F. Aircraft will vacate RWY 29 via TWYs D, C or B.
- After vacating the runway, ATC will not provide parking position number. In the real-life aircraft would be guided by the follow-me car to their parking position. **Do not** request pilots to “~~report on blocks~~”.
- TWY F has not yet been implemented on sceneries. Use TWY E instead.

## Osijek Airport (LDOS)

### Runway

11/29 MAG BRG 106°/286°  
dimensions 2500 m x 45 m

11 TORA TWY A 1800 m

TWY B 1500 m

29 TORA TWY B 1000 m

TWY A 700 m

- RWY 29 and 11 are equipped with CAT I ILS. RNAV (GNSS) approach available for RWY 11 – check aircraft equipment before clearance issuance.

### ATS communication facilities

LDOS APP	Osijek Approach	118.800	Croatian: Osijek Prilazna
LDOS TWR	Osijek Tower	118.800	Croatian: Osijek Toranj

- On the Network LDOS APP is the only position available. LDOS TWR is not used.

### Departure

- All parking positions are taxi-in and taxi-out. Pushback is not required.
- Aircraft will be instructed to backtrack and line-up RWY via A (RWY 11) or via B (RWY 29) unless the pilot requests or confirms that he/she is able to perform an intersection departure.
- **Procedural control** is used in Osijek. This means that a controller does not have a radar screen. You **cannot** radar identify the aircraft nor provide vectors.
- Initial climb for SIDs in Osijek is **NOT** specified. APP (TWR) shall issue the **initial climb clearance of FL110** (Osijek TMA upper limit), unless otherwise coordinated with LDZO ACC.
- RNAV SIDs are available for both RWYs – check aircraft equipment
- After departure pilots will be advised to **report when passing 9000 ft**. After the pilot reports passing 9000 ft, a controller will transfer the aircraft to other respective frequency.
- VFR flights leaving CTR will leave via the published VFR reporting points.

### Arrival

- ILS Z and LOC Z RWY 29 are temporarily suspended. **ILS X** RWY 29 is operational **only for A and B category** aircraft. **ILS Y** is operational. – refer to the chart
- Arriving aircraft shall be cleared onto the STAR (RNAV STARs available) with the instruction “**Descend via STAR**” (both RWYs). If visual approach is desired, pilot shall be instructed to “**Report RWY in sight**”. When the RWY is in sight ATC will issue clearances accordingly (visual approach clearance, then landing clearance).
- If RWY 11 is the arrival runway, ILS, RNAV, locator RWY 11 approach via CE or visual approaches are available. **Remember, the aircraft is not under radar control.** – refer to the chart
- After vacating, ATC **will not provide** parking position number.

## Zadar Airport (LDZD)

### Runway

04/22 MAG BRG 038°/218°  
dimensions 2000 m x 45 m

13/31 MAG BRG 132°/312°  
dimensions 2500 m x 45 m

- RWY 13 is equipped with CAT I ILS. RNAV (GNSS) approach available for RWY 04, 13 and 31 – check aircraft equipment before clearance issuance.
- TWYs B, C, D, E and F are closed to civil traffic. TWYs A and H are available only for aircraft code letter 'A' and 'B'. When landing RWY 31, ACFT greater than 'B' code letter, expect backtrack to vacate the RWY via TWY G.

### ATS communication facilities

LDZD APP	Zadar Radar	128.525	
LDZD TWR	Zadar Tower	123.700	Croatian: Zadar Toranj

### Departure

- All parking positions are taxi-in and taxi-out. Pushback is not required.
- Usual departure runways are RWY 31 (for all aircraft) and RWY 22 (light aircraft, DH8D) due to shorter taxi times (backtrack is not required).
- Initial climb for SIDs in Zadar is NOT specified. TWR shall issue the initial climb clearance of **8000 ft** (internal agreement between TWR and APP), unless otherwise coordinated with LDZD APP.
- After departure pilots need to be instructed to contact LDZD APP.
- VFR flights leaving CTR will leave via the published VFR reporting points.

### Arrival

- RWY 13 is equipped with CAT I ILS. Glideslope intercept altitude is 2300 ft. Aircraft can be vectored to LUKAV (levelled at 6000 ft overhead) and then descended to the approach altitude and cleared for ILS approach. Another option is to vector the aircraft closer to the airport in order to intercept the ILS (not closer than DME 10.0 of ZDA (Zadar VOR, frequency 108.6).
- Descent instructions need to be given regarding the published SMAC.
- For all other approaches consult respective charts.
- Aircraft, wake turbulence category M and H, must **vacate RWY 13 via TWY G only**.
- After vacating the runway, ATC will not provide parking position number. In the real-life aircraft would be guided by the follow-me car to their parking position. **Do not** request pilots to "report on blocks".

## Pula Airport (LDPL)

### Runway

09/27 MAG BRG 084°/264°  
dimensions 2946 m x 45 m

09 TORA TWY C 1692 m

27 TORA TWY D 1992 m

TWY E 2491 m

- RWY 27 is equipped with CAT I ILS.

### ATS communication facilities

LDPL APP	Pula Radar	124.600	
LDPL TWR	Pula Tower	132.000	Croatian: Pula Toranj
ATIS	Pula ATIS	129.150	

### Departure

- All parking positions are taxi-in and taxi-out. Pushback is not required.
- Most commonly used runway for departure is RWY 09 (due to wind).
- Initial climb for SIDs in Pula is NOT specified. TWR shall issue the initial climb clearance of **8000 ft** (internal agreement between TWR and APP), unless otherwise coordinated with LDPL APP.
- When departing from RWY 27 ATC will ask the pilot whether he/she is able for intersection departure or he/she requires backtrack from intersection E.
- After departure pilots need to be instructed to contact LDPL APP.
- VFR flights leaving CTR will leave via the published VFR reporting points.

### Arrival

- Arriving aircraft will be vectored for a straight-in VOR approach RWY 09 via PLA (Pula NDB, frequency 351.5) at 2300 ft.
- Glideslope intercept altitude for ILS 27 is 2800 ft. Descent instructions need to be given with regard to the published SMAC.
- If RWY 27 is the arrival runway and ILS RWY 27 is used ATC has multiple options: vector the aircraft via CRE (Cres NDB, frequency 433) at 4000 ft; vector via PUL (Pula VOR, frequency 111.25) at 3300 ft and then clear for ILS approach as published (with 45°/180°procedural turn at DME 8.2 from PUL); vector to intercept the ILS at 3000 ft at least DME 12.0 from PUL.
- **NOTE:** Arrival at Pula Water Aerodrome (LDPP; VFR only) is via the following points: S7 to LDPP at 1000 ft AGL (maintain flight path over the sea); W5 to Fažana to LDPP at 1000 ft AGL. – refer to VFR Manual Croatia.
- After vacating the runway, ATC will not provide parking position number. In the real-life aircraft would be guided by the follow-me car to their parking position. **Do not** request pilots to “~~report on blocks~~”.

## Rijeka Airport (LDRI)

### Runway

14/32 MAG BRG 140°/320°  
dimensions 2500 m x 45 m

14 TORA TWY A 1800 m  
TWY B 1100 m

32 TORA TWY B 1400 m  
TWY A 700 m

- RWY 14 is equipped with CAT I ILS.

### ATS communication facilities

LDPL APP	Pula Radar	124.600	
LDRI TWR	Rijeka Tower	119.000	Croatian: Rijeka Toranj

- **LDPL APP** provides (radar) services for arriving/departing traffic.

### Departure

- All parking positions are taxi-in and taxi-out. Pushback is not required.
- Aircraft will be instructed to backtrack and line-up RWY via A (RWY 14) or via B (RWY 32) unless the pilot requests or confirms that he/she is able to perform an intersection departure.
- Initial climb for SIDs in Rijeka is NOT specified. TWR shall issue the initial climb clearance of **8000 ft** (internal agreement between TWR and LDPL APP), unless otherwise coordinated with LDPL APP.
- After departure pilots need to be instructed to contact LDPL APP.
- VFR flights leaving CTR will leave via the published VFR reporting points.

### Arrival

- LDPL APP (Pula Radar) is responsible for all arrivals to LDRI. Use the SMAC provided for LDPL.
- When RWY 14 is the arrival runway prefer using ILS 14. Aircraft need to be either vectored or directed via STAR to BRZ (Breza NDB, frequency 400) to be levelled at 7000 ft overhead and when reaching BRZ cleared ILS approach as published (refer to the chart). Aircraft can be descended to 3000 ft and cleared for straight-in ILS approach via BRZ, **only** if the pilot has and can maintain visual reference.
- If RWY 32 is in use, vectoring for visual approach RWY 32 or VOR 32 as published can be used. If published procedure is used, aircraft needs to be levelled 6000 ft overhead RI (Rijeka NDB, frequency 289).
- After vacating the runway, ATC will not provide parking position number. In the real-life aircraft would be guided by the follow-me car to their parking position. **Do not** request pilots to “~~report on blocks~~”.

## Brač Airport (LDSB)

### Runway

04/22 MAG BRG 031°/211°  
dimensions 1760 m x 30 m

04 TORA TWY A 550 m

22 TORA TWY A 1210 m

### ATS communication facilities

LDSP APP	Split Radar	120.875	
LDSB TWR	Brač Tower	118.025	Croatian: Brač Toranj

- Split Radar (LDSP APP) provides radar services for all arriving/departing traffic.

### Departure

- All parking positions are taxi-in and taxi-out. Pushback is not required.
- Aircraft will be instructed to backtrack and line-up RWY via A.
- Initial climb for SIDs in Brač is NOT specified. TWR shall issue the initial climb clearance of **4000 ft** (Brač CTR upper limit), unless otherwise coordinated with LDSP APP.
- After departure pilots need to be instructed to contact LDSP APP.
- VFR flights leaving CTR will leave via the published VFR reporting points.

### Arrival

- LDSP APP will provide vectors for visual approach. RWY 22 is usually used for arrivals. RWY 04 is preferred for departures (depending on the wind).
- Aircraft shall be vectored so as to avoid overflying LDSP (Split Airport). For flights arriving via SPL (Split VOR, frequency 115.7) provide vectors to the southeast before reaching SPL. Plan for the aircraft to be around 8000 ft overhead/abeam Split city. Refer to the SMAC for LDSP. After passing the mainland and when overhead Brač Channel descend the aircraft to 4000 ft, provide information on airport's position and, when in sight, clear the pilot for visual approach. Then transfer the aircraft to TWR.
- After vacating the runway, ATC will not provide parking position number. In the real-life aircraft would be guided by the follow-me car to their parking position. **Do not** request pilots to "~~report on blocks~~".



## Lošinj Airport (LDLO)

### Runway

02/20 MAG BRG 018°/198°  
 dimensions 900 m x 30 m

### ATS communication facilities

LDPL APP	Pula Radar	124.600	1000 ft AGL – FL115
LDLO TWR	Lošinj Tower	120.300	Croatian: Lošinj Toranj

- Pula Radar (LDPL APP) is responsible for all aircraft arriving/departing Lošinj from 1000 ft AGL to FL115. Aircraft shall maintain constant radio communication with active ATC unit. Outside of Lošinj Airport operating hours (refer to NOTAM), Lošinj ATZ is active (G airspace) – pilots shall contact Pula Radar (or if unavailable, Zagreb LDZO\_CTR) no later than 5 minutes before entry into controlled airspace.

### Departure

- All parking positions are taxi-in and taxi-out. Pushback is not required.
- Aircraft will be instructed to taxi to the respective holding point (A if RWY 20 active, B if RWY 02 active). Instruction to backtrack and line-up shall be given in coordination with the pilot (if required).
- Initial climb for SIDs in Lošinj is NOT specified. TWR shall issue the initial climb clearance of **2000 ft** (Lošinj CTR upper limit), unless otherwise coordinated with LDPL APP.
- After departure pilots need to be instructed to contact LDPL APP if under LDLO TWR control.
- VFR flights leaving CTR will leave via the published VFR reporting points.

### Arrival

- LDPL APP will issue STAR for arriving IFR aircraft, unless visual approach is desired (in that case vectors can be provided). All STARs end at LOS (Lošinj NDB, frequency 429) where NDB-a approach can be carried out if desired. – refer to charts for LDLO
- Outside of Lošinj Tower operating hours, **only VFR aircraft are allowed** since Lošinj ATZ is classified as G airspace (**IFR flights are not permitted in G airspace in Croatia**). In this case, pilots shall be instructed to report 5 minutes before overflying VFR entry points for Lošinj ATZ, and, after the report is received, instructed to monitor UNICOM.
- VOR approach RWY 02 available.
- After vacating the runway, ATC will not provide parking position number. **Do not** request pilots to “~~report on blocks~~”.
- Lošinj Airport can handle aircraft up to 27,000 kg MTOW (category A and B aircraft).
- If desired, you can treat this airport as uncontrolled during your controlling session.

## Zagreb ACC

### General

- Zagreb ACC (callsign: Zagreb Radar, LDZO\_CTR – do not confuse \_CTR (ATC position abbreviation for ACC on IVAO) with CTR (control zone, an airspace type)) is responsible for the airspace of the Republic of Croatia that is not included in TMAs or CTRs.
- On the Network, LDZO\_CTR is responsible for the entire Zagreb FIR and other delegated airspace if there are no ATC units connected in Croatia (APPs and TWRs).
- Zagreb FIR/UIR extends from ground to unlimited. Controlled airspace extends from 1000 ft AGL to FL660 (excluding CTRs) – this airspace is called Control Area (CTA).
- Classification of CTA is as follows: C – between FL115 and FL660; D – below FL115 to 1000 ft AGL. Airspace below 1000 ft AGL outside of CTRs is classified as G (uncontrolled airspace).

### Frequencies in Zagreb FIR (LDZO)

- Following frequencies are used in Zagreb FIR:

Login name	Callsign	Frequency	Remarks
LDZO_CTR	Zagreb Radar	135.800	All
LDZO_N_CTR	Zagreb Radar	132.125	North sector
LDZO_WS_CTR	Zagreb Radar	135.800	Adria sector
LDZO_FSS	Zagreb Information	135.050	VFR only, procedural
LDZA_APP	Zagreb Radar	120.700	
LDZA_TWR	Zagreb Tower	118.300	
LDZA_GND	Zagreb Ground	121.850	From 8 to 16 h local
LDSP_APP	Split Radar	120.875	
LDSP_TWR	Split Tower	124.675	
LDDU_APP	Dubrovnik Radar	123.600	
LDDU_TWR	Dubrovnik Tower	129.500	
LDOS_APP	Osijek Approach	118.800	Procedural
LDZD_APP	Zadar Radar	128.525	
LDZD_TWR	Zadar Tower	123.700	
LDPL_APP	Pula Radar	124.600	Respb arr/dep LDRI
LDPL_TWR	Pula Tower	132.000	
LDRI_TWR	Rijeka Tower	119.000	
LDSB_TWR	Brač Tower	118.025	
LDLO_TWR	Lošinj Tower	120.300	upon NOTAM
UNICOM	UNICOM	122.800	
Emergency	GUARD	121.500	

### Coordination with other ATS units

- For ATS units providing services within Zagreb FIR: Zagreb ACC can descend arriving aircraft to upper TMA vertical limit + 500 ft, e.g. for LDZA FL210 (transfer to APP usually done 2000 ft before reaching assigned level), unless otherwise coordinated with respective APPs. Transfer must be done before the aircraft reaches its final waypoint (most commonly STAR entry point).

- For ATS units providing services outside of Zagreb FIR: Consult with standing Letters of Agreement between divisions (FIRs) or coordinate with respective ATS unit.



LDZO\_CTR

LDZO\_N\_CTR

LDZO\_WS\_CTR

### Delegated airspace

- Western part of Sarajevo FIR has been delegated to Zagreb ACC between 9500 ft MSL and FL325 west of the **KOMAR Line** (AGLIB-IRDIV-TIVNU-OKSIG-EVTON-ETOB-NAVSU-ELTIB-Croatian border), and between FL325 and FL660 east of the KOMAR Line and west of the **BOSNA Line** (GUBOK-DER-DOBOT-BOSNA-SOLGU-VRANA-DIXUM) – see sector file depiction. Eastern part of Sarajevo FIR has been delegated to Beograd ATCC between FL325 and FL660.
- Due to lack of presence of Sarajevo Radar on the Network, the following agreement is in place between IVAO Croatia and IVAO Serbia: all transit flights passing through Sarajevo FIR are to be controlled from FL170 (being the upper limit of Sarajevo TMA) to FL660 respecting the BOSNA Line.
- Airspace south of the BEVIS Line (GISAM-BEVIS-KOFER) has been delegated to Brindisi ACC (LIBB) between FL205 and FL460.

### SECSI FRA

- South East Common Sky Initiative Free Route Airspace (SECSI FRA): The airspace volume consisting of airspace volumes defined in ENR 2.1 and/or ENR 2.2 (check AIP Croatia) of the corresponding AIPs where cross-border application of FRA is implemented. – see **Appendix C**
- Applicable H24
- FL205 – FL660 inside Croatian airspace
- Within SECSI FRA, airspace users are allowed to plan user preferred trajectories using significant points or radio navigation aids (see ENR 4.1 and ENR 4.4), as well as geographical coordinates under special conditions and rules laid down in AIP and RAD.
- In SECSI FRA there is no limitation on the number of FRA Intermediate Points (I) and DCTs used in Field 15 of FPL.
- Within SECSI FRA there is no limitation on the maximum DCT distance.
- ATS units are **permitted to issue DCTs to the next waypoint outside of their airspace as long as that waypoint is inside the SECSI FRA** (e.g. flight overflying Serbia – Croatia – Slovenia – Austria: Croatian controller is permitted to issue a DCT to the waypoint located in the Slovenian airspace without prior coordination provided the flight remains inside the SECSI FRA).

## Appendix A: Acronyms and Abbreviations

ACC	Area Centre Control Unit or Area Centre Controller (IVAO)
ADC	Aerodrome Controller (IVAO)
AGL	Above Ground Level
AIP	Aeronautical Information Publication
APC	Approach Controller (IVAO)
APP	Approach or Approach Control Unit
ARR	Arrival
AS	Student Controller (IVAO)
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Service
ATS	Air Traffic Services
ATZ	Aerodrome Traffic Zone
BRG	Bearing
C/S	Callsign
CAT	Category
CRS	Course
CTA	Control Area
CTR	Aerodrome Control Zone
DCT	Direct to
DEP	Departure
DME	Distance Measuring Equipment
ENR	Enroute
FAF	Final Approach Fix
FIR	Flight Information Region
FL	Flight Level
FPL	Filed Flight Plan
FRA	Facility Rating Assignment

## International Virtual Aviation Organisation

FRA	Free Route Airspace
FSS	Flight Service Station
GND	Ground or Ground Control Unit
GNSS	Global Navigation Satellite System
GS	Glideslope
HIRO	High Intensity Runway Operations
HKZP	Hrvatska kontrola zračne plovidbe
IAF	Initial Approach Fix
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IVAO	International Virtual Aviation Organisation
LOC	Localizer
LVP	Low Visibility Procedures
MAG	Magnetic
MSL	Mean Sea Level
MTOW	Maximum Take-off Weight
NATO	North Atlantic Treaty Organisation
NDB	Non-directional Beacon
NM	Nautical Mile
QNH	The altimeter sub-scale setting to obtain elevation when on the ground
RAD	Route Availability Document
RNAV	Area Navigation
RNP	Required Navigation Performance
RTF	Radiotelephony
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minima
RWY	Runway
SEC	Senior Controller (IVAO)
SECSI	South East Common Sky Initiative

## International Virtual Aviation Organisation

SID	Standard Instrument Departure
SMAC	Surveillance Minimum Altitude Chart
SSR	Secondary Surveillance Radar
STAR	Standard Terminal Arrival Route
TAA	Terminal Arrival Altitude
TMA	Terminal Control Area
TORA	Take-off Run Available
TWR	Aerodrome Control Tower Unit
TWY	Taxiway
UIR	Upper Flight Information Region
UNICOM	Universal Communications Frequency (IVA0)
UTC	Coordinated Universal Time
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Range

Appendix B: ATS Airspace Classification of Zagreb FIR

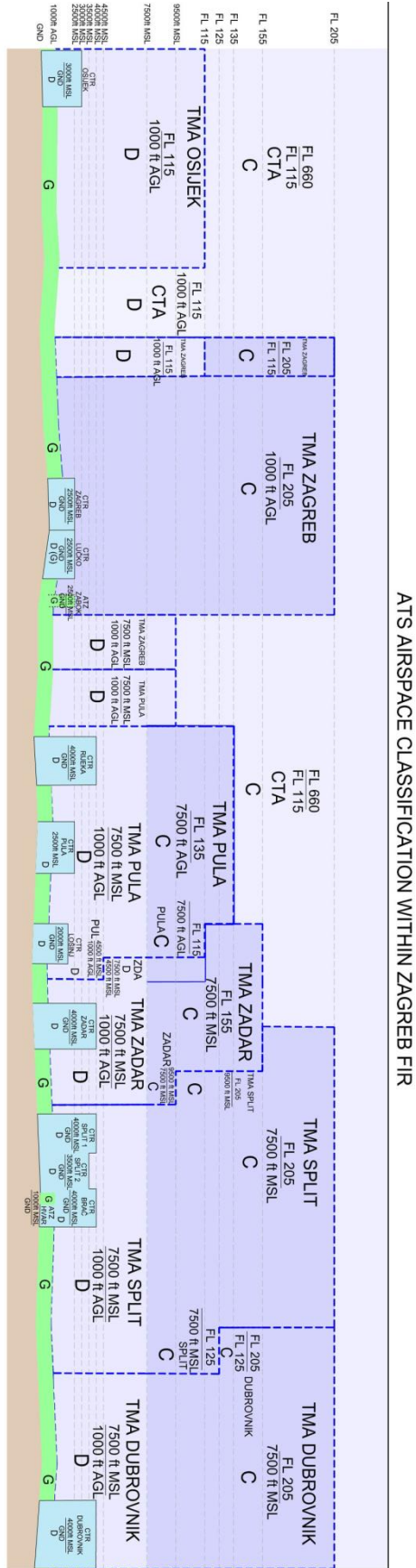


Figure 1 ATS airspace classification of Zagreb FIR

# Appendix C: SECSI Free Route Airspace

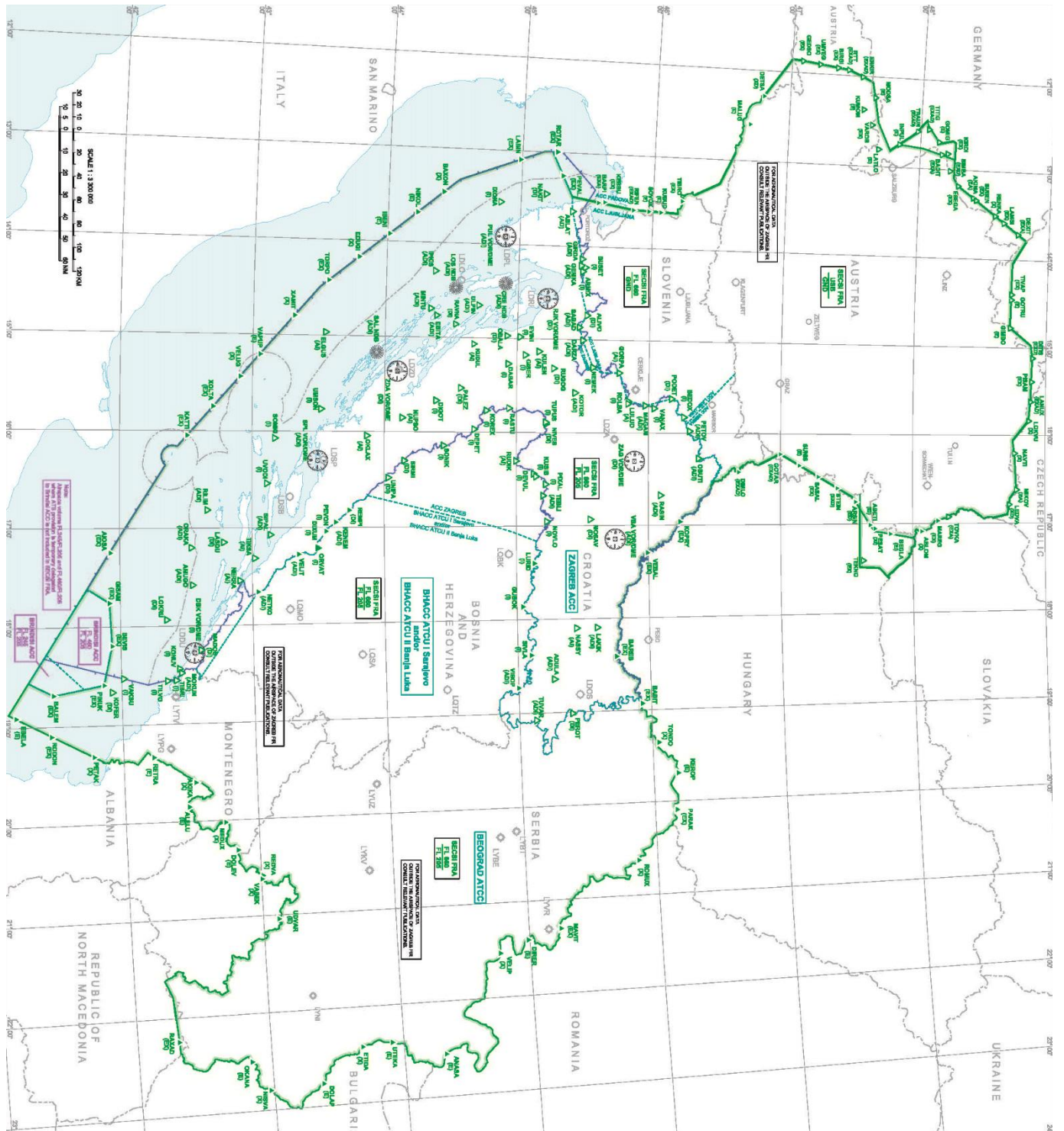


Figure 2 Free Route Airspace - Index Chart – SECSI FRA



## Appendix D: Phraseology Examples

Phraseology is the key element of any aircraft operation. Safe, orderly and expeditious aircraft operations can only be conducted with proper phraseology. To ease the learning process and to standardise the practices of controllers in the Croatian Division, examples of IFR and VFR phraseology will be elaborated in this appendix. Phraseology is based on the documentation published by the HKZP (Crocontrol), please check the link in the Introduction section of this Manual.

The following examples will be presented in a dialog form, where the two speakers are the pilot (marked as the aircraft's callsign) and the air traffic controller (marked as the controller's login name on the IVAO). The first example covers the IFR phraseology on a flight from Zagreb (LDZA) to Dubrovnik (LDDU). The second example presents the VFR phraseology for a flight departing from Pula (LDPL) and arriving at Zadar (LDZD). At the end, Croatian VFR phraseology is also mentioned.

### Example 1 – IFR (LDZA-LDDU)

Callsign	Aircraft	Route	Requested level
CTN660	A320	TEBLI1W TEBLI DCT OKSIG DCT NETKO DCT NERRA NERRA1Z	FL270

**NOTE:** It is presumed that the pilot has received all the pertinent departure/arrival information via the ATIS. This will be indicated by the *information "ATIS validity letter"* phrase.

CTN660: Zagreb Tower, CTN660, stand E2, information C received, request IFR clearance to Dubrovnik.

LDZA\_TWR: CTN660, Zagreb Tower, check information D, cleared to Dubrovnik via flight planned route, climb 6000 ft, TEBLI1W departure, squawk 7020.

CTN660: Information D received, cleared to Dubrovnik via flight planned route, to climb 6000 ft, TEBLI1W departure, squawk 7020, CTN660.

LDZA\_TWR: CTN660, information D correct, readback correct.

CTN660: CTN660, stand E2, request start-up and pushback.

LDZA\_TWR: CTN660, start-up and pushback approved, RWY 04, QNH 1020.

CTN660: Start-up and pushback approved, RWY 04, QNH 1020, CTN660.

CTN660: CTN660, request taxi.

LDZA\_TWR: CTN660, taxi to holding point A RWY 04 via H and F.

CTN660: Taxiing to holding point A via H and F, CTN660.

LDZA\_TWR: CTN660, report ready for departure.

International Virtual Aviation Organisation

CTN660: CTN660, ready for departure.

LDZA\_TWR: CTN660, roger, hold short of RWY 04, traffic is A319 on final RWY 04, report in sight.

CTN660: CTN660, traffic in sight.

LDZA\_TWR: CTN660, roger, behind landing traffic, line-up and wait RWY 04, behind.

CTN660: Behind landing traffic to line-up and wait RWY 04 behind, CTN660.

LDZA\_TWR: CTN660, cleared for take-off RWY 04, wind 030 degrees 6 knots gusting to 15 (*one-five*) knots.

CTN660: Cleared for take-off RWY 04, CTN660.

**NOTE:** Aircraft departing from Zagreb (LDZA) via SIDs are to contact Zagreb Radar immediately after departure, therefore there is no frequency change instruction from LDZA\_TWR to CTN660. However, for demonstration purposes, this instruction will be presented.

LDZA\_TWR: CTN660, contact Zagreb Radar 120.7.

CTN660: 120.7, CTN660.

CTN660: Zagreb Radar, CTN660, on TEBLI1W departure, passing 1200 ft, climbing 6000 ft.

LDZA\_APP: CTN660, Zagreb Radar, identified, follow TEBLI1W departure, climb FL200.

CTN660: Following TEBLI1W departure, climbing FL200, CTN660.

LDZA\_APP: CTN660, turn right, cleared direct to OKSIG.

CTN660: Turning right, cleared direct to OKSIG, CTN660.

LDZA\_APP: CTN660, contact Zagreb Radar 135.8.

CTN660: 135.8, CTN660.

CTN660: Zagreb Radar, CTN660, inbound OKSIG, passing FL184, climbing FL200.

LDZO\_CTR: CTN660, Zagreb Radar, identified, climb FL270.

CTN660: Climbing FL270, CTN660.

LDZO\_CTR: CTN660, turn right 5 degrees due traffic.

CTN660: Turning right 5 degrees, CTN660.

LDZO\_CTR: CTN660, resume own navigation direct to NERRA.

CTN660: Wilco, direct to NERRA, CTN660.

CTN660: CTN660, request descent.

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LDZO\_CTR: CTN660, descend FL210.

CTN660: Descending FL210, CTN660.

LDZO\_CTR: CTN660, contact Dubrovnik Radar 123.6.

CTN660: 123.6, CTN660.

CTN660: Dubrovnik Radar, CTN660, inbound NERRA, passing FL230, descending FL210, information P received.

LDDU\_APP: CTN660, Dubrovnik Radar, identified, information P correct, turn left heading 140, descend 5000 ft, QNH 1015, vectoring ILS approach RWY 11.

CTN660: Turning left heading 140, descending 5000 ft, QNH 1015, vectoring ILS approach RWY 11, CTN660.

LDDU\_APP: CTN660, reduce speed 230 knots or less, number 2 (*for approach*).

CTN660: Reducing speed 230 knots or less, number 2, CTN660.

LDDU\_APP: CTN660, descend 4000 ft, cleared ILS approach RWY 11, report established, number 2.

CTN660: Descending 4000 ft, cleared ILS approach RWY 11, wilco, number 2, CTN660.

CTN660: CTN660, established ILS approach RWY 11.

LDDU\_APP: CTN660, maintain 160 knots until passing outer marker, contact Dubrovnik Tower 129.5.

CTN660: Maintaining 160 knots until passing outer marker, 129.5, CTN660.

CTN660: Dubrovnik Tower, CTN660, on ILS approach RWY 11.

LDDU\_TWR: CTN660, Dubrovnik Tower, continue approach, number 2, report passing outer marker.

CTN660: Continuing approach, number 2, wilco, CTN660.

CTN660: CTN660, passing outer marker.

LDDU\_TWR: CTN660, cleared to land RWY 11, wind 150 degrees 16 knots, variable between 120 and 210 degrees.

CTN660: Cleared to land RWY 11, CTN660.

CTN660: CTN660, wind check.

LDDU\_TWR: CTN660, wind 200 degrees 17 knots.

LDDU\_TWR: CTN660, vacate right via E, taxi to the apron via G.

CTN660: Vacating right via E, taxiing to the apron via G, CTN660.

LDDU\_TWR: CTN660, give way to Croatia Dash 8D, taxiing from stand 3.

CTN660: Giving way to company Dash 8D, CTN660.

**Example 2 – VFR (LDPL-LDZD)**

Callsign	Aircraft	Route	Requested level
9ADEX	C172	S8 LOŠINJ R1 W2	5500 ft

9ADEX: Pula Tower, 9ADEX, stand 9, request departure information. (*ATIS unserviceable*)

LDPL\_TWR: 9ADEX, Pula Tower, departure RWY 27, wind calm, QNH 1025, temperature 23, dew point 15.

9ADEX: RWY 27, QNH 1025, 9ADEX.

9ADEX: 9ADEX, request start-up.

LDPL\_TWR: 9ADEX, start-up approved, QNH 1025.

9ADEX: Starting up, QNH 1025, 9ADEX.

9ADEX: 9ADEX, request taxi.

LDPL\_TWR: 9ADEX, confirm able intersection D departure.

9ADEX: 9ADEX, affirm.

LDPL\_TWR: 9ADEX, taxi to holding point D RWY 27.

9ADEX: Taxiing to holding point D RWY 27.

LDPL\_TWR: 9ADEX, report ready to copy ATC clearance.

9ADEX: 9ADEX, ready to copy.

LDPL\_TWR: 9ADEX, cleared VFR flight to Zadar via flight planned route, climb 2500 ft, after departure turn left inbound S8, squawk 0036.

9ADEX: Cleared VFR flight to Zadar via flight planned route, to climb 2500 ft, after departure to turn left inbound S8, squawk 0036, 9ADEX.

LDPL\_TWR: 9ADEX, readback correct, report ready for departure.

9ADEX: 9ADEX, wilco.

9ADEX: 9ADEX, ready for departure.

LDPL\_TWR: 9ADEX, cleared for take-off RWY 27, intersection D, wind calm.

International Virtual Aviation Organisation

9ADEX: Cleared for take-off RWY 27, intersection D, 9ADEX.

9ADEX: 9ADEX, overhead S8 at 2500 ft.

LDPL\_TWR: 9ADEX, roger, contact Pula Radar 124.6.

9ADEX: 124.6, 9ADEX.

9ADEX: Pula Radar, 9ADEX, overhead S8 at 2500 ft, estimating Lošinj at 12:04 (*one-two zero-four*).

LDPL\_APP: 9ADEX, Pula Radar, identified, continue visually, QNH 1025, report requested level.

9ADEX: Continuing visually, QNH 1025, requested altitude 5500 ft, 9ADEX.

LDPL\_APP: 9ADEX, climb 5500 ft, report Lošinj.

9ADEX: Climbing 5500 ft, wilco, 9ADEX.

9ADEX: 9ADEX, overhead Lošinj at 5500 ft, estimating R1 at 25 (*two five*).

LDPL\_APP: 9ADEX, roger, contact Zadar Radar 128.525.

9ADEX: 128.525, 9ADEX.

9ADEX: Zadar Radar, 9ADEX, overhead Lošinj at 5500 ft, estimating R1 at 25.

LDZD\_APP: 9ADEX, Zadar Radar, identified, continue visually, QNH 1023.

9ADEX: Continuing visually, QNH 1023, 9ADEX.

LDZD\_APP: 9EX, descend to reach W2 at 1500 ft.

9ADEX: To descend to reach W2 at 1500 ft, 9EX.

LDZD\_APP: 9EX, contact Zadar Tower 123.7.

9ADEX: 123.7, 9EX.

LDZD\_APP: 9EX, negative, 123.7.

9ADEX: 123.7, 9EX.

LDZD\_APP: 9EX, correct.

9ADEX: Zadar Tower, 9ADEX, inbound W2, descending 1500 ft, request touch and go.

LDZD\_TWR: 9ADEX, Zadar Tower, after passing W2 join right-hand downwind RWY 13, wind 160 degrees 3 knots, QNH 1023.

9ADEX: After passing W2 to join right-hand downwind RWY 13, QNH 1023, 9ADEX.

9ADEX: 9ADEX, right-hand downwind RWY 13, request touch and go.

LDZD\_TWR: 9ADEX, cleared touch and go RWY 13, wind 160 degrees 3 knots.

9ADEX: Cleared touch and go RWY 13, 9ADEX.

LDZD\_TWR: 9ADEX, correct, after touch and go join right-hand traffic circuit RWY 13.

9ADEX: After touch and go to join right-hand traffic circuit RWY 13, 9ADEX.

9ADEX: 9ADEX, right-hand downwind RWY 13, request full stop landing.

LDZD\_TWR: 9ADEX, roger, traffic A319 on final RWY 13, report in sight.

9ADEX: 9ADEX, traffic in sight.

LDZD\_TWR: 9ADEX, roger, follow traffic as number 2, report on final, caution wake turbulence.

9ADEX: Following traffic as number 2, wilco, roger, 9ADEX.

9ADEX: 9ADEX, final RWY 13.

LDZD\_TWR: 9ADEX, make long landing to vacate via G, cleared to land RWY 13, wind 150 degrees 5 knots.

9ADEX: To make long landing to vacate via G, cleared to land RWY 13, 9ADEX.

9ADEX: 9ADEX, RWY 13 vacated via G.

LDZD\_TWR: 9ADEX, taxi via G and K to general aviation apron.

9ADEX: Taxiing via G and K to general aviation apron, 9ADEX.

### **Croatian phraseology (VFR flights)**

The following phraseology phrases are written from the controller's perspective and are translated to Croatian in such fashion.

ATC clearance	Rutno odobrenje
Back-track	Vozite povratno
Base	Osnovni krak
Caution	Oprez
Cleared for take-off	Odobreno polijetanje
Cleared to land	Odobreno slijetanje
Climb	Penjite
Contact	Prijeđite na
Descend	Snižavajte
Dew point	Rosište

## International Virtual Aviation Organisation

Downwind	Krak niz vjetar
Expedite	Ubrzajte
Final	Završni krak
Follow	Slijedite
Go around	Produžite
Hold position	Zadržite poziciju
Holding point	Pozicija za čekanje
Line-up	Izađite
Low approach	Nisko prilaženje
On own discretion	Prema vlastitoj prosudbi
Pushback	Izguravanje
Report	Javite
Runway	Uzletno-sletna staza (Staza)
RVR	Vidljivost uzduž staze
Standby	Pričekajte
Start-up	Pokretanje
Stop immediately	Zaustavite se smjesta
Straight ahead	Ravno naprijed
Taxi	Vozite
Taxiway	Vozna staza
Temperature	Temperatura
Touch and go	Slijetanje s produžavanjem
Traffic circuit	Prometni krug
Turn	Skrenite
Vacate	Napustite