

Familiarization Briefing LSZS



Index

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Foreword

The Airport of Samedan is a VFR / IFR airport open to private and commercial operators. It is situated in a particular geographical area. Located in the Engadin Valley, the airport is surrounded by a mountainous region wherein the flight procedures and aircraft performances are very strongly affected by its natural obstacles. For this reason, the approach to and the departure from LSZS are limited to flight crews fulfilling the requirements of the concept for mandatory familiarization and AIP LSZS AD 2.22 Flight Procedures.



The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

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It is advised that personal flight preparation of any pilot intending to operate in or around Samedan shall go beyond the information contained in these pages and should be based on current official documents such as AIP, VFR-Manual, NOTAM etc..

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1. General Information

LSZS airport is a Civil, Category B Airport and is open to all private, commercial and business flights as well as to unscheduled VFR / IFR flights.

Reminder: LSZS is the highest elevated airport in Europe:

Elevation 5'600 ft AMSL



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General Information

- **LSZS has a FIZ (Flight Information Zone)**
- **Airport opening hours summer: 0600Z to 1700Z.**
- **FIS (Flight Information Service) is available: 0600Z to 1700Z.**
- **Airport opening hours winter: 0700Z to SS+30min**
- **FIS (Flight Information Service) is available: 0700Z to SS+30min**
- **PPR for IFR APCH with piston engine aircraft**
- **PPR for multiple IFR APCH (training)**
- **Availability of the IFR Procedures depending on the military activity in the temporary reserved areas (TRA) REF: AIP SWITZERLAND ENR 5.2**
 - **During military activity IFR flightplans might be rejected**

NO NIGHT OPERATION

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1.1 Runway information / Airport overview

Runway 03 / 21	1'840 m x 40 m asphalt /concrete
Slope Runway 03	0.4% down slope
Slope Runway 21	0.4% up slope

No runway and approach lighting available.

For further information refer to AIP/VFR-Manual Switzerland



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1.2 Airspace & weather minima for VFR traffic

WX minima for VFR traffic:

≥ FL 100

VIS: 8 KM

Distance from cloud: Vertical 1'000 ft Horizontal 1'500 m

> 2000 ft/AGL - < FL 100

VIS: 5 KM

Distance from cloud: Vertical 1'000 ft Horizontal 1'500 m

1'000 ft/AGL – 2'000 ft/AGL

VIS: 5km*, Surface in sight

Distance from cloud: Vertical 1'000 ft Horizontal 1'500 m
(clear of clouds, if Transponder operated)

Below 1'000 ft /AGL

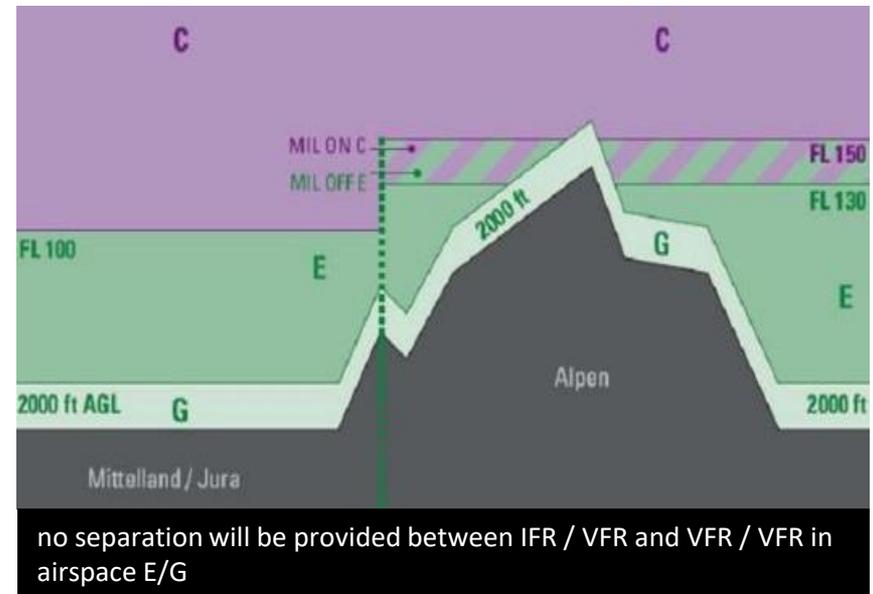
Vis: 5km*, surface in sight

Distance from cloud: clear of clouds

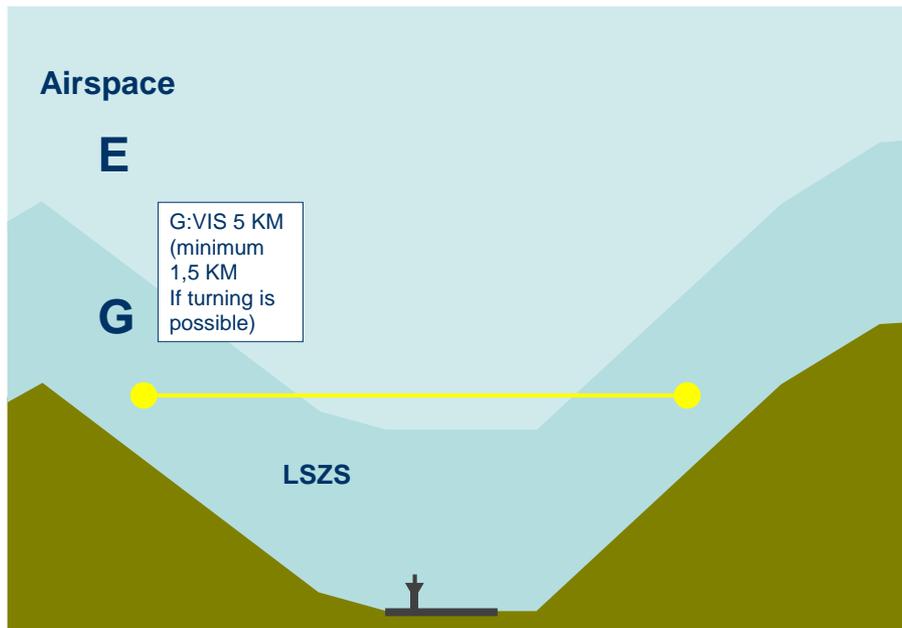
*flight visibility $\geq 1'500$ m if flight speed ≤ 140 kts IAS

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Airspace Switzerland:



1.3 Airspace Echo / Golf



Be aware of turning radius:

Refer to chapter 16. IAS-TAS/Reverse turn: page 59

Airspace E & G

no separation will be provided between IFR/VFR and VFR/VFR.

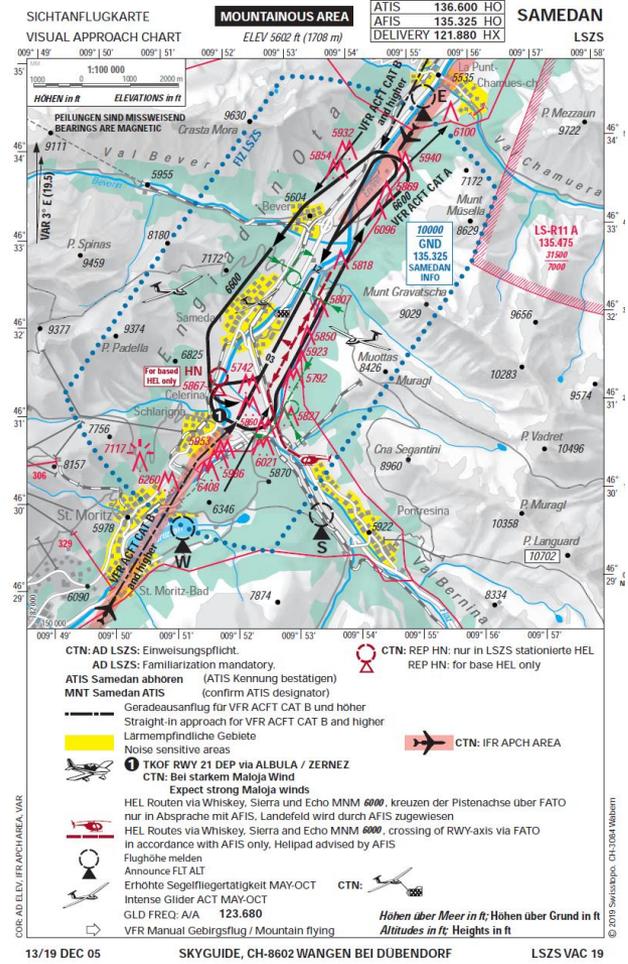
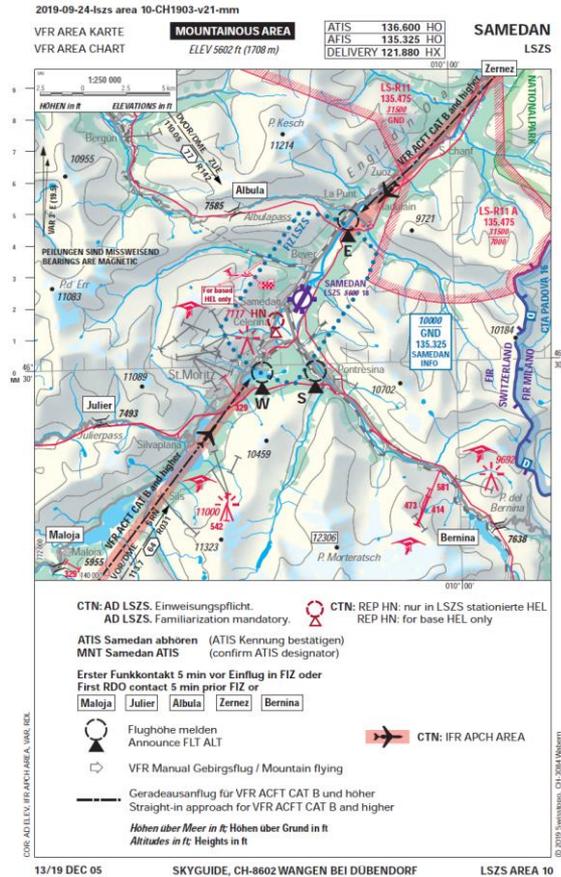
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1.4 ATS

- Samedan is a information service (AFIS) no traffic display available.
- AFISO (Aerodrome Flight Information Service Officer) is not authorized to give ATC instructions or clearances.
- AFISO is authorized to give ATC instructions on the maneuvering area (taxi, backtrack, line up, runway crossing, etc).
- AFISO is not allowed to do sequencing. Therefore tell your intentions when the traffic is in sight (eg. “Joining behind the traffic”, “one orbit for separation”, “extending downwind for separation”, etc).
- The reporting points Zernez (ZS710) and Maloja (ZS702) for IFR and aircraft APCH Cat. B and higher are mandatory.
- It is highly recommended to maintain listening watch of Samedan AFIS in the region from Maloja to Zernez to be informed about IFR traffic in the valley.
- Check the appropriate NOTAMs for special regulations, for example during the World Economic Forum in Davos (WEF), usually at the end of January.

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1.5 VFR Charts



The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

1.6 Seasonal traffic density - winter

Winter is the peak-traffic season. Expect a high traffic density.

This requires special attention at the airport and in the vicinity of the airport (traffic circuit).

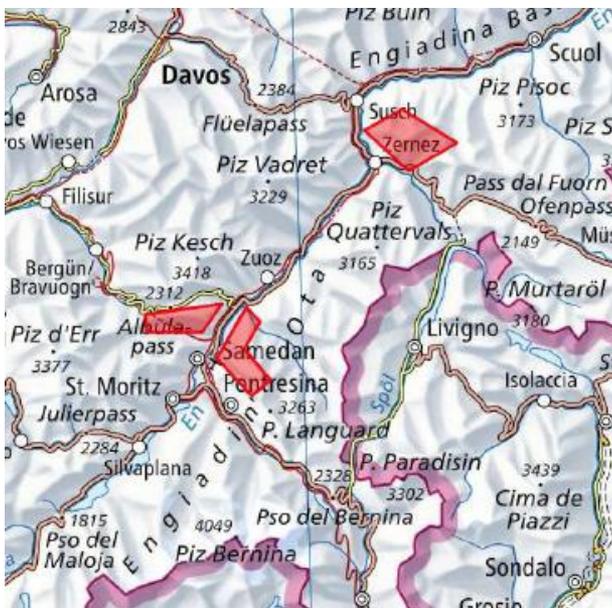


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1.7 Seasonal traffic density - summer

Glider activities: The mountains near the airport are attractive to gliders. Expect intense glider activities between May and September in the Valley, within the FIZ and in the traffic circuit.

Intense Glider activities



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1.8 Hang glider



Departing Area: Muottas Muragl or Alp Languard south east of the airport.

Landing Area: Valley station of the funicular Muottas Muragl (Punt Muragl).

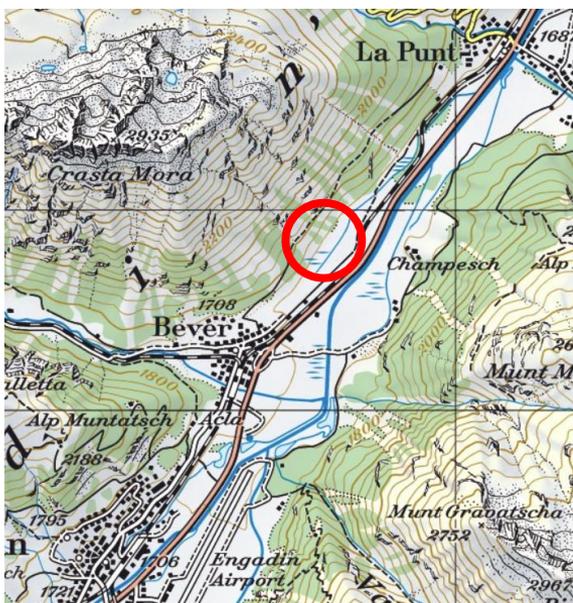
Hang Gliders are requested to fly only in the area between Departing- and Landing Area in order not to interfere with traffic departing and landing at the airport.

Furthermore: Expect hang glider traffic outside of the FIZ.

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1.9 Model scale flying bever

Caution for model scale flying between Bever and La Punt. They remain clear of the final approach track.

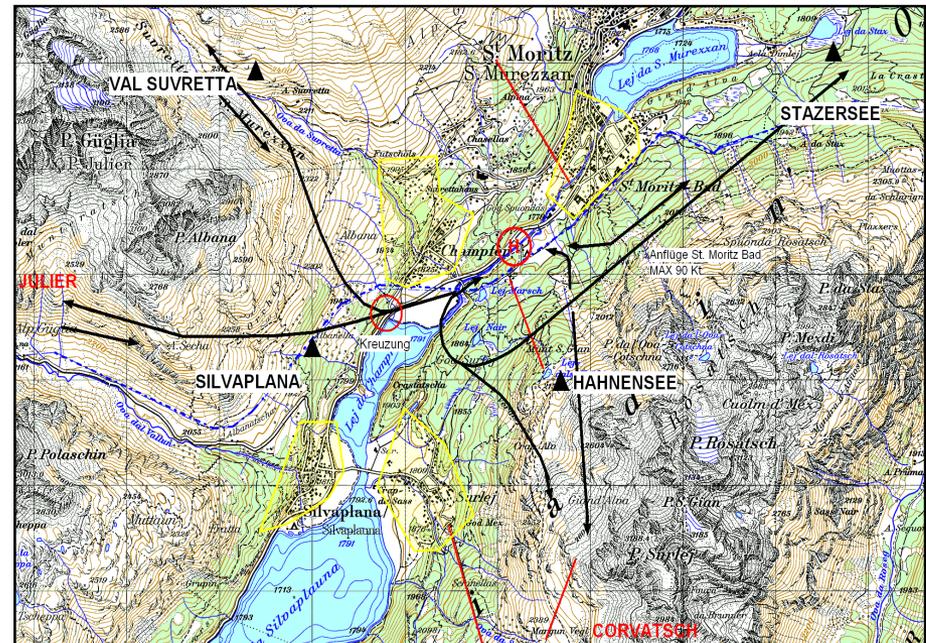


The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

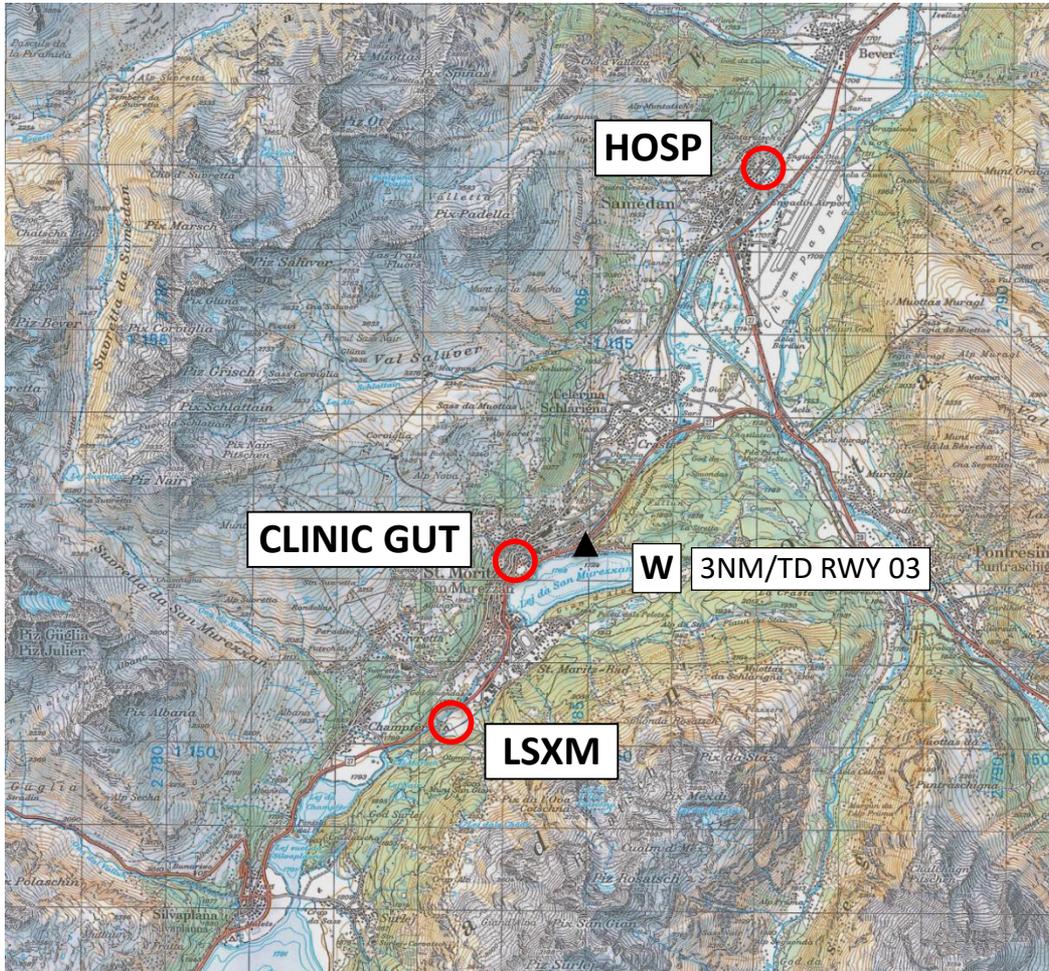
1.10 Helicopter operations

There is intense Helicopter traffic in the region, carrying out rescue- / transport- and scenic- flights.

During winter season, December 15th to April 15th, a Heliport (LSXM) is established at St. Moritz-Bad, 3.6 NM form THR RWY 03.



The information in this document serves to increase the safety of operation to and from LSXS. For flight preparation use only the official documentation published in the AIP / VFR manual.



Three of the main helicopter - landing areas outside the airport

- the **Hospital**, located west of THR runway 21
- the **Clinic Gut**, located down town St. Moritz
- the **TEMP heliport LSXM**, located southwest of St. Moritz

Be aware that helicopter operations may cause TCAS alerts.

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2. Qualification

NOTE: Check first if you are qualified.

Samedan airport is situated in a mountainous region. Due to this special geographical and meteorological situation the use of the airport is limited to pilots having successfully completed the mandatory familiarization briefing. This briefing is provided on the webpage of the Engadin Airport. Following the briefing you have to pass the online test. For further requirements please consult the next page – Qualification/Currency-Requalification.

It is the responsibility of each pilot to be qualified and current. Each pilot must be able to prove to FOCA or the Airport Authority, at any time, that he fulfils these requirements.

For details consult [concept for mandatory familiarization](#).



Legal disclaimer:

In addition to the European General Data Protection Regulation (EU) 2016/679 (GDPR), national regulations apply to data protection in Switzerland. These include in particular the Federal Act on Data Protection (FADP, SR 235.1).

As such, data that is being processed through the consultation of the LSZS briefing, as well as by taking the online test or through an exchange of messages with Engadin Airport will be handled with the utmost care. In order to ensure the protection of personal data, we use both technical and organizational security measures.

All data is processed and/or stored exclusively for its intended use. Personal data is only stored for as long as permitted by law in order to provide our services or to comply with our legal obligations and to prevent misuse. The data processed by us will be deleted in accordance with the legal provisions as soon as the consent to its processing is revoked or other reasons no longer apply (i.e. particularly as soon as the specific purpose for processing the data no longer applies). With the sole exceptions of legal or judicial obligations, as well as for IT-related maintenance and upgrade works, personal data will not be passed on to third parties. For the latter case Engadin Airport concludes non-disclosure agreements, in order to ensure the protection of your data, with the respective third parties.

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2.1 Qualification / Currency / Requalification

mandatory Qualification	Aeroplanes ICAO App. Cat. A	Aeroplanes ICAO App. Cat. B and higher	Helicopters
Briefing	LSZS Familiarization-Briefing and Test for all Pilots not older than 24 months		
Introduction flight	Introduction flight with mountainous experienced FI (Introduction flight with FI can be done after first landing at LSZS)	NIL	NIL
no LDG at LSZS more than 24 months ago	Refresher flight with mountainous experienced FI	Flight into LSZS IFR or with MET COND FEW or CAVOK or supervised by LSZS current Pilot "for App. Cat B and higher".	NIL
LDG within 24 months	NIL	NIL	NIL

mandatory Qualification	Gliders
Briefing	LSZS Glider-Briefing annually, before first flight at LSZS
	<ul style="list-style-type: none"> • MNM 50 flight HRS since licensing or released by LSZS approved FI and • MNM 3 winch TKOF within the last 3 months or Winch TKOF training at LSZS passed and • MNM 1 flight from LSZS within the last 5 years or Alpine flying introduction at LSZS passed

For details consult [concept for mandatory familiarization.](#)

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3. Weather

General

Because of its special location, the weather can be unpredictable. Significant changes of weather conditions within a short time are frequent in the mountains.

Wind

During winter calm winds predominate throughout the whole day.

In summer a special local wind (Maloja Wind) dominates the wind patterns in the Engadin. This valley wind can be quite strong (up to 20 knots or more). It normally starts at noon, coming from the south-west.

North winds: Take care of north-easterly winds aligned with the runway axis and expect moderate and severe turbulences in approach sector. (RWY 03 in use)

Visibility

In winter, visibility may be reduced temporarily due to snow showers. Fog can occur all year round in the morning. The fog normally dissipates as soon as the sun rises behind the mountains.

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Current meteorological information

Current meteorological information can be found on the Skybriefing site: www.skybriefing.com. For ATIS, refer to the AIP. Furthermore different webcams are available in the Engadin valley.

CAVOK

For LSZS the ICAO MET term CAVOK means rather nice weather conditions. Due to high MSA, there are no clouds below 15'600 ft AMSL when LSZS reports CAVOK.

Weather minima (runway closing):

The runway will be closed for arriving aircraft with **APCH Cat. B and higher** if visibility is less than 5 KM and/or ceiling (bkn or ovc) below 2'200 ft AGL.

The runway will be closed for arriving and departing aircraft if visibility is less than 1500m and/or ceiling (bkn or ovc) below 500ft AGL.

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4. Geographical and topographical situation

General view

Samedan airport is situated north-east of St. Moritz and east of Samedan.
The airport is surrounded by high mountains.

View towards the north-east



View towards the south-west



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Airspace

Samedan airport is close to the Italian border. Study the surrounding airspace carefully.

Obstacles

Aerodrome obstacle charts are available to identify critical obstacles in both runway directions.

Refer to AIP.



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5. Communication

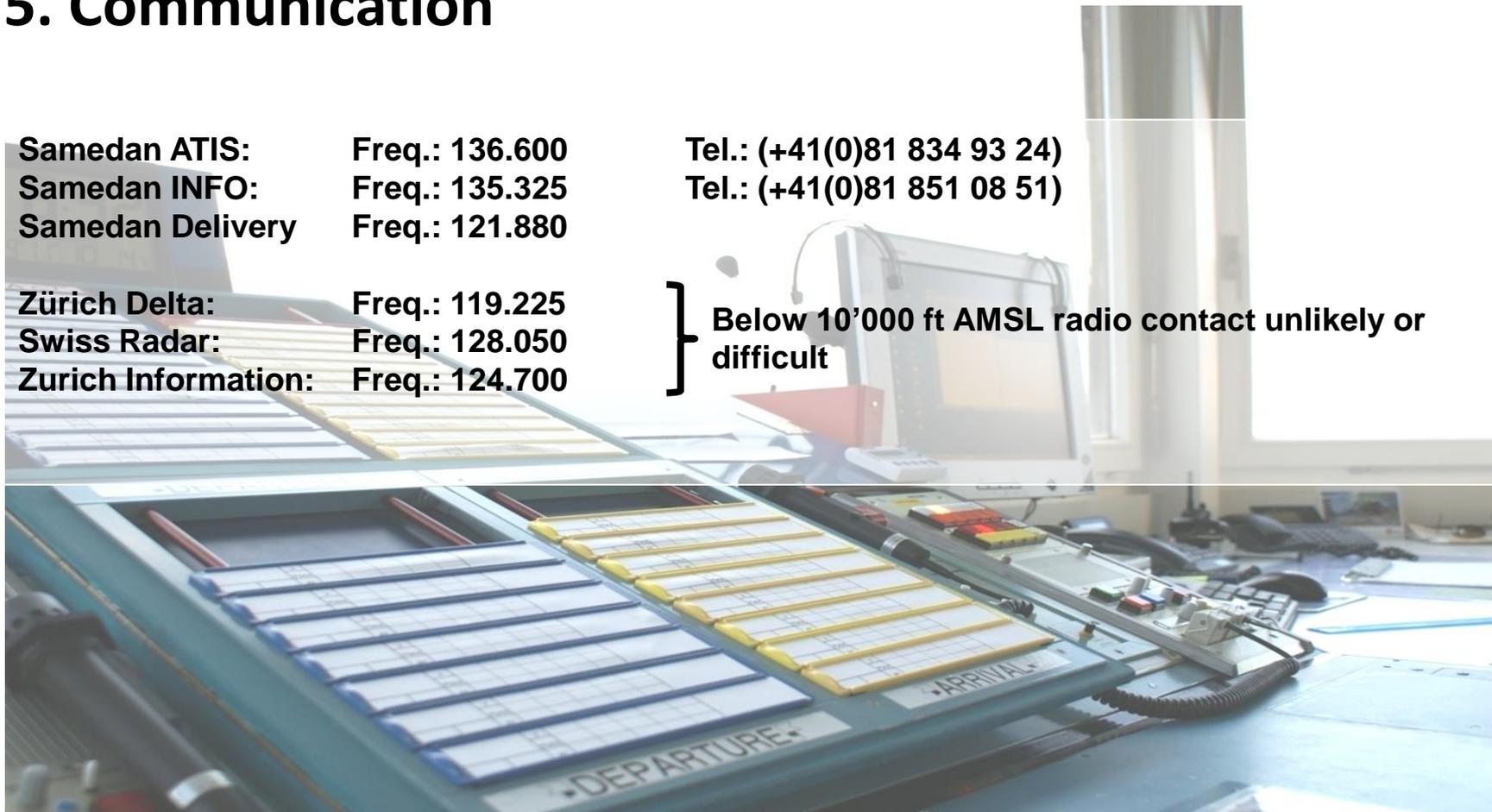
Samedan ATIS: Freq.: 136.600
Samedan INFO: Freq.: 135.325
Samedan Delivery Freq.: 121.880

Tel.: (+41(0)81 834 93 24)

Tel.: (+41(0)81 851 08 51)

Zürich Delta: Freq.: 119.225
Swiss Radar: Freq.: 128.050
Zurich Information: Freq.: 124.700

} **Below 10'000 ft AMSL radio contact unlikely or difficult**



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6. Pre-flight briefing

NOTE:

- ✓ Check the weather situation over the Alps
- ✓ Check the density altitude
- ✓ Check the aircraft performance, for helicopters HOGE
- ✓ Check OEI performance
- ✓ Check contingency procedures
- ✓ Check procedures in case of loss of GNSS signal (IFR)
- ✓ Check runway condition
- ✓ Check NOTAM
- ✓ On departure, observe the speed and maintain a good rate of climb, especially for high performance jet aircraft
- ✓ External lighting has to be used (navigation lights, strobe lights, etc..)

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7. VFR Approach

General

Refer to AIP or to official route documentation for exact location and for technical information.

Study the requirements and conditions for the execution of the flight procedures carefully and be aware of GPWS indications due to the topography of the valley.

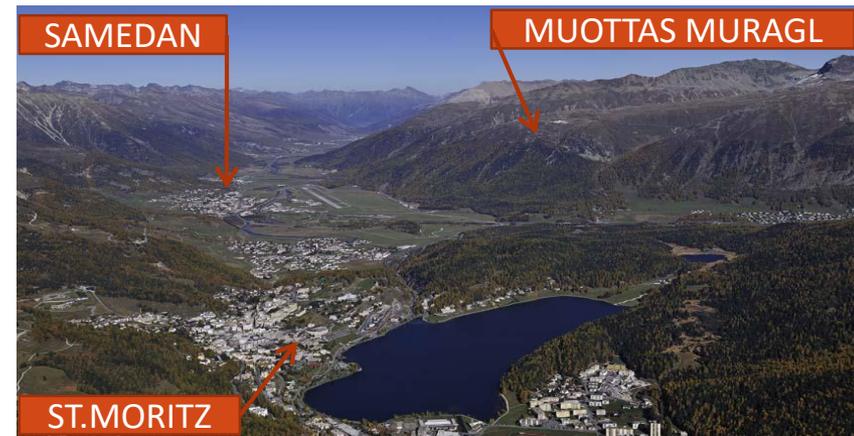
Study all official charts carefully:

For VFR Area Chart and Visual Approach Chart refer to AIP Switzerland (VFR-manual).

It is recommended to maintain listening watch of Samedan AFIS in the region from Maloja to Zernez to be informed about IFR traffic in the valley.

Note:

- Expect unknown VFR activity inside and outside of the FIZ (Airspace Class E & G)
- Be aware, that in Airspace E & G no separation between IFR/VFR and VFR/VFR traffic will be provided.



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7.1 Additional information

- Expect general information by ATIS and traffic information by AFISO.
- Observe the surroundings! Look out for unknown VFR traffic in the vicinity of the airport.
- During winter, expect helicopter traffic at the St. Moritz Bad Heliport LSXM near the approach sector RWY 03 close to terrain (3.6 NM from THR RWY 03). Their standard procedure avoid the approach and departure sector of Samedan airport.
- Expect intense glider activity from May to September. Gliders have landing priority.
- Be aware of straight-in approach of jets from Maloja or Zernez.
- **Approach RWY 21 / Departure RWY 03:** Restricted area LSR11/R11A can be active. Please check ATIS. For crossing coordination, you may contact Samedan Information as early as possible (min. 15 minutes before ETA).

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7.2 VFR Approach

Entering points:

Available for APCH Cat. A and helicopter only:

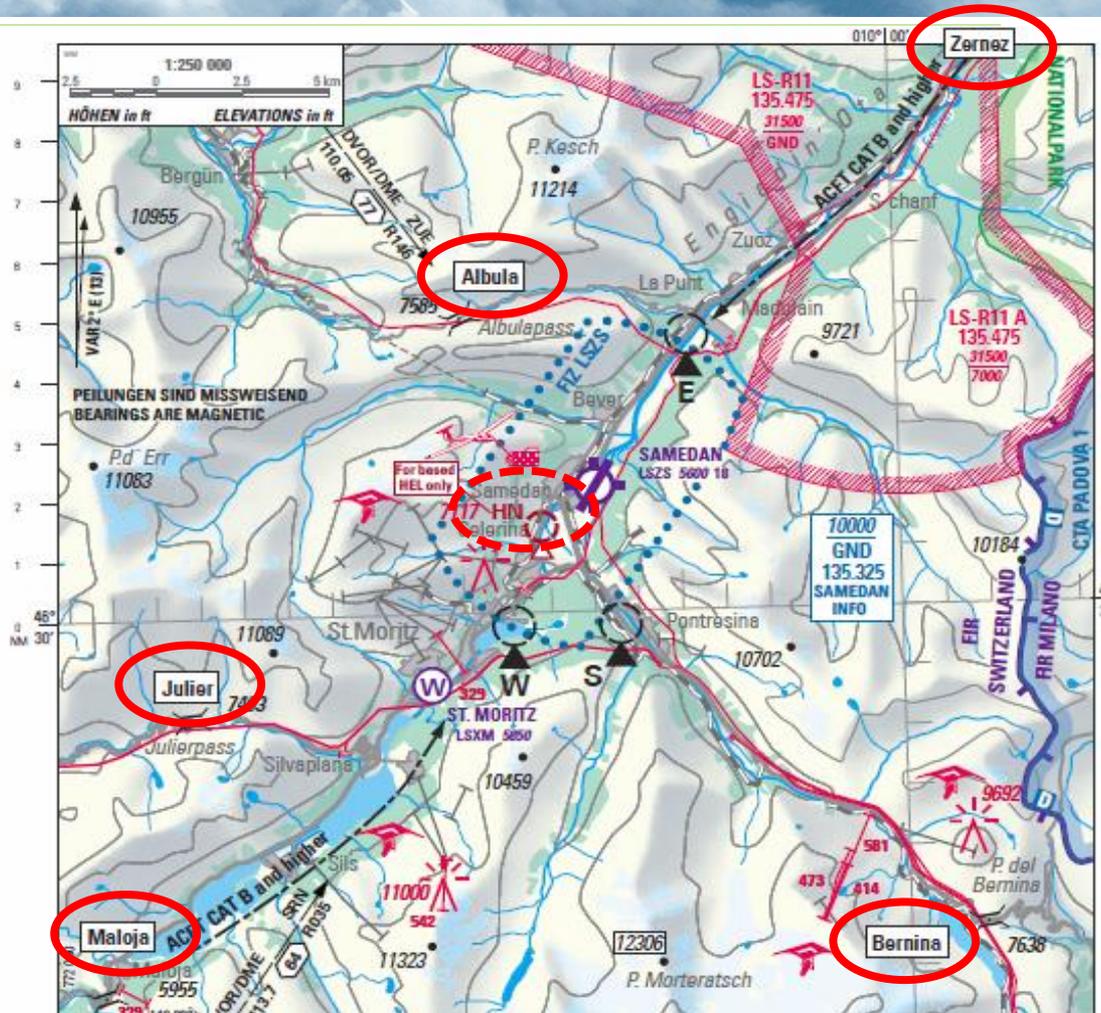
- **ALBULA**
- **BERNINA**
- **JULIER**

Available for all planes and helicopter:

- **ZERNEZ**
- **MALOJA**

Available for homebased helicopters only:

- **CELERINA (HN)**



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7.3 VFR Approach for Cat. A and helicopter

General Information:

AFIS 135.325 MHz
ATIS 136.600 MHz

Establish radio contact 5 minutes before entering the FIZ (Flight Information Zone) or at entering points (Zernez, Albula, Julier, Maloja, Bernina).

It is highly recommended to maintain listening watch of Samedan AFIS in the region from Maloja to Zernez to be informed about IFR traffic in the valley.

After Albula and Julier enter the valley carefully as there might be jet traffic on a straight-in approach from Maloja/Zernez. If possible give way to jet aircraft on final and tell AFISO about your intentions.

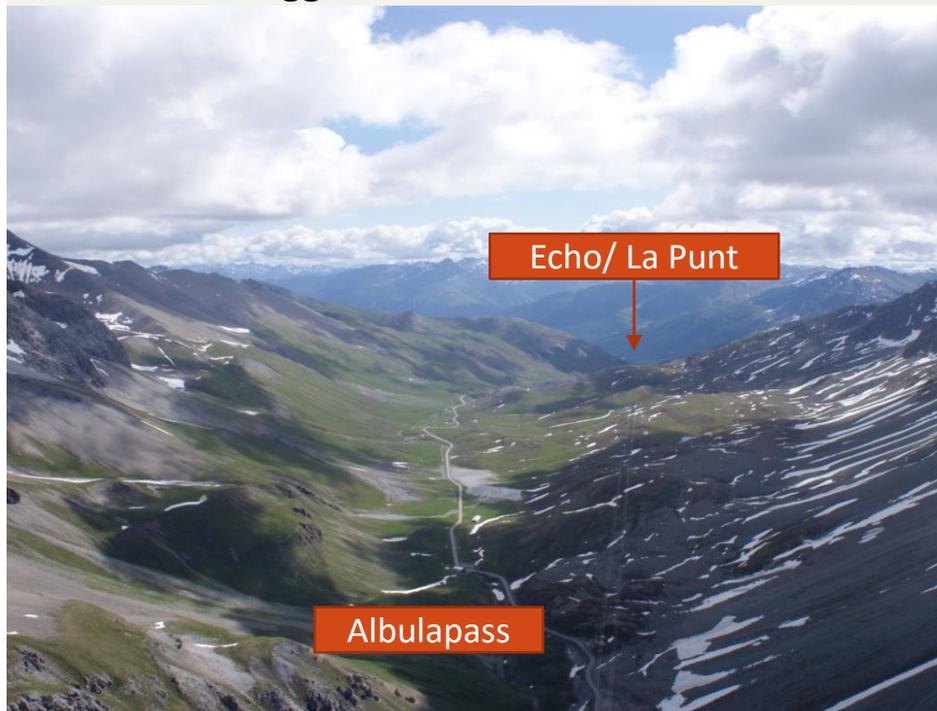
NOTE: The PIC has the full responsibility to conduct a safe flight and to maintain VMC. The AFISO can only provide information regarding known traffic as there is no traffic display available.

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

7.3.1 VFR Approach via ALBULA

ALBULA

Min. suggested altitude 8'700 ft AMSL



ECHO Point / La Punt

Min. suggested altitude 7'000 ft AMSL

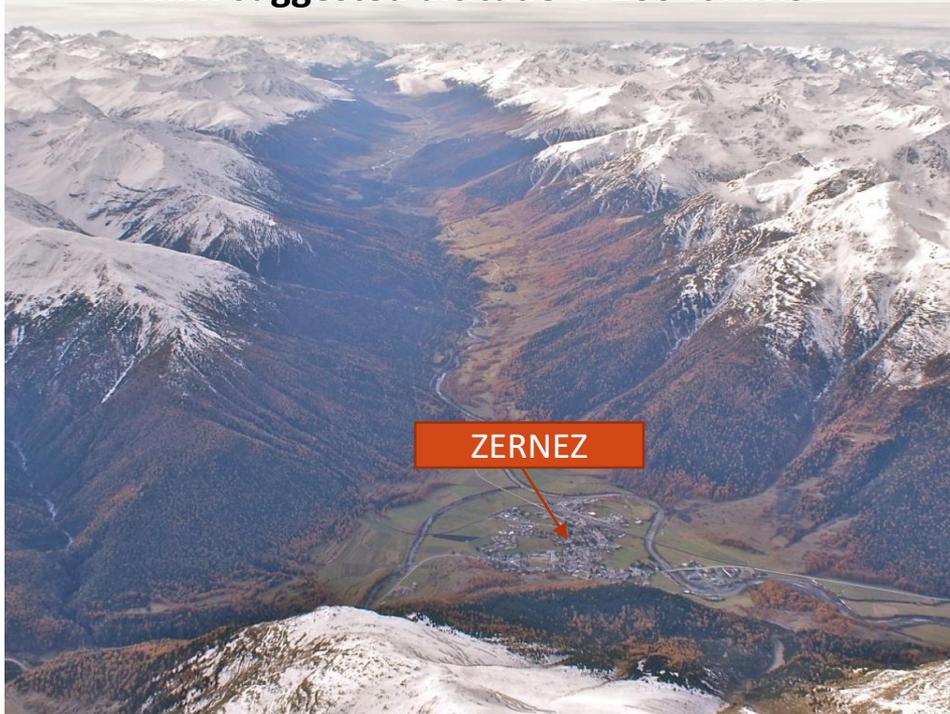


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7.3.2 VFR Approach via ZERNEZ

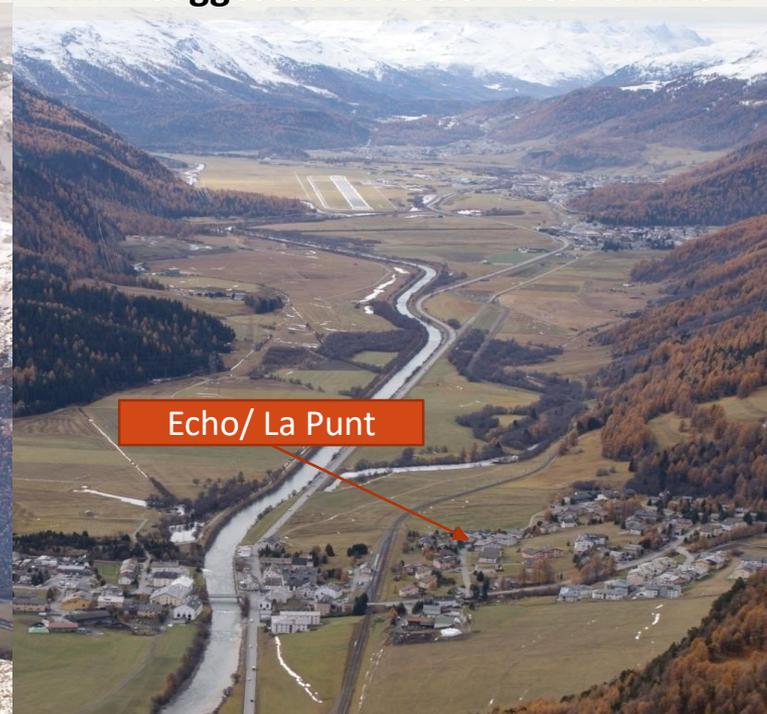
ZERNEZ

min. suggested altitude 7'200 ft AMSL



ECHO Point/ La Punt

Min. suggested altitude 7'000 ft AMSL



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7.3.3 VFR Approach via BERNINA

BERNINA

Min. suggested altitude 8'600 ft AMSL



SIERRA Point/ Pontresina

Min. suggested altitude 7'000 ft AMSL



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7.3.4 VFR Approach via JULIER

JULIER

Min. suggested altitude 8'600 ft AMSL



WHISKEY

Min. suggested altitude 7'000 ft AMSL



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7.3.5 VFR Approach via MALOJA

MALOJA

min. suggested altitude 7'200 ft AMSL



WHISKEY

Min. suggested altitude 7'000 ft AMSL



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7.3.6 Entering traffic pattern

Runway 03 in use:

Sierra: via right base for final 03

Whiskey: straight-in for final 03

Echo: via downwind for final 03

Unless instructed otherwise: vacate via the first possible exit to the right and taxi via taxiway to the main apron.

Runway 21 in use:

Sierra: via downwind for final 21

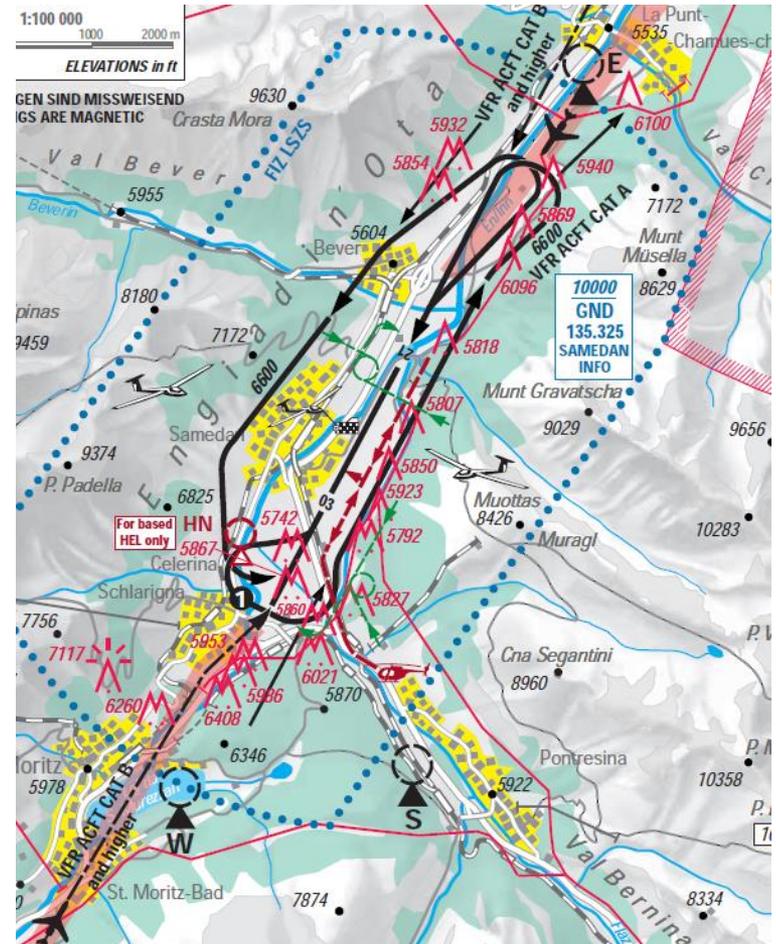
Whiskey: via downwind for final 21

Echo: straight-in final 21

Unless instructed otherwise: vacate via the first possible exit to the left and taxi via taxiway to the main apron.

Missed Approach:

Proceed via circuit and restart the approach.

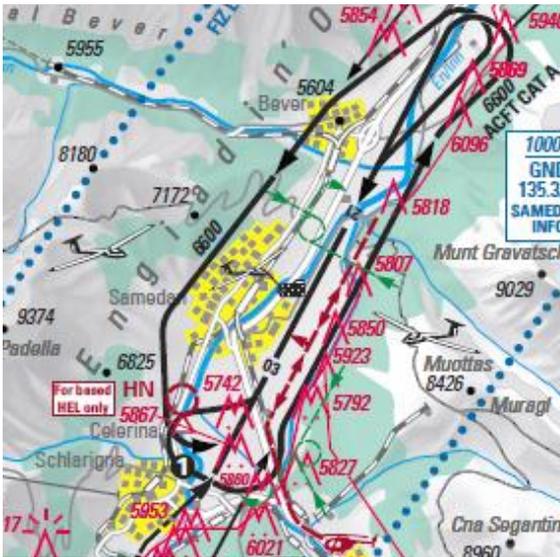


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7.3.7 Final Approach for helicopter

Approach for helicopter with overall LEN < 13m or an overall WID < 11m via east of RWY axis as published in the VFR Manual (Visual Approach Chart – red dotted line) Information about helipad conditions is given by AFISO, SNOWTAM, ATIS. In winter season expect blowing snow (white out). Helicopter with an overall LEN > 13m or an overall WID > 11m use the paved RWY for landing.

ARRIVAL VIA FATO to designated Helipad (1-5)



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VFR Approach for Cat. B and higher

General Information

AFIS	135.325 MHz
ATIS	136.600 MHz
ZRH Info	124.700 MHz
ZRH Delta	119.225 MHz
Swiss Radar	128.050 MHz

For the approach, it is suggested to proceed in the direction of Maloja / Zernez and then turn inbound to LSZS at 10NM.

Establish radio contact with Samedan Information when released by radar or latest at Maloja / Zernez.

NOTE: The PIC has the full responsibility to conduct a safe flight and to maintain VMC. The AFISO can only provide information regarding known traffic as there is no traffic display available.

Airspace E & G no separation between IFR/VFR and VFR/VFR traffic will be provided.

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7.4.1 VFR Approach (Cat. B and higher) via Maloja for RWY 03

MALOJA

Suggested altitude 10'000 ft AMSL (10NM FINAL)



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7.4.2 VFR go around (Cat. B and higher)

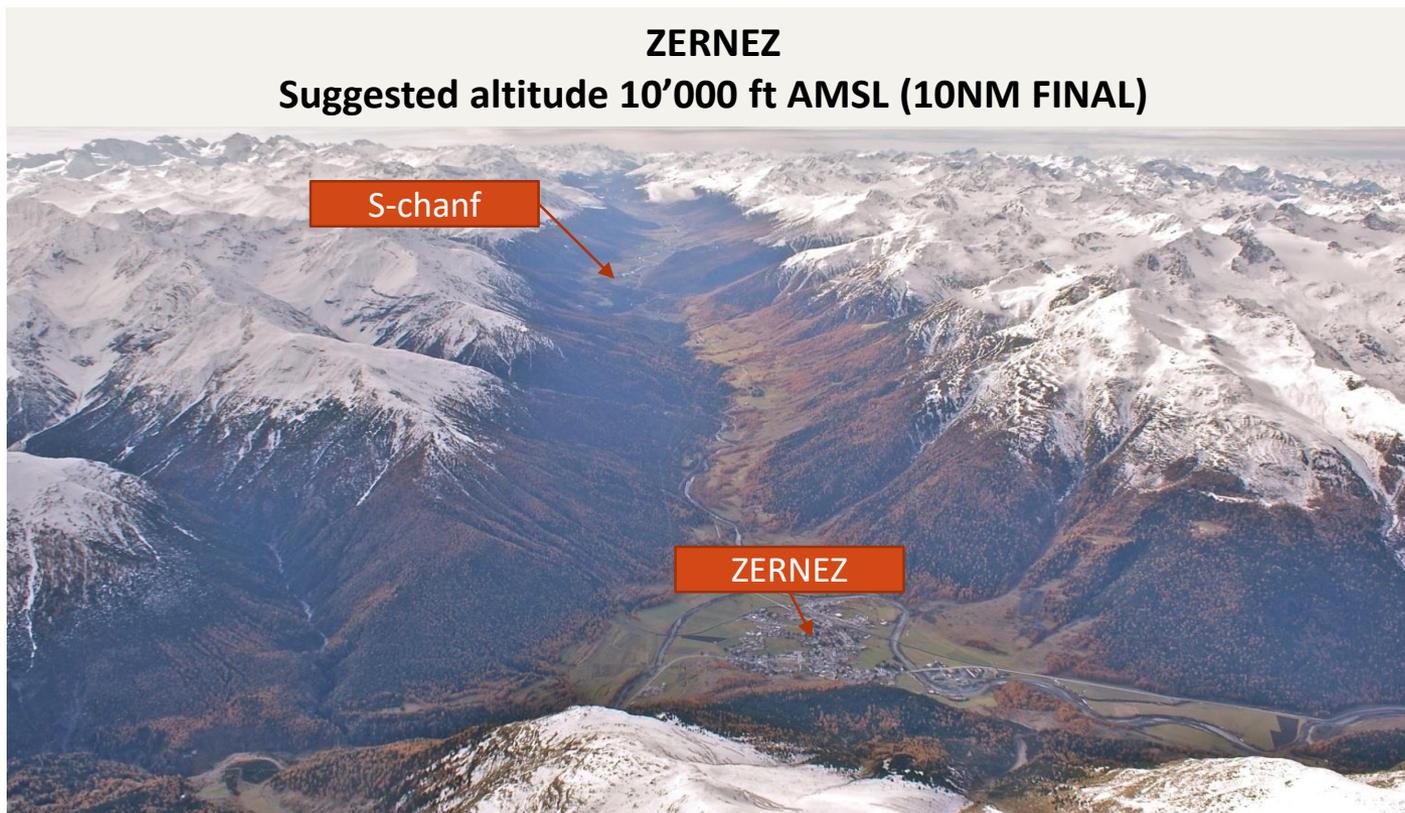
Go around: When clear of terrain proceed back to Maloja and restart the VFR approach.

NOTE: Be aware of the space needed for manoeuvring. Climb to a sufficient altitude first before starting reverse turn.



The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

7.4.3 VFR Approach (Cat. B and higher) via Zernez for RWY 21



The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

7.4.4 VFR go around (Cat. B and higher)

Go around: when clear of terrain proceed back to Zernez and restart the VFR approach

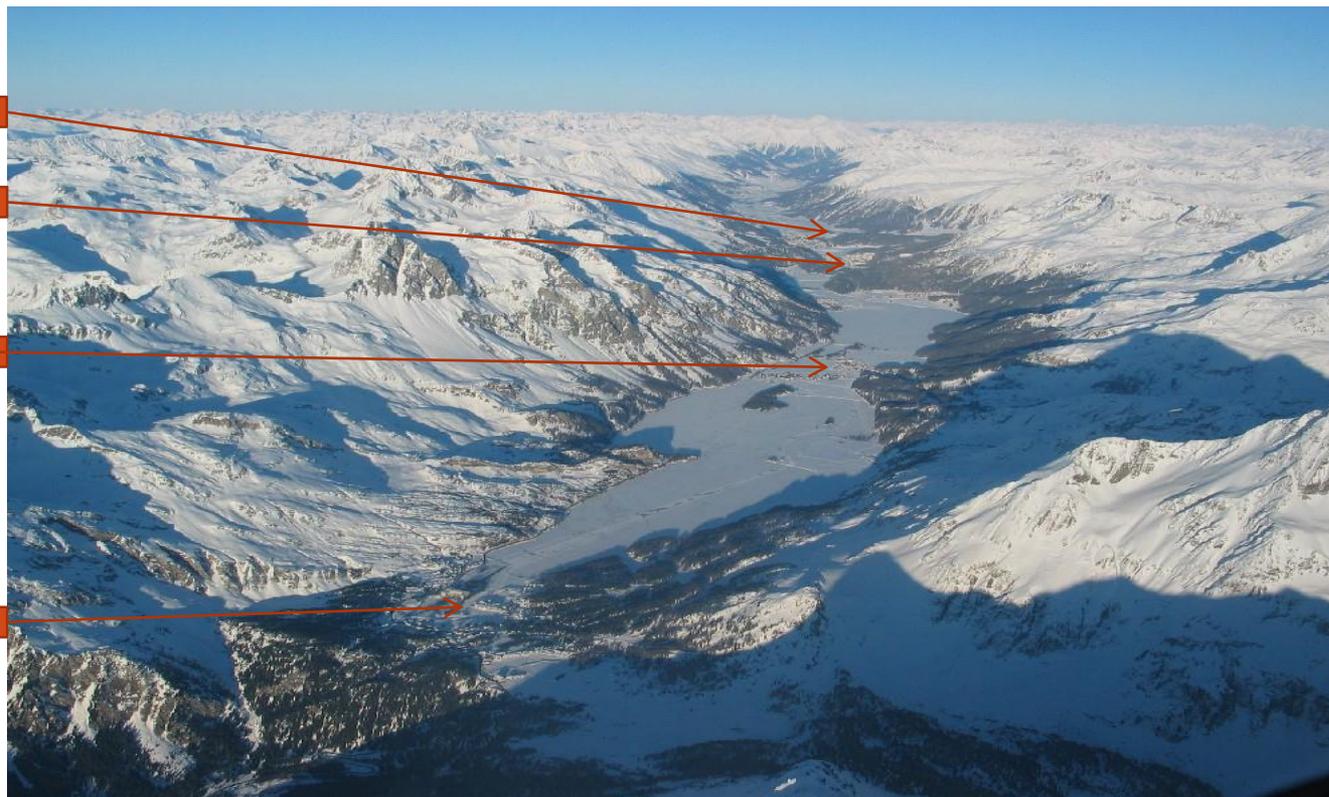
NOTE: Be aware of the space needed for manoeuvring. Climb to a sufficient altitude first before starting reverse turn.



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7.5 Winter season

Caution! Winter scenery looks significantly different (example below: approach RWY 03)



SAMEDAN

St. Moritz 3NM

Sils 6NM

MALOJA 10NM

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

8. VFR Departure

APCH Cat. A:

- Be aware of high density altitude, which may affect the aircraft performance negatively. (See page 61-63)
- Be aware of downdrafts caused by local winds. (See page 66-67)
- When required follow the circuit to gain height
- When departing on RWY 21, if performance permits, make a right turn as published thereafter it is recommended to proceed north-west of whiskey (see red circle on the chart) to stay clear of inbound traffic on route whiskey.
-> same procedure recommended for departing RWY 03.
Proceed south-east of Echo.



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VFR Departure

APCH Cat. B and higher:

- Joining instructions (Joining point, max. level, squawk, next frequency) given by AFISO before departure.
- Perform a straight out departure towards Maloja or Zernez.
- Expect initial climb to FL130 due to military activity above.
- Report passing 10'000ft for frequency change.
- Expect unknown VFR activity inside and outside of the FIZ (Airspace Class E & G)
- Be aware, that in Airspace E & G no separation between IFR/VFR and VFR/VFR traffic will be provided. Expect traffic information as far as practicable.
- For VFR Departure no Transition Altitude given.

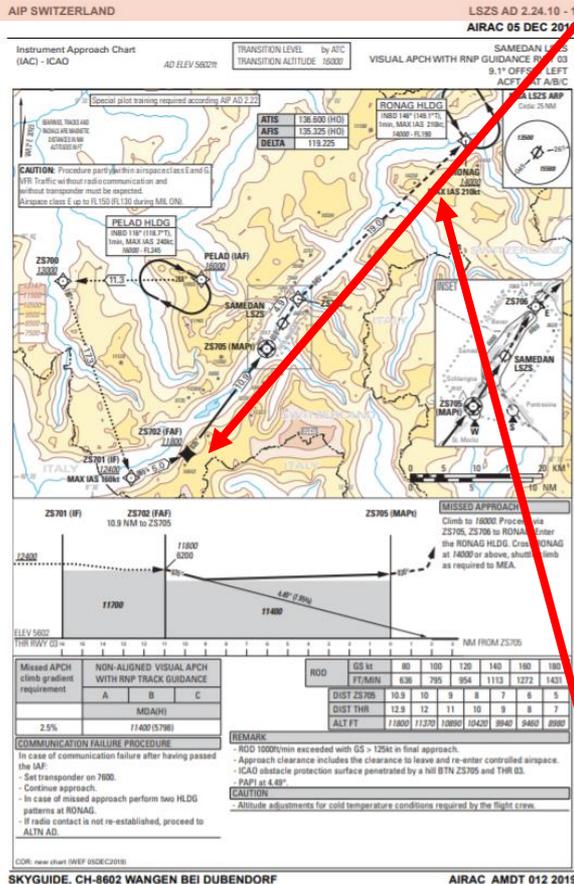
The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

9. IFR Approach

- The procedures refer to normal operations (all engines running).
- Contingency procedures (e.g. OEI operation) are in the responsibility of the operator.
- The calculations for obstacle clearance do not take into account the effect of cold temperatures, as it is in the responsibility of the pilot to adjust the altitudes in case of cold temperatures.
- Procedures partly within airspace class E and G. Watch out for VFR traffic.
- Be aware, that in Airspace E & G no separation between IFR/VFR and VFR/VFR traffic will be provided.
- Availability of the IFR Procedures depending on the military activity in the temporary reserved areas (TRA) REF: AIP SWITZERLAND ENR 5.2 (During military activity IFR flightplans might be rejected)
- For piston engine aircraft and multiple IFR APCH (training) PPR required. ppr.smv@engadin-airport.ch

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

9.1 IFR Approach 03



Mandatory reporting point **Maloja (ZS702)**

Altitude adjustments for cold temperature conditions required by the flight crew.

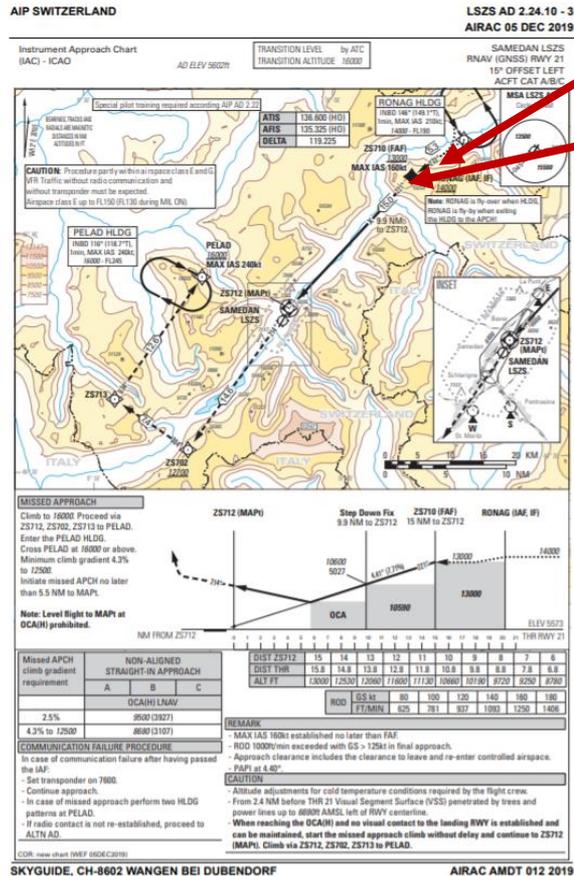
Approach clearance includes the clearance to leave and re-enter controlled airspace

- Approach has a very high MDA of 11400ft.
- After that altitude, the APCH is a visual maneuver.
- Visual contact especially to the mountains right and left of track must be assured at all time.
- The high terrain might trigger aircraft Ground Proximity Warning System (GPWS). Speed constraints and temperature corrected altitudes have to be strictly respected to assure terrain clearance
- **Do not attempt to continue at MDA and initiate a steep descent once LSZS in sight.**

Expect GLD activity. **Hot Spot Piz Nuna.**

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

9.2 IFR Approach 21



Expect GLD activity. **Hot Spot Piz Nuna.**

Mandatory reporting point **Zernez (ZS710)**

Altitude adjustments for cold temperature conditions required by the flight crew.

Approach clearance includes the clearance to leave and re-enter controlled airspace

When reaching the OCA(H) and no visual contact to the landing RWY is established and can be maintained, start the missed approach climb without delay.
The need to navigate very precisely (RNP 0.3) in the first part of the missed approach due to non-standard RNP value from the point where OCA is reached and the MAPt. After MAPt standard RNP values apply (RNP 1.0)

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10 SID's 03/21

There are 4 RNAV 1 SID's available at LSZS.

Since a fully IMC SID from runway 03 / 21 is limited to aircraft with high climb performance, it was decided to introduce SID's with an initial visual segment. The pilot will have to maintain visual ground contact to a specific altitude in order to stay clear of obstacles.

- The procedures refer to normal operations (all engines running).
- Engine-out procedures are the responsibility of the operator.
- The calculations for obstacle clearance do not take into account the effect of cold temperatures, as it is in the responsibility of the pilot to adjust the altitudes in case of cold temperatures.
- Procedures partly within airspace class E and G. Watch out for VFR traffic.
- Be aware, that in Airspace E & G no separation between IFR/VFR and VFR/VFR traffic will be provided.

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10.1 SID's 03/21

SIDs are named as follows:

SIDs RWY 03: RONAG 1E (full IMC, direction east)
 RONAG 1V (containing a visual segment)

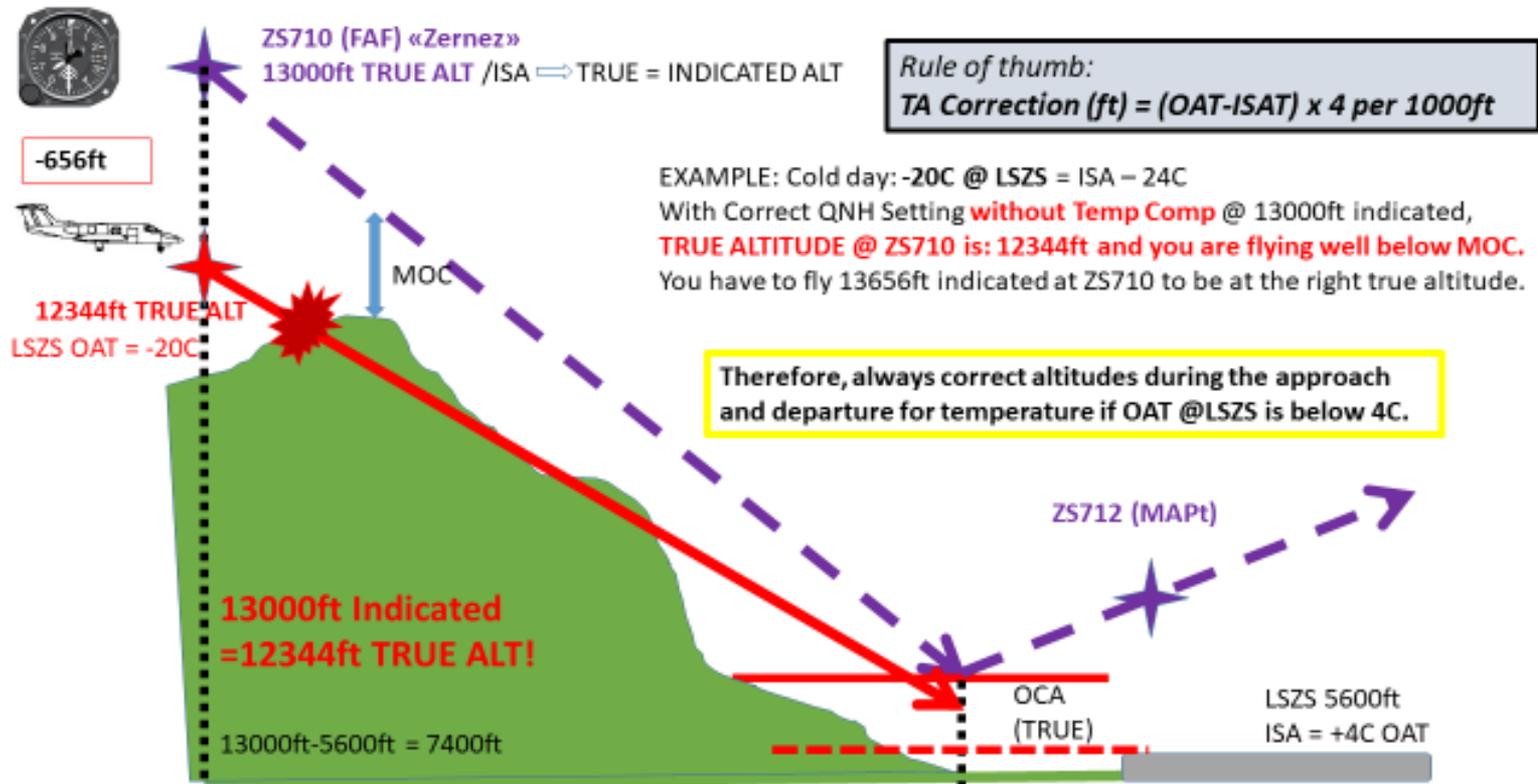
SIDs RWY 21: PELAD 1W (full IMC, direction west)
 PELAD 1 V (containing a visual segment)

The Runway will be closed for IFR departure procedures as follows:

RWY	SID	VIS (m) / Ceiling (ft AGL)	RMK
03	RONAG 1E	2000 / ---	Ceiling means BKN or OVC. VMC must be maintained up to the ALT stated in the table.
	RONAG 1V	5000 / 4400	
21	PELAD 1W	2000 / ---	
	PELAD 1V	5000 / 5100	

11. Temperature/pressure correction

The operator/pilot is responsible to correct the IFR procedures for temperature and pressure errors!



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Temperature/pressure correction

Example for Temperature Correction



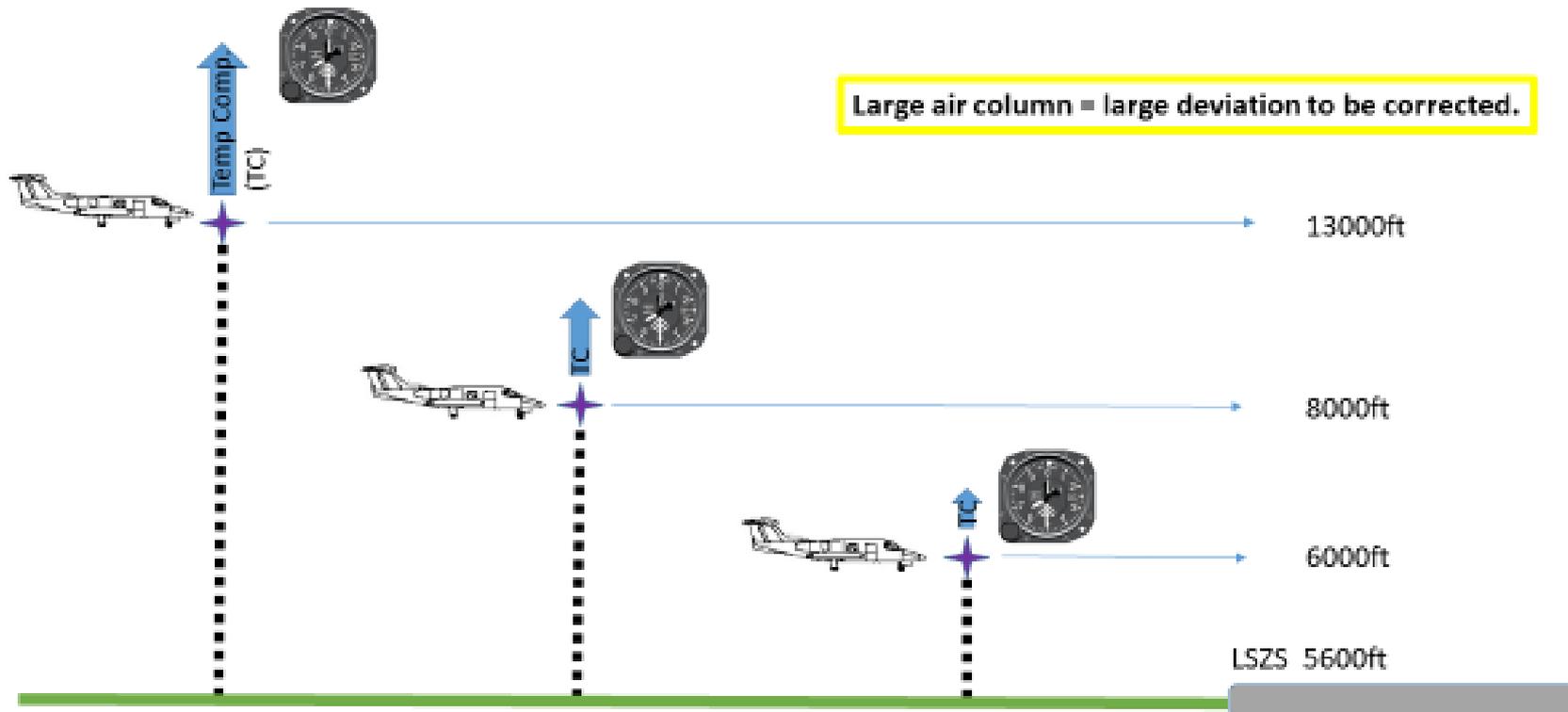
Aerodrome Temperature LSZS							
Altitude	0°	-5°	-10°	-15°	-20°	-25°	-30°
16000	+152 ft	+347 ft	+542 ft	+737 ft	+932 ft	+1127 ft	+1323 ft
14000	+122 ft	+278 ft	+435 ft	+591 ft	+747 ft	+904 ft	+1060 ft
13000	+107 ft	+244 ft	+382 ft	+519 ft	+656 ft	+793 ft	+930 ft
12700	+103 ft	+234 ft	+366 ft	+497 ft	+628 ft	+760 ft	+891 ft
12400	+98 ft	+224 ft	+350 ft	+476 ft	+601 ft	+727 ft	+853 ft
11800	+89 ft	+204 ft	+318 ft	+433 ft	+547 ft	+662 ft	+776 ft
10700	+73 ft	+167 ft	+261 ft	+355 ft	+448 ft	+542 ft	+636 ft
10580	+71 ft	+163 ft	+255 ft	+346 ft	+438 ft	+529 ft	+621 ft
9400	+54 ft	+124 ft	+193 ft	+263 ft	+332 ft	+402 ft	+471 ft
8820	+46 ft	+105 ft	+163 ft	+222 ft	+281 ft	+340 ft	+399 ft
8680	+44 ft	+100 ft	+156 ft	+213 ft	+269 ft	+325 ft	+381 ft

Temp on GND in LSZS (ISA = +4°C)	Target (true) Altitude	Temp Correction to be applied	Indicated Altitude to fly target (true) Altitude
OAT = -10°C (-> ISA-14)	13'000ft (Interm. Alt.)	382ft	13'382ft
OAT = -20°C (-> ISA-24)	13'000ft (Interm. Alt.)	656ft	13'656ft
OAT = -10°C (-> ISA-14)	8'680ft (OCA 4.3% MACG)	156ft	8'836ft (= temp. corrected OCA)
OAT = -20°C (-> ISA-24)	8'680ft (OCA 4.3% MACG)	269ft	8'949ft (= temp. corrected OCA)

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Temperature/pressure correction

Correction depends as well on air column between airport and aircraft



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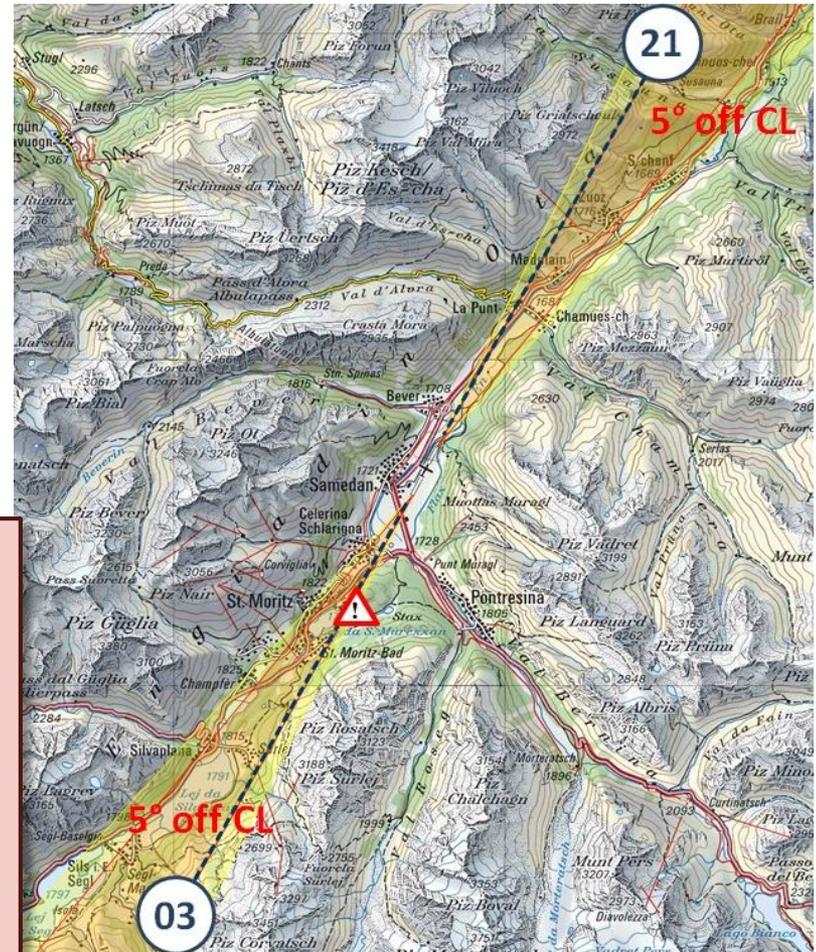
12. Non-STD PAPI



The PAPI is not alligned with the RWY axis, but 5° left of it.



- The PAPI does not grant obstacle clearance according to ICAO standard. Hence, the PAPI can be used as a reference only.
- Avoid critical terrain visually.
- The PIC has the full responsibility to keep clear of terrain and obstacles.



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13. Runway condition

Information on runway condition is given by AFISO, SNOWTAM, METAR, ATIS.

Estimated Runway Surface Friction is assessed and reported based on readings from Decelerometer (friction test device), runway contamination, vehicle control and PIREPs.



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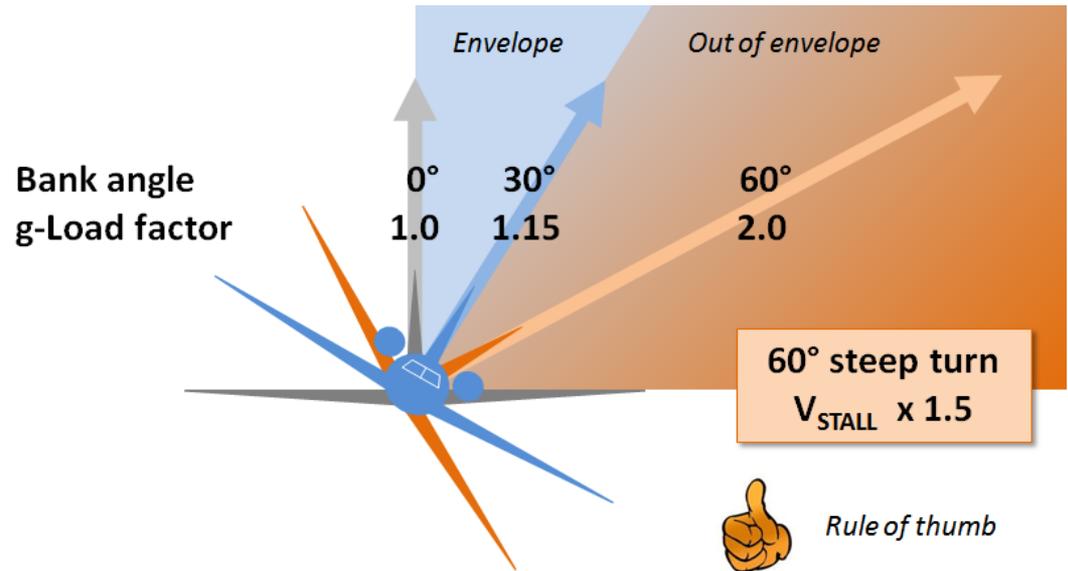
14. Noise abatement

- Make sure that the type of aircraft (noise class) is allowed to operate at Samedan airport.
- More than idle reverse shall be used for safety reason only. (Jet)
- APU shall be started at the earliest 30 minutes before EOBT and shall be shut off at latest 15 minutes after reaching the park position. (Jet)
- Avoid flying over towns and villages and noise sensitive areas when operationally possible (see VFR chart).
- Helicopter: Reduce speed when approaching airport.
- For further information refer to AIP / VFR Manual LSZS.

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP / VFR manual.

15. Bank angle / g-force / stall speed

Aircraft manoeuvring is assumed to be conducted at minimum defined pattern speed according to AFM. This covers adequate safety margin above stall speed. Using higher bank angles to avoid obstacles or for any reason may bring the aircraft close to or into stall conditions.



Stall speed: As weight doubles (60° bank), stall speed increases by $\sqrt{2}$, or 1.414

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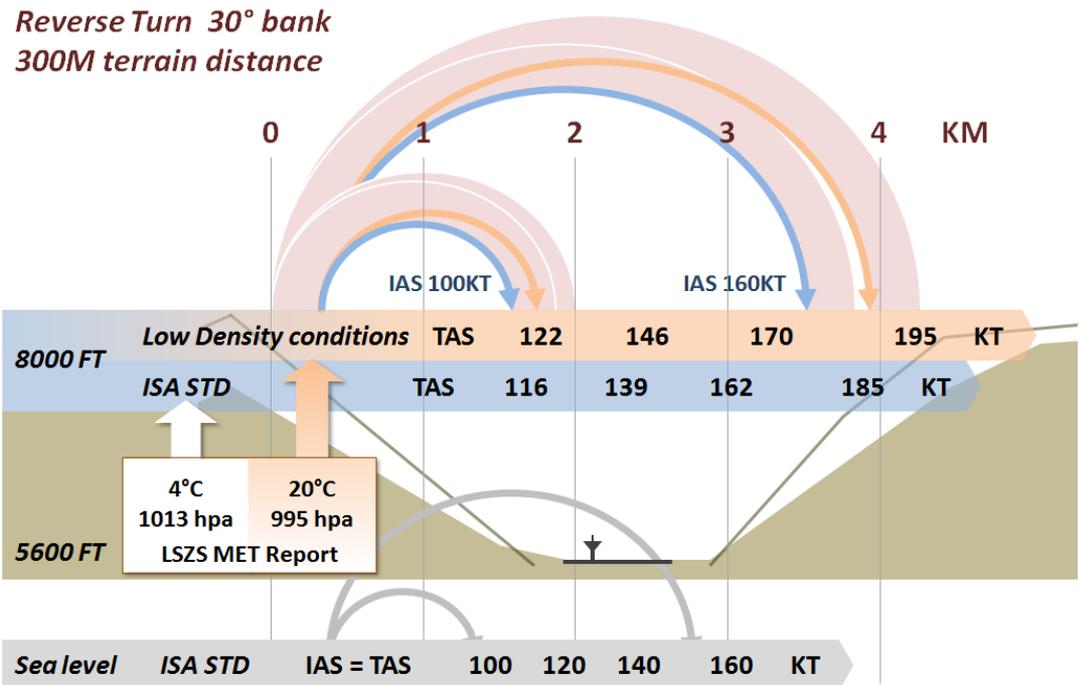
16. IAS – TAS / Reverse turn

Aircraft operation under VFR and in mountainous terrain requires solid knowledge of the atmosphere theory. Density altitude and therefore true airspeed (TAS) can be considerably higher than aerodrome altitude (AD ELEV) or indicated air speed (IAS). Thus, pilots may be surprised by the area needed to maneuver the aircraft (reverse turn).

True airspeed (TAS): Add 2% to indicated airspeed (IAS) for every 1,000 feet increase in altitude

Standard temperature (ISA): 15°C (59°F) at sea level. ISA decreases 2°C (3.5°F) per 1'000 foot increase in altitude

Density altitude: Increases or decreases 120 ft for each 1 degree Celsius that the temperature varies from standard temperature **and:** Increases or decreases 27 ft for each hPa that the QNH varies from STD (1013.25 hPa)



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17. Calculation density altitude

Calculation Density Altitude

Example: Density Altitude Samedan at 1030 hPa and 22°C OAT

Solution steps:

1. Calculation Pressure Altitude
2. Calculation Standard temperature on Pressure Altitude
3. Calculation Density Altitude

Calculation Pressure Altitude

QNH	1030 hPa
Standard pressure	1013 hPa
Difference	17 hPa (lower)

Calculation method: 27 ft per hPa difference of pressure

Calculation altitude differential	17 x 27 ft = 459 ft
Elevation Engadin Airport	5600 ft
Altitude differential	- 459 ft
(Minus if QNH is higher then 1013 hPa)	
Samedan Pressure Altitude at 1030 hPa	5141 ft

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Calculation density altitude

Calculation Standard Temperature on Pressure Altitude

Calculation method: 2°C pro 1000 ft

Calculation Pressure Altitude 5141 ft;	$2 \times 5.141 = 10.28 \text{ }^\circ\text{C}$
ISA Temperature Sea level	15 °C
Difference	10.28 °C
Standard temperature on Pressure Alt. 5141 ft	4.72 °C

Calculation Density Altitude

Samedan OAT	22 °C
Standard temperature on Pressure Alt. 5141 ft	4.72 °C
Difference	17.28 °C

Calculation method altitude differential: 120 ft pro °C

Calculation altitude differential	$120 \times 17.28 = 2073.6 \text{ ft}$
-----------------------------------	--

Calculation method Density Altitude: If OAT is higher than Standard temperature of Pressure Altitude, altitude differential has to be added to Pressure Altitude.

Pressure Altitude	5141 ft
Altitude differential	2073.6 ft
Density Altitude	7214.6 ft

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18. IAS – TAS / Landing distance

Density altitude affects the landing performance of an aeroplane as greatly as it affects takeoff performance. High temperature and high elevation will cause an increase in the landing roll because the true airspeed is higher than the indicated airspeed. Remind the higher touchdown speed and check the landing performance data according to the AFM of your aircraft rather than assuming the available runway being sufficient.

**LSZS STD TEMP (4°C)
TAS is 11.2% HIGHER**

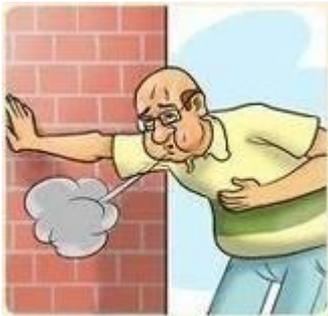


True airspeed (TAS):

Add 2% to indicated airspeed (IAS) for every 1'000 feet increase in altitude

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19. Engine performance

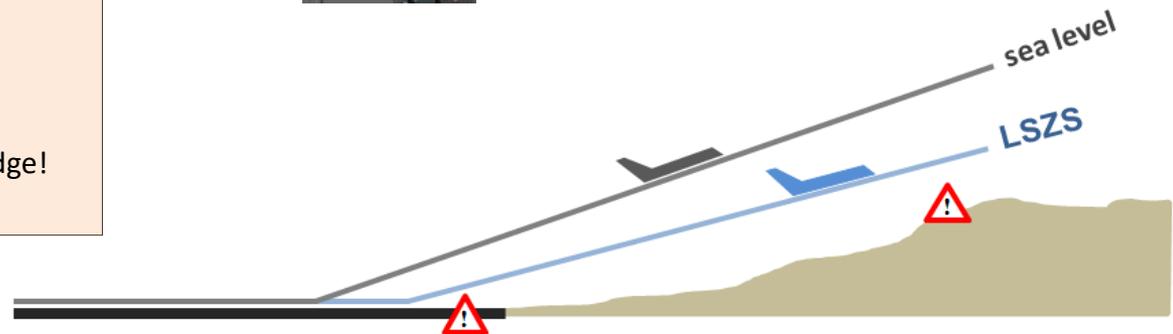


Your engine may get a shortage of breathing at high altitude!



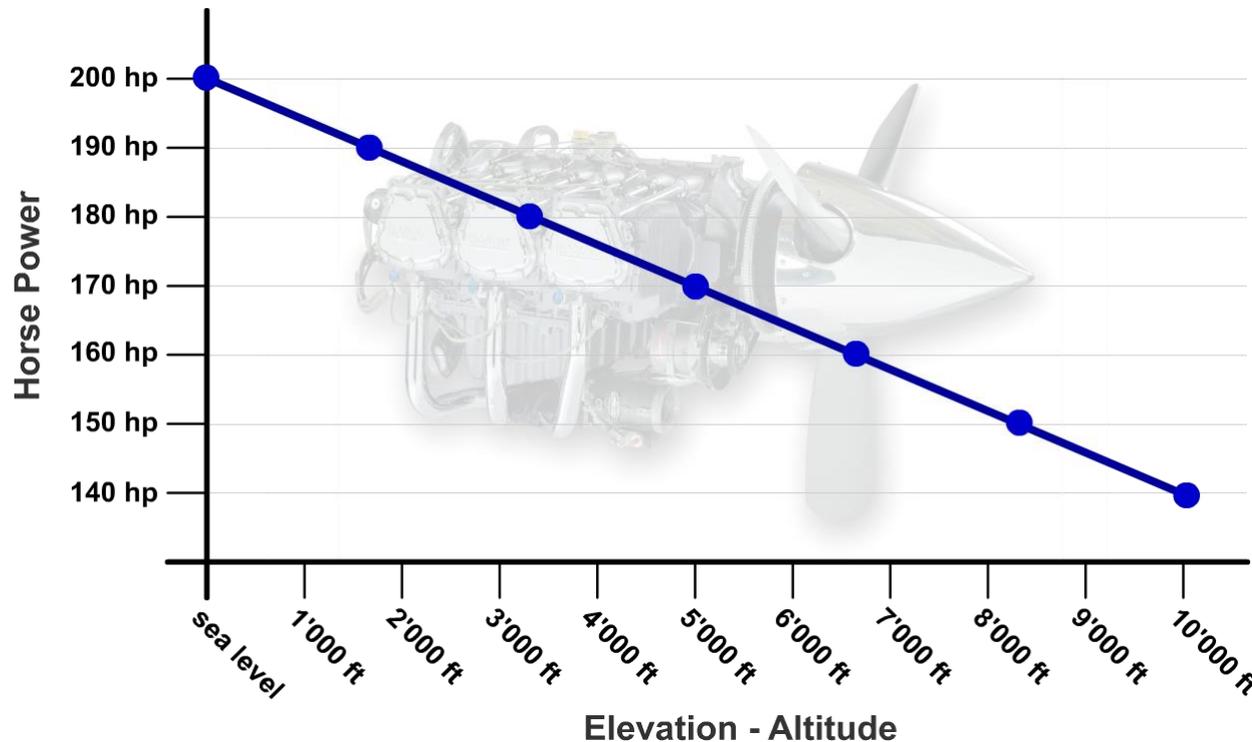
Remember the essentials:

- Proper adjustment of piston engine parameters (leaning) according to AFM
- Proper assessment of runway length and climbout profile
- Keep sufficient margins – don't go to the edge!



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Typical engine power loss with altitude

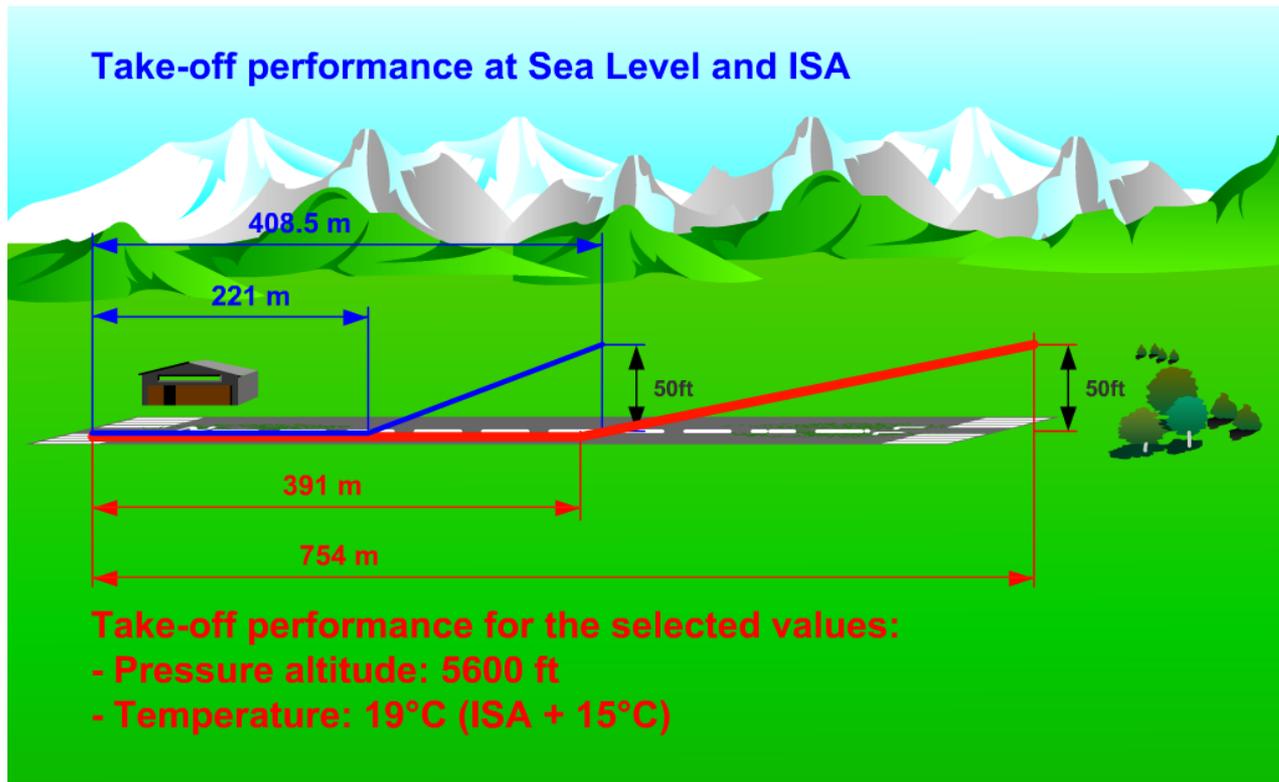


A normally aspirated engine (without a turbocharger) routinely loses about 3 % of its power for every 1000 ft increase in altitude. This means that a non turbocharged Piper Arrow rated at 200 hp at sea level will generate only about 165 hp at Samedan.

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20. Take-off and climb performance

Take-off performance at sea level vs performance at high altitude



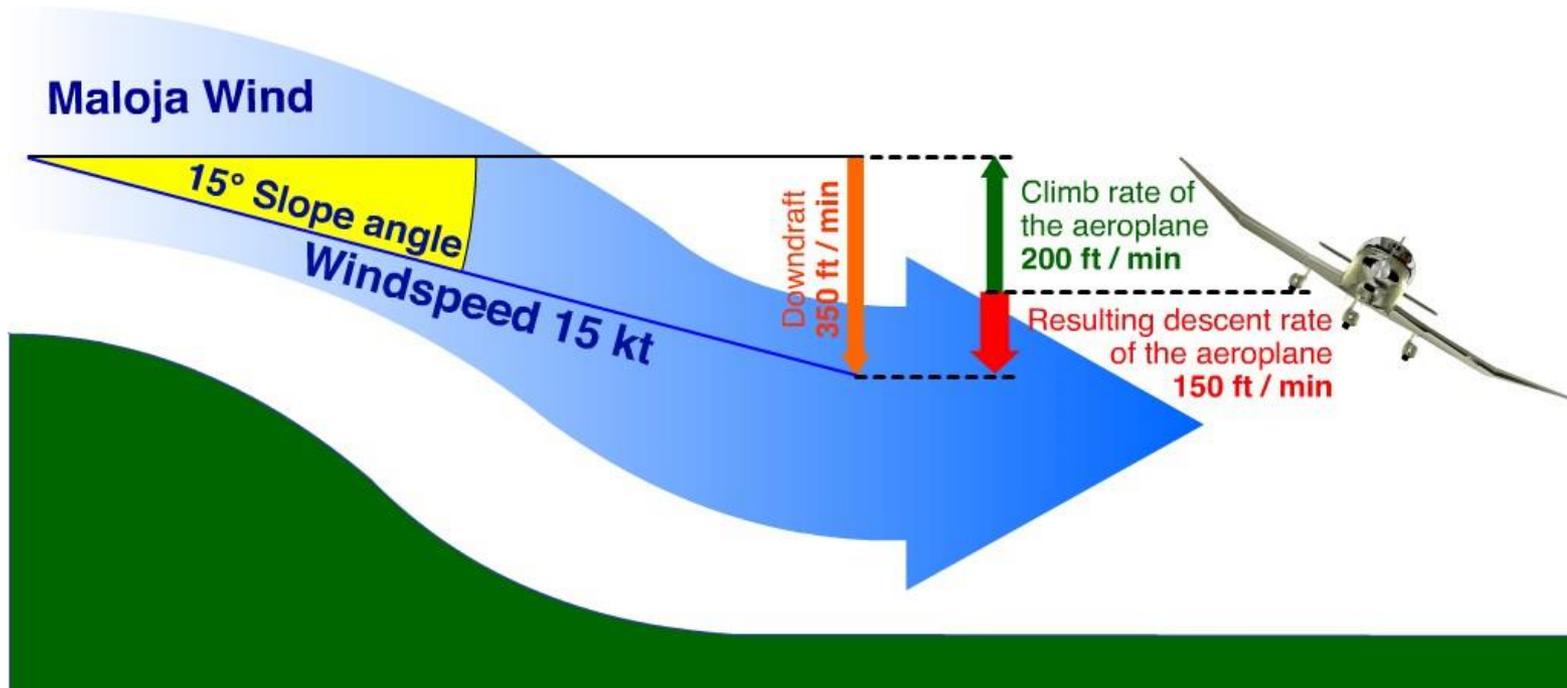
Higher density altitude means thinner air which seriously degrades aircraft performance.

Higher density altitudes also require a longer take-off roll. For safety reasons, add a margin of 30 to 50% to the values you retrieve from the POH/AFM.

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Reduced climb performance due to wind

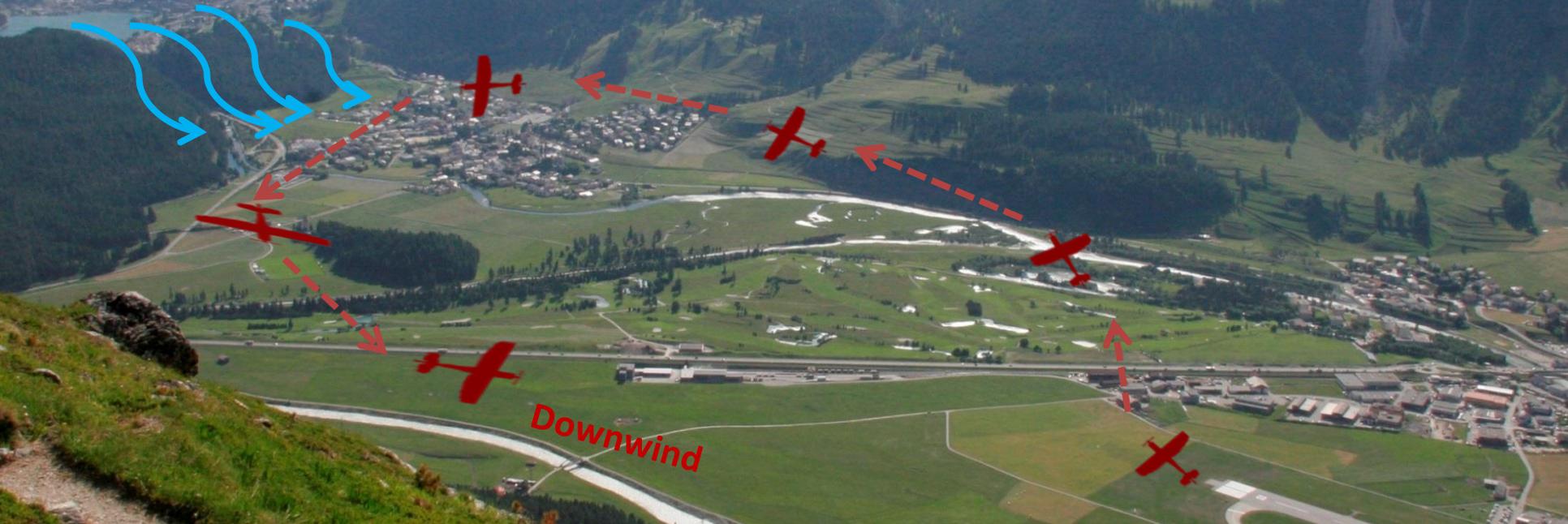
Always consider downdrafts caused by local winds. These downdrafts may exceed your climb performance and result in a descent, therefore the published departure circuit RWY 21 has to be observed. This situation has to be expected especially after departure on runway 21 in the region of the village Celerina.



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Reduced climb performance due to wind

downdrafts caused by local wind (Malojawind)



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21. Emergency and contingency procedures

Contingency procedures

Aeroplanes:

Depending on the performance of your aircraft, you may have to consider the necessity in establishing contingency procedures for certain flight manoeuvres.

Helicopter:

In case of emergency helicopter may land on the RWY.

22. Surveillance / Responsibilities / Sanctions

- The PIC is responsible to conduct the aeroplane safely within the certified envelope (AFM) and in compliance with the current regulations regarding proper weather conditions as well as published procedures for LSZS airport.
- The Airport Authority reports observed deviations from local procedures or regulations to FOCA.
- VFR traffic observation may be conducted by Swiss Air Force reporting to FOCA.
- FOCA is responsible for sanctions.

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Start TEST