

LSZA - LUGANO

LSZA AD 2.1 AERODROME LOCATION INDICATOR AND NAME

LSZA - LUGANO

LSZA AD 2.2 AERODROME GEOGRAPHICAL AND ADMINISTRATIVE DATA

1	ARP coordinates and site at Aerodrome	46 00 13N 008 54 37E RWY midpoint
2	Direction and distance from the CITY	4 km W Lugano
3	Elevation/Reference temperature	915 ft AMSL - 27.0° C
4	MAG VAR/Annual change	2° E (2016.5) / 0°10' eastwards
5	AD Administration, address, telephone, telefax, telex, AFS	Post: Lugano Airport via Aeroporto CH-6982 Agno Phone: +41 (0) 91 610 11 11 Fax: +41 (0) 91 610 11 00 Email: info@luganoairport.ch URL: www.luganoairport.ch LSZA-Airport Authority: Phone: +41 (0) 79 917 68 01 Email: airportauthority@luganoairport.ch
6	Types of traffic permitted (IFR/VFR)	IFR/VFR
7	Remarks	Geodetic undulation reference for ARP: 166.7 ft

LSZA AD 2.3 OPERATIONAL HOURS

1	AD Administration	AD OPR HR: 0700-1100 (0600-1000) and 1230-1900 (1130-1800) from MON to SUN and HOL.
2	Customs and immigration	AD OPR HR
3	Health and sanitation	NIL
4	AIS Briefing Office	AD OPR HR
5	ATS Reporting Office (ARO)	CTC ARO Zurich; Phone: +41 (0) 43 931 61 61
6	MET Briefing Office	AD OPR HR
7	ATS	AD OPR HR
8	Fuelling	AD OPR HR
9	Handling	AD OPR HR
10	Security	AD OPR HR
11	De-icing	AD OPR HR
12	Remarks	Extension for all FLT's outside of the AD operating hours between 0600-2100 (0500-2000) with PPR minimum 48 HR notice before ETA/ETD. Each request has to be send via email to gahandling@luganoairport.ch. Exception: Special permission possible 24/7 O/R for HOSP FLT, SAR FLT, FLT of the Swiss Confederation and members of the Swiss Government.

LSZA AD 2.4 HANDLING SERVICES AND FACILITIES

1	Cargo handling facilities:	All modern facilities
2	Fuel/oil types	JET A1, AVGAS 100LL
3	Fuelling facilities/capacity	No limitations for all types of ACFT permitted at AD
4	De-icing facilities	Lugano Airport - Service available from 01 NOV to 30 APR De-icing fluid available: Type II: Killfrost ABC K-Plus
5	Hangar space available for visiting aircraft	NIL
6	Repair facilities for visiting aircraft	Hangar, major aircraft repairs
7	Remarks	Airline handling agent: Lugano Airport Phone: +41 (0) 91 610 12 82 Fax: +41 (0) 91 610 12 25 FREQ: 131.430 MHz SITA: LUGKKXH General aviation handling: Lugano Airport Phone: +41 (0) 91 610 11 16 Fax: +41 (0) 91 610 11 19 FREQ: 131.805 MHz AFS: LSZAYDYH Email: gahandling@luganoairport.ch

LSZA AD 2.5 PASSENGER FACILITIES

1	Hotels	In city
2	Restaurants	At AD and in city
3	Transportation	Shuttle buses, trains, taxis, car rentals
4	Medical facilities	Ambulance O/R Hospital in city
5	Bank and Post Office	In city
6	Tourist Office	At AD and in city
7	Remarks	NIL

LSZA AD 2.6 RESCUE AND FIRE FIGHTING SERVICES

1	AD category for fire fighting	Category 3 Category 4 O/R 3 HR before ETA/ETD HYR category O/R 24 HR before ETA/ETD
2	Rescue equipment	Hydraulic and outting tools, 2 rescue boats.
3	Capability for removal of disabled aircraft	No limitations for all type of ACFT admitted at AD
4	Remarks	NIL

LSZA AD 2.7 SEASONAL AVAILABILITY - CLEARING

1	Type(s) of clearing equipment	Snow removal vehicles: 1 RWY de-icer, 1 ACFT de-icer
2	Clearance priorities	RWY, TWY, then apron
3	Remarks	All seasons: RWY / TWY / apron: De-iced / Anti-iced with KFOR (potassium formate fluids)

LSZA AD 2.8 APRONS, TAXIWAYS AND CHECK LOCATIONS/POSITIONS DATA

1	Apron surface and strength	ASPH - PCN 30/F/B/W/T
2	Taxiway width, surface and strength	TWY M and N: MNM 18.6 m (DH8D OPS); TWY L: 15 m ASPH - PCN 30/F/B/W/T
3	ACL location and elevation	Apron 902 ft (275 m)
4	VOR/INS checkpoints	NIL
5	Remarks	Slopes on Apron partially exceeding 1%

LSZA AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM, MARKINGS

1	Use of aircraft stand ID signs, TWY guide lines and visual docking/parking guidance system of aircraft stands	ACFT stand identification markings: Lead-in, stop and lead-out lines. Apron safety lines. Taxiing and parking procedures: see LSZA AD 2.24.2 - 1
2	RWY/TWY markings and LGT	RWY markings: D-THR, designation, aiming point, touchdown zone and centre line. RWY LGT: see LSZA AD 2.14 TWY markings: Centre line and intermediate holding positions; RWY holding position, enhanced TWY centre line and mandatory instruction at all intersections with RWY. TWY LGT: Edge lights on TWY L, M and N. Runway guard lights on TWY M and N. Mandatory instruction signs at all RWY holding positions. Information signs on the movement area. No RWY turn pad centre line lights provided.
3	Stop bars	NIL
4	Remarks	NIL

LSZA AD 2.10 AERODROME OBSTACLES

In approach/TKOF areas				In circling area and at aerodrome			
1				2			3
RWY/Area affected	Obstacle type Elevation Markings/LGT	Co-ordinates		Obstacle type Elevation Markings/LGT	Co-ordinates		RMK
a	b	c		a	b	c	
		ft			ft		
AOC 01 (1)	Pole	934	46 00 37 N 008 54 46 E	Antenna LGTD	1020	46 00 09 N 008 54 23 E	
AOC 01 (2)	Pole	943	46 00 37 N 008 54 46 E	Crane/Cranes marked/LGTD	989	46 00 18 N 008 54 48 E	B1216/21
AOC 01 (3)	Pole	954	46 00 38 N 008 54 45 E	Tower/Mast LGTD	945	46 00 03 N 008 54 36 E	
AOC 01 (4)	Pole	970	46 00 41 N 008 54 46 E	Antenna LGTD	1529	46 02 15 N 008 56 20 E	
AOC 01 (5)	Building	980	46 00 44 N 008 54 47 E	Antenna LGTD	1526	46 00 39 N 008 55 32 E	B0555/01
AOC 01 (6)	Pole	983	46 00 47 N 008 54 49 E	Telephone line	45 m AGL	45 59 36 N 008 50 13 E - 45 59 36 N 008 50 06 E	B0016/02
AOC 01 (7)	Building	985	46 00 48 N 008 54 48 E	Tower marked/LGTD	998	46 00 16 N 008 54 31 E	B0121/02
AOC 01 (8)	Building	996	46 00 49 N 008 54 49 E	Tower LGTD	974	46 00 43 N 008 54 54 E	B0043/04
AOC 01 (9)	Tree/Trees	1025	46 01 08 N 008 55 06 E	Silo	965	46 00 53 N 008 54 59 E	B0480/05
AOC 01 (10)	Building	1040	46 01 19 N 008 55 12 E	Power line	72 m AGL	45 59 18 N 008 52 23 E - 45 59 18 N 008 52 38 E	B0617/05
AOC 01 (11)	Tree/Trees	1069	46 01 38 N 008 55 03 E	Pole LGTD	2366	46 02 43 N 008 57 44 E	B0471/07
AOC 01 (12)	Power line	1100	46 01 37 N 008 55 22 E	Pole LGTD	1752	45 57 49 N 008 52 56 E	B0470/07
AOC 01 (13)	Power line	1113	46 01 40 N 008 55 16 E	Pole LGTD	1886	46 02 58 N 008 55 54 E	B0469/07
AOC 01 (14)	Power line	1137	46 01 45 N 008 55 12 E				
AOC 01 (15)	Power line	1155	46 01 42 N 008 55 24 E	Pole marked/LGTD	989	46 00 13 N 008 54 28 E	B0099/09
AOC 01 (16)	Tree/Trees	1214	46 01 57 N 008 56 08 E	Pole LGTD	1825	46 01 28 N 008 56 46 E	B1145/09
AOC 01 (17)	Tree/Trees	1228	46 02 05 N 008 56 11 E	Pole LGTD	1914	45 58 27 N 008 54 48 E	B1144/09
AOC 01 (18)	Antenna	1520	46 02 15 N 008 56 20 E	Power line marked	90 m AGL	46 05 32 N 009 03 11 E - 46 05 33 N 009 02 51 E	C0366/05
AOC 01 (19)	Tree/Trees	1555	46 02 24 N 008 56 52 E	Cable CW	80 m AGL	46 03 52 N 008 55 12 E - 46 03 43 N 008 54 43 E	B0054/06
AOC 01 (20)	Tree/Trees	1660	46 02 21 N 008 56 58 E	Building	3m AGL	46 00 41 N 008 54 49 E	B0131/07
AOC 01 (21)	Building	1664	46 02 19 N 008 57 04 E	Chimney LGTD	25 m AGL	46 01 15 N 008 55 00 E	B0130/07
AOC 01 (22)	Tree/Trees	1815	46 02 19 N 008 57 11 E	Antenna marked, LGTD	5414	45 55 35 N 009 00 54 E	B0733/08

In approach/TKOF areas				In circling area and at aerodrome		
1				2		3
RWY/Area affected	Obstacle type Elevation Markings/LGT	Co-ordinates		Obstacle type Elevation Markings/LGT	Co-ordinates	RMK
a	b	c		a	b	c
		ft			ft	
AOC 19 (1)	Pole	914	45 59 54 N 008 54 23 E	Pole LGTD	1931	46 01 52 N 008 54 48 E B1143/09
AOC 19 (2)	Pole	924	45 59 51 N 008 54 30 E	Pole LGTD	1518	46 01 13 N 008 57 03 E B1331/11
AOC 19 (3)	Pole	924	45 59 52 N 008 54 22 E			
AOC 19 (4)	Tree/Trees	938	45 59 48 N 008 54 29 E			
AOC 19 (5)	Tree/Trees	947	45 59 45 N 008 54 27 E			
AOC 19 (6)	Tree/Trees	990	45 58 51 N 008 53 39 E			
AOC 19 (7)	Tree/Trees	1009	45 58 50 N 008 53 39 E			
AOC 19 (8)	Tree/Trees	1041	45 58 24 N 008 54 04 E			
AOC 19 (9)	Tree/Trees	1130	45 58 21 N 008 54 04 E			
AOC 19 (10)	Tree/Trees	1142	45 58 15 N 008 54 02 E			
AOC 19 (11)	Tree/Trees	1162	45 58 15 N 008 54 02 E			
AOC 19 (12)	Tree/Trees	1234	45 57 47 N 008 53 12 E			
AOC 19 (13)	Tree/Trees	1289	45 57 47 N 008 53 11 E			
AOC 19 (14)	Tree/Trees	1353	45 57 12 N 008 53 06 E			
AOC 19 (15)	Tree/Trees	1578	45 57 10 N 008 53 05 E			
AOC 19 (16)	Tree/Trees	1641	45 56 32 N 008 54 22 E			
AOC 19 (17)	Tree/Trees	2121	45 56 21 N 008 54 23 E			
AOC 19 (18)	Tree/Trees	2130	45 56 17 N 008 54 23 E			
AOC 19 (19)	Tree/Trees	2161	45 56 17 N 008 54 23 E			
Refer also to LSZA AOC 01/19, LSZA AD 2.24.4						

LSZA AD 2.11 METEOROLOGICAL INFORMATION PROVIDED

1	Associated MET Office	MeteoSwiss
2	Hours of service	H24
3	Office responsible for TAF preparation Periods of validity	MeteoSwiss, Zurich 9 hours
4	Type of landing forecast	NIL
5	Briefing/consultation provided	Self Briefing Service (www.skybriefing.com)
6	Flight documentation Language(s) used	Digital and hard copy En, Ge, Fr, It
7	Charts and other information available for briefing or consultation	All area forecast charts available worldwide
8	Supplementary equipment available for providing information	Internet connection in the briefing room
9	ATS units provided with information	Lugano TWR
10	Additional information (limitation of service, etc.)	TEL: Weather briefing: 0900 162 737 (Ge), 0900 162 767 (Fr); accessible within Switzerland

LSZA AD 2.12 RUNWAY PHYSICAL CHARACTERISTICS

Designations RWY NR	TRUE & MAG BRG	Dimensions of RWY (m)	Strength (PCN) and surface of RWY and SWY	THR COORD	THR elevation and highest elevation of TDZ of precision APP RWY	Slope of RWY-SWY
1	2	3	4	5	6	7
01 ¹⁾	019° 017°	1415 x 30	PCN 40/F/B/W/T ASPH	45 59 58.17N 008 54 29.68E	900 ft	Refer to: LSZA AOC 01/19
19 ¹⁾	199° 197°			46 00 29.60N 008 54 45.07E	915 ft	

¹⁾ Designation changed to avoid mix-up.

Designations RWY NR	SWY dimensions (m)	CWY dimensions (m)	Strip dimensions (m)	OFZ	Remarks
1	8	9	10	11	12
01 ¹⁾	NIL	NIL	1535 x 80	NIL	Runway strip and RESA dimensions according to non-instrument runway criteria Grooved 1415 m RESA: 30 m
19 ¹⁾		60			Runway strip and RESA dimensions according to non-instrument runway criteria Grooved 1415 m RESA: 30 m

¹⁾ Designation changed to avoid mix-up.

LSZA AD 2.13 DECLARED DISTANCES

RWY Designator	TORA (m)	TODA (m)	ASDA (m)	LDA (m)	Remarks
1	2	3	4	5	6
01	1345	1345	1415	1305	No turn pad at the beginning of RWY
	1025	1025	1095	Not applicable	Intersection MIKE
19	1415	1475	1415	1135	Turn pad at the beginning of RWY
	940	1000	940	Not applicable	Intersection ZULU
	695	755	695	Not applicable	Intersection NOVEMBER

DER RWY 01 is located 70 m before runway end respective RENL 01 due to obstacles in the immediate departure area.

LSZA AD 2.14 APPROACH AND RUNWAY LIGHTING

RWY Designator	ALS Type LEN, INTST	THR LGT Colour INTST WBAR	VASIS Type PSN, MEHT	RTZL LEN, INTST	RCLL LEN, spacing, colour, INTST	REDL LEN, spacing, colour, INTST	RENL Colour, INTST	SWY LGT LEN, colour	RMK
1	2	3	4	5	6	7	8	9	10
01	NIL	RTHL G, LIH, WBAR; RTIL FLG W	PAPI 4.17°, L, 6.27 m; PAPI 6.00°, L, 15.54 m	Simple TZL*, 323 m FM THR 01, W, LIH	740 m, 30 m, W, LIH; 375 m, 30 m, R/W, LIH; 300 m, 30 m, R, LIH	110 m, 60 m, R, LIH; 830 m, 60 m, W, LIH; 475 m, 60 m, Y, LIH	R, LIH	NIL	PAPI 6.00° only switched on for IGS RWY 01 approaches
19	RLLS, Seq. FLG LGT W LIH; SALS, 360m, LIH	RTHL G, LIH, WBAR; RTIL FLG W	PAPI 4.17°, L, 6.71 m	Simple TZL*, 323 m FM THR 19, W, LIH		280 m, 60 m, R, LIH; 660 m, 60 m, W, LIH; 475 m, 60 m, Y, LIH	R, LIH	NIL	RLLS follows circling Charlie track

* The purpose of simple touchdown zone lights is to provide pilots with enhanced situational awareness in all visibility conditions and to help enable pilots to decide whether to commence a go-around if the aircraft has not landed by a certain point on the runway.

LSZA AD 2.15 OTHER LIGHTING, SECONDARY POWER SUPPLY

1	ABN/IBN location, characteristics and hours of operation	NIL
2	LDI location and LGT Anemometer location and LGT	NIL
3	TWY edge and centre line lighting	TWY edge lighting
4	Secondary power supply/switch-over time	< 1 s
5	Remarks	Obstruction marking and lighting: partly

LSZA AD 2.16 HELICOPTER LANDING AREA

1	Coordinates TLOF or THR of FATO	FATO: 46 00 12.87 N / 008 54 36.86 E
2	TLOF and/or FATO elevation M/FT	276 m / 907 ft
3	TLOF and FATO area dimensions, surface, strength, marking	TLOF HEL stands 1 and 2: MAX Overall LEN 17 m, Rotor Diameter 14 m, ASPH, marked and numbered circles with diameter 6.5 m. TLOF HEL stands 3 and 4: MAX Overall LEN 13 m, Rotor Diameter 11 m, ASPH, marked and numbered circles with diameter 6.5 m. FATO: paved RWY 01-19.
4	True and MAG BRG of FATO	RWY 01: 019° GEO / 017° MAG RWY 19: 199° GEO / 197° MAG
5	Declared distance available	See: LSZA AD 2.13 for RWY 01/19
6	APP and FATO lighting	RWY LGT
7	Remarks	Simultaneous hover operations on HEL stands are not allowed

LSZA AD 2.17 ATS AIRSPACE

1	Designation and lateral limits	Lugano CTR 45 55 51 N 008 46 22 E - 46 03 43 N 008 54 41 E Arc of circle centred on 46 02 26 N 008 57 10 E, Radius 2.16 NM, clockwise 46 01 21 N 008 59 51 E - 45 52 54 N 008 52 50 E Arc of circle centred on 45 54 15 N 008 49 29 E, Radius 2.70 NM, clockwise 45 55 51 N 008 46 22 E
2	Vertical limits	6500 ft AMSL (2000 m)
3	Airspace classification	D
4	ATS unit call sign Language(s)	Lugano TWR It, En
5	Transition altitude	6000 ft AMSL (1800 m)
6	Remarks	ACT: HX

LSZA AD 2.18 ATS COMMUNICATION FACILITIES

Service designation	Call sign	Frequency	Hours of Operation	Remarks
1	2	3	4	5
ATIS		121.175 MHz	H24	TEL Service +41 (0) 22 417 40 88
TWR VDF	Lugano Tower	120.250 MHz 119.700 MHz	HX do.	QDM AVBL O/R Reserve FREQ
CLR DEL	Lugano Delivery	121.780 MHz	HX	

LSZA AD 2.19 RADIO NAVIGATION AND LANDING AIDS

Type Category (Variation)	ID	Frequency	Hours of operation	Site of transmitting antenna coordinates	Elevation of DME transmitting antenna	Remarks
1	2	3	4	5	6	7
ILS 01-LOC	ILU	108.90 MHz	H24	46 00 42.15N 008 54 51.21E		LOC PSN: 409 m FM THR 19. RWY 01: LOC course 017° MAG. Front course sector width 5°. Restricted coverage: at 10 NM - 30° W to 30° E from CL above 5000 ft AMSL.
GP 01		329.30 MHz	H24	46 00 01.28N 008 54 34.40E		GP Angle 6.65°. PSN: 123 m FM THR 01. GP HGT THR 01: 48 ft / 14.6 m. Restricted coverage: at 8 NM - 8° W to 8° E from CL above 5000 ft AMSL.
DME 01	ILU	26X	H24	46 00 41.27N 008 54 49.04E	942 ft	DME Co-located with LOC, reads D0.8 at THR 01. Restricted coverage: at 10 NM - 6° W to 14° E from CL above 5000 ft AMSL. at 10 NM - 25° W to 25° E from CL above 5900 ft AMSL.

LSZA AD 2.20 LOCAL TRAFFIC REGULATIONS**1. Local flying restrictions and remarks****1.1 Commercial and Private traffic**

- DEPs and LDGs may be planned according AD OPR HR.
- If out of NML OPS HR, PPR according to Remarks in LSZA AD 2.3

1.2 AD circuits only

- AD circuits can be allowed between 0700-1100 (0600-1000) and 1300- SS [MAX -1700] (1200-SS [MAX -1600]) from Monday to Friday and between 0800-1100 (0700-1000) and 1400-1600 (1300-1500) on Saturday.
- Night VFR flights (circuits) under instruction are allowed from SS to 1900 (1800) from Monday to Friday.
- If out of NML OPS HR, PPR according to Remarks in LSZA AD 2.3

1.3 Apron - Parking

- Taxing on the APRON is at the PIC's discretion. No ATC service is provided. TWR will issue ADVS as far as practicable.
- HEL OPS during the night, air taxi via N.
- Embarking and disembarking crew members, passengers, luggage and catering with the engine running is prohibited.
- Refuelling with the engine running is prohibited. Exceptions can be granted by Lugano AP Authority for EMERG reasons.
- For general aviation ACFT, the parking period for arriving ACFT shall be indicated in item 18 of the flight plan.
- "Follow me" SER on request.
- For handling and fuelling, SER priority is given to SKED FLT.
- Refueling on the grass is forbidden. For any fuel request contact TWR for coordination.
- **Safety Rules for Crews and Passengers**
All persons on the Airside must wear a high-visibility jacket which complies with EN 471 standard class 2 or 3. With the exception of passengers of scheduled and general aviation FLTs accompanied by the handling agent or crew members wearing high-visibility clothing or vests.
Crew members arriving without high-visibility clothing or vests must be transported by car by the handling agent.
- **Security Rules for Crew Members**
Crew members holding an Airport ID Card or crew member certificate must ensure it is visible. Departing crew members accessing the movement area must already have filed a FPL or flight notification.

1.4 Exceptions to local flying restrictions

Outside of operating HR, special AUTHs can be issued for the Federal Department of Transport, Communications and Energy and for the Swiss Federal Department of Defence, in particular, for State ACFT, and:

- SAR FLTs,
- police and supervision FLTs,
- FLTs carrying sick and injured persons,
- transport of transplant organs,
- relief FLTs in disaster cases.

2. Procedure for departure

Do not start engines before ACFT is ready to LVE parking PSN in order to minimise ground noise.

2.1 Aircraft

For IFR or SVFR FLT, a **start-up clearance** shall be requested on the Lugano CLR DEL FREQ.

3. De-icing**3.1 Clean Aircraft Concept (CAC)**

Clean Aircraft Concept as defined in ICAO Doc 9640 is applied; aircraft are de-iced according to the requirements of SAE AS6285. Airport Authority can intervene in case of non-adherence.

LSZA AD 2.21 NOISE ABATEMENT PROCEDURES

1. General

- The following regulations are defined to avoid excessive noise at and in the VCY of Lugano AP.
- Operators UNA to comply with these rules and procedures shall submit for APV to Lugano AP Authority those procedures they intend to apply.
- All ACFT types to be used for regular services at Lugano AP will be subject to an individual noise qualification prior to receiving operational rights.
- In particular cases, Lugano AP Authority can issue differing procedures and rules for noise abatement.

2. Aircraft not admitted unless a special authorisation

The following ACFT types are not admitted to operate at Lugano AP unless a special AUTH has been issued by Lugano AP Authority.

The request for a special AUTH must be filed at least 24 HR before the intended ARR.

2.1 Jet aeroplanes

REF: [GEN 4.1.12.](#), class I, II, III, IV.

2.2 Propeller aeroplanes

REF: [GEN 4.1.13.](#), class A and following aeroplanes of class B:

- BE-55 Beech Baron 55
- C 210 Cessna
- C 336/337 Cessna; 336 Skymaster/337 Super Skymaster

2.3 Helicopters

- Bell 204
- Bell 214
- Kamow

3. Circling procedure RWY 19

The Circling Foxtrot procedure is the preferential manoeuvre for noise abatement purposes when LDG on RWY 19.

FLTs performing a visual APCH to RWY 19 from a PSN south or east of the AP are requested, if conditions permit, to join the circling Foxtrot pattern at the beginning of the base turn.

4. Reverse thrust

For deceleration it is recommended to use the entire RWY LEN AVBL; use of reverse thrust shall be limited to only when safety or particular operational reasons require it.

5. Taxi and holding

Aeroplanes shall be operated so as to reduce noise to a MNM during TAX and HLDG operations.

6. Auxiliary Power Units (APU)

The following regulations are applicable to the use of APU:

- a MAX of 15 MIN prior to the ACFT DEP,
- a MAX of 5 MIN after the ACFT ARR.

The use of APU for MAINT shall be restricted to a MNM DUR.

7. Instruction and qualification flights

Operators are requested to plan introduction flights well in advance. Airport authority should be contacted whenever possible latest 5 days in advance of the planned training.

LSZA AD 2.22 FLIGHT PROCEDURES**1. Special regulations for IFR approach and departure****1.1 IFR procedures**

The use of IFR APCH or DEP procedures in Lugano is limited to pilots, operators and ACFT fulfilling the AP Qualifications in accordance with § 1.2.

Helicopter flight crews are allowed to operate without Lugano Qualification.

1.1.1 Procedure in case of SRN VOR unavailability

During SRN VOR unavailability all radial values referred to SRN VOR published for SID, STAR and IAC can be intended as bearings referred to SRN NDB (frequency 330.0 KHz) of the same value.

1.1.2 IFR departure procedures

Any departing ACFT must comply with the requirements of Aircraft Certification § 1.2.1, as well as with the relevant procedures published on the SID charts.

SID (Standard Instrument Departures):

- a. Requirements:
 - At least Pilot Qualification type A.Conditions:
 - VIS 3000 m or more and ceiling *2100 ft AAL* or HYR.
- b. Requirements:
 - At least Pilot Qualification type B.
 - ACFT complying with the climb requirements in accordance with published procedures, or APV Company contingency procedures.
- c. Conditions:
 - VIS 400 m or more.

1.1.3 SID Descriptions

1.1.3.1 SID RNAV 1

1.1.3.1.1 SID RWY 01/19 (see chart LSZA AD 2.24.7 - 1)

DESIGNATOR	RWY 01/19 - RNAV (GNSS)			
	ROUTE		Contact	Remark
	Lateral	Vertical		
INITIAL CLIMB RWY 01	Climb straight ahead. At D2 ILU turn right (MAX IAS 150kt during turn. MNM bank angle 25°). Proceed to LUGAN.	Maintain visual ground contact up to LUGAN. Cross LUGAN (overhead RWY) at 5000ft or above.		Average climb gradient to reach LUGAN at 5000ft is 8.1%
INITIAL CLIMB RWY 19 PDG 10.2% to 4100ft	After departure climb on TR201 until receiving MMP. Establish and follow R017 MMP inbound.			HIGH PERFORMANCE SID
CANNE 1E	Proceed to PINIK. Proceed via ZA557 and ZA559 to CANNE.	Cross PINIK at 6000ft or above, ZA557 at FL100 or above, ZA559 at FL120 or above, CANNE at FL140/FL150 or above (depending on QNH).		by ATC only RNAV applicable when passing PINIK.
OMETO 1E	Proceed to PINIK. Proceed via ZA557, ZA558 and BAVMI to OMETO.	Cross PINIK at 6000ft or above, ZA557 at FL100 or above, ZA558 at FL130 or above, BAVMI at FL150 or above, OMETO at FL180/FL190 or above (depending on QNH).		RNAV applicable when passing PINIK.

RNAV (GNSS) SID CANNE 1E

Path terminator	Waypoint	Flyover	Altitude (ft)	Speed limit (kt)	Track	Distance (NM)
-	PINIK	N	+ 6000	-	-	-
TF	ZA557	N	+ FL100	-	232° (234.4°T)	8.3
TF	ZA559	N	+ FL120	-	300° (302.1°T)	8.0
TF	CANNE	N	+ FL140/150	-	037° (039.1°T)	23.5

RNAV (GNSS) SID OMETO 1E

Path terminator	Waypoint	Flyover	Altitude (ft)	Speed limit (kt)	Track	Distance (NM)
-	PINIK	N	+ 6000	-	-	-
TF	ZA557	N	+ FL100	-	232° (234.4°T)	8.3
TF	ZA558	N	+ FL130	-	232° (234.2°T)	10.0
TF	BAVMI	N	+ FL150	-	275° (277.3°T)	3.7
TF	OMETO	N	+ FL180/190	-	275° (277.5°T)	15.5

1.1.3.2 SID NON RNAV

1.1.3.2.1 SID RWY 01 (see chart LSZA AD 2.24.7 - 3)

SID RWY 19 (see chart LSZA AD 2.24.7 - 5)

DESIGNATOR	RWY 01/19			
	ROUTE			
	Lateral	Vertical	Contact	Remark
INITIAL CLIMB RWY 01	Climb straight ahead. At D2 ILU turn right (MAX IAS 150kt during turn. MNM bank angle 25°). Proceed to LUGAN.	Maintain visual ground contact up to LUGAN. Cross LUGAN (overhead RWY) at 5000ft or above.		Average climb gradient to reach LUGAN at 5000ft is 8.1%
INITIAL CLIMB RWY 19 PDG 10.2% to 4100ft	After departure climb on TR201 until receiving MMP. Establish and follow R017 MMP inbound.			HIGH PERFORMANCE SID
CANNE 2U	At 5000ft turn left (MAX IAS 165kt, MNM bank angle 25°). Intercept R347 SRN to CANNE.	Cross ZA505 at FL090 or above, ZA506 at FL130 or above, CANNE at FL140/FL150 or above (depending on QNH).		
CANNE 1Z	Proceed to PINIK. At PINIK turn right, intercept R009 MMP to CANNE.	Cross PINIK at 6000ft or above, D20 MMP at FL090 or above, CANNE at FL140/FL150 or above (depending on QNH).		
OMETO 1F	Follow R017 MMP inbound MMP. At D4.3 MMP turn right, intercept R276 SRN to ZA558. Proceed via BAVMI to OMETO	Cross PINIK at 6000ft or above, D4.3 MMP at FL100 or above, ZA558 at FL130 or above, BAVMI at FL150 or above, OMETO at FL180/FL190 or above (depending on QNH).		
ORIO 1U (ORI 1U)	Proceed to PINIK. At PINIK intercept R330 SRN. inbound to SULUR. At SULUR intercept R277 BEG inbound to BEG. Proceed to ORI.	Cross PINIK at 6000ft or above, SULUR at FL080 or above, BEG at FL120 or above.		
ORIO 1W (ORI 1W)	Proceed to PINIK, At PINIK intercept R287 BEG inbound to BEG. Proceed to ORI.	Cross PINIK at 6000ft or above, ZA526 at FL080 or above (depending on TL), ZA527 at FL100 or above, BEG at FL120 or above.		by ATC only
PINIK 1A	Proceed to PINIK. Enter PINIK HLDG.	Climb to and maintain 6000ft to reach 6000ft at PINIK or before.		
SARONNO 1W (SRN 1W)	Proceed to PINIK. At PINIK intercept R330 SRN inbound to SRN.	Cross PINIK at 6000ft or above, SRN MCA according to next AWY segment.		
VOGHERA 1W (VOG 1W)	Follow R017 MMP inbound to MMP. At MMP intercept R344 VOG inbound to VOG.	Cross PINIK at 6000ft or above, MMP at FL080 or above, VOG at FL110 or above.		

(Tracks and radials calculated with VAR 2° East)

1.1.4 IFR approach procedures

Any approaching ACFT must comply with the requirements of Aircraft Certification § 1.2.1, as well as with the relevant procedures published on the APCH charts.

The following instrument APCH procedures, with the corresponding requirements, are AVBL:

1. **LOC-DME RWY 01 for CIRCLING FOXTROT RWY 19**
 - Requirements:
At least Pilot Qualification type A.
Approach can be flown during the day only.
2. **LOC-DME RWY 01 for CIRCLING CHARLIE RWY 19**
 - Requirements:
At least Pilot Qualification type B.
An Approved contingency procedure RWY 19 may be required according to § 1.1.10
3. **IGS RWY 01** (steep APCH procedure)
 - Requirements:
Pilot Qualification type C.
ACFT certification in accordance with § 1.2.1, for steep APCH of 6° or higher.

1.1.5 Approach to RWY 01

1.1.5.1 IGS RWY 01 steep approach 6.65°

Instruction of crews using the IGS 01 APCH procedure must satisfy the rules of the "Training Requirements Application Manual" (TRAM) for Lugano AP.

The IGS APCH may only be used by qualified crew and certified ACFT for a "steep APCH" of 6° or HYR.

For ACFT certified for steep APCHs of 6.65° or more, the instrument APCH procedure IGS 01 may be used with an angle of 6.65° during the entire APCH until LDG.

For ACFT certified for steep APCHs with an angle between 6° and 6.64°, the use of the instrument APCH procedure IGS 01 is subject to the following regulations:

- a. The APCH for LDG will be performed at an angle of 6.65° (phase 1). The following LDG phase (phase 2) has to be performed at a MAX angle of 6° with the help of the PAPI set to this value.
- b. The ACFT must be established (with the correspondent Vref) along the portion with an APCH angle of 6° at latest, at a HGT of 500 ft AAL; in any other case, the APCH procedure must be interrupted and a go-around procedure must be initiated.
- c. The APCH may be performed only if, at the given time, the tailwind component, which results from the values measured at the LDG on the AP, does not exceed half of the value of the MAX tailwind component permitted, in accordance with the Aircraft Flight Manual (AFM), for steep APCH procedures.
- d. The MAX permitted difference above the descent path must correspond to half-scale on the glide-slope indicator (generally 1 dot). In the case where this limit is exceeded, a go-around procedure must be immediately initiated.

1.1.5.2 PAPI RWY 01

For all APCHs, only one PAPI shall be illuminated and operative.

The use of the 6° PAPI on RWY 01 is limited to certified ACFT and to FLT crews qualified for steep APCHs and LDGs of 6° or HYR.

The 6° PAPI on RWY 01 will only be in use for IFR traffic performing an IGS APCH. For all other APCHs, the 4.17° PAPI on RWY 01 will be in use.

If on an IGS APCH, IFR is CNL, or if a visual APCH is requested after having passed CALDO (INBD), then the LDG procedure on RWY 01 must be complete following (and not undershooting) the 6° PAPI until LDG on RWY 01, or a circling procedure for LDG on RWY 19 is initiated. Under these circumstances, the ACFT may descend onto the 6.0° PAPI earlier than MDA or Visual Descent Point (VDP) but not before PSG 3.7 DME ILU.

1.1.6 Approach to RWY 19

1.1.6.1 LOC-DME approach for circling RWY 19

The LOC-DME APCH shall be flown on a continuous descent angle or gradient.

The break-off points on the APCH will always remain at the same PSN, but it will be overflown at the applicable ALT.

1.1.6.2 Circling procedures RWY 19

There are two circling procedures AVBL:

1. **CIRCLING FOXTROT RWY 19** (see chart [LSZA AD 2.24.10 - 5](#))

Requirements:

- At least Pilot Qualification type A.

Conditions:

- VIS 5000 m or more, day only and ceiling 3100 ft AAL or HYR.

2. **CIRCLING CHARLIE RWY 19** (see chart [LSZA AD 2.24.10 - 7](#))

a. Requirements:

- At least Pilot Qualification type A or B depending on weather minima's as required in § 1.1.10

Conditions:

- VIS 5000 m or more, day only and ceiling 3100 ft AAL or HYR.

b. Requirements:

- At least Pilot Qualification type B.
- Contingency procedure APV by the respective National Aviation Authority (including APCH LDG climb gross gradient table and 2.0 NM THR 01 TP definition).
- Specific FLT training associated with the afore mentioned contingency procedure.

Conditions:

- VIS 3000 m or more during the day / VIS 5000 m or more at night, and ceiling 1700 ft AAL or HYR.

1.1.7 Missed approach

During all IFR APCHs the applicable MDA and the corresponding MNM visibility shall be predefined by the operator and the FLT crew reflecting the daily PER limits of the corresponding ACFT given by mass, temperature, density, and wind conditions (including, where applicable, the Company contingency procedures).

1.1.8 STAR Descriptions**1.1.8.1 STAR RWY 01/19 (see chart LSZA AD 2.24.9 - 1)**

DESIGNATOR	RWY 01/19		
	ROUTE		Remark
	Lateral	Vertical	
ORIO 7L (ORI 7L)	At ORI intercept R103 BEG. Proceed to BEG. At BEG intercept R299 BEG. Proceed to LUGAN. At LUGAN intercept R017 MMP. Proceed to PINIK.	Cross BEG at FL120 or above, LUGAN at FL100/FL110 or above (depending on QNH).	Expect base turn over CALDO.
LUSIL 7L	At LUSIL intercept R035 BEG. Proceed to BEG. At BEG intercept R299 BEG. Proceed to LUGAN. At LUGAN intercept R017 MMP. Proceed to PINIK.	Cross LUSIL at FL140 or above, BEG at FL120 or above, LUGAN at FL100/FL110 or above (depending on QNH).	Expect base turn over CALDO.
ORIO 7P (ORI 7P)	At ORI intercept R103 BEG. Proceed to BEG. At BEG intercept R287 BEG. Proceed to PINIK.	Cross BEG at FL120 or above, ZA631 at FL100 or above, ZA632 at FL080/TL or above (depending on TL).	
LUSIL 7P	At LUSIL intercept R035 BEG. Proceed to BEG. At BEG intercept R287 BEG. Proceed to PINIK.	Cross LUSIL at FL140 or above, BEG at FL120 or above, ZA631 at FL100 or above, ZA632 at FL080/TL or above (depending on TL).	
SARONNO 6L (SRN 6L)	At SRN intercept R330 SRN. Proceed via SULUR to PINIK.	Cross SRN at 6000ft or above.	
VOGHERA 6L (VOG 6L)	At VOG intercept R344 VOG. Proceed to MMP. At MMP intercept R017 MMP. Proceed to PINIK.	Cross VOG at FL090 or above, MMP at 6000ft or above.	
TORINO 6L (TOP 6L)	At TOP intercept R085 TOP. Proceed to VOG. At VOG intercept R344 VOG. Proceed to MMP. At MMP intercept R017 MMP. Proceed to PINIK.	Cross TOP at FL090 or above, VOG at FL090 or above, MMP at 6000ft or above.	
ODINA 7L	At ODINA intercept R299 BEG. Proceed to LUGAN. At LUGAN intercept R017 MMP. Proceed to PINIK.	Cross ODINA at FL140/FL150 or above (depending on QNH), LUGAN at FL100/FL110 or above (depending on QNH).	Expect base turn over CALDO.

(Tracks and radials calculated with VAR 2° East)

1.1.9 ATC

1.1.9.1 Communication with ATC

FLT crews entering Lugano CTR under IFR shall make contact with ATC, requesting the type of APCH they intend to execute.

1.1.9.2 ATC flight plan

Operators holding an AP Qualification in accordance with § 1.2 shall insert "THE TYPE OF QUALIFICATION" in item 18 of ATC flight plan.

1.1.10 Requirements overview

Flight Procedure	Flight Operation	Pilot Qualification	Operator Qualification Procedures	Aircraft Performances
Approach and landing	- VFR commercial - IFR Visual APP - LOC DME Circling C (VIS 5000 m or more and ceiling 3100 ft AAL or higher / Day only) - LOC DME Circling F (Day only)	minimum type A	NIL	NIL
	- LOC DME Circling C (VIS 3000 m or more day / VIS 5000 m or more night / ceiling 1700 ft AAL or higher)	minimum Type B	Approved contingency procedure for circling missed approach required	NIL
	- IGS	minimum Type C	NIL	glide > 6° See Explanation § 3.1.4
Departure	IFR departure	minimum Type A	NIL	NIL
	Take-off (VIS 400 m - 3000 m)	minimum Type B	Approved contingency procedure take-off RWY 19 and/or 01 required	NIL

1.2 Airport qualification

To operate at Lugano under IFR, the following AP requirements must be fulfilled:

- The ACFT must meet the PER requirements in accordance with the ACFT certification, including (where necessary) a steep APCH and LDG certification.
- Operator's contingency procedures (if required by the type of FLT operation) must be calculated and AVBL.
- The FLT crew must hold a valid Pilot Qualification for the applicable type of operation and FLT procedures.

The application shall contain:

- A letter of Endorsement from the National Aviation Authority (NAA) approving Training Syllabus and the operation into Lugano and confirming conformity with the requirements of § 1.2.1 and 1.2.2
- The APV, given by the respective NAA, of the operator's contingency procedures.

1.2.1 Aircraft certification

Any ACFT to be operated under IFR at Lugano AP shall be able to comply with the published IFR procedures § 1.1 or with approved company contingency procedures.

The MAX IAS, as published on the relevant charts, shall not be exceeded during the corresponding FLT manoeuvres.

For ACFT certified for steep APCHs with an angle of 6.65° or more

The ACFT Certification of compliancy for the AP Qualification shall contain:

- Type, REG and Serial Number (S/N) of the ACFT;
- Mass, AP and Temperature (MAT) PER table calculated and published for the operation in Lugano and for the Individual Runway Tables including:
 - MTOM table for all applicable SID, covering One Engine Inoperative (OEI) conditions,
 - MAX Landing Mass (MLM) for the APCH covering the speed requirements,
 - table of the applicable minima covering the requirements for the APCH gross climb gradient,
 - if required, contingency procedures covering the entire MAT items above.
- If required for the operation, a copy of the "steep APCH" certificate, or equivalent steep APCH and LDG capabilities for the applicable S/N AFM.

For ACFT certified for steep APCHs between 6° and 6.64°

A "Letter of non objection" is needed. The "Letter of non objection" proves, from a technical/operational point of view, that in the certification already obtained by an ACFT, it also includes an "INA" of 6.65° until the published Minimum Descent Altitude (MDA), and a further "steep APCH to LDG", starting at 500 ft AAL, at the latest, with an angle of 6°. The manufacturer shall prove that this special procedure is supported by tests and equipment used for the AVBL certification.

Furthermore, the manufacturer, in the "Letter of non objection", shall clearly state the PER requirements in a such manner that they shall be properly covered in case an ACFT is certified for 6° (tolerance of +/-2° included); for instance, the "handling qualities", the Flight Guidance Systems and Autopilot until the published Minimum Descent Altitude (MDA) and the PER.

1.2.2 Pilot qualification

MNM training requirements for the AP Qualification are included in a so-called "Training Requirements Application Manual (TRAM)"

Pilots intending to operate under IFR conditions at Lugano AP shall hold a valid Pilot Qualification, in accordance with the requirements of IFR Procedures § 1.1.10

1.2.2.1 Pilot qualification type A

The Pilot Qualification type A is directly controlled by the Lugano AP Authority and includes:

- a. A theoretical self-instruction on:
 - Lugano general operational requirements (FOCA & Lugano AP Authority),
 - Local weather phenomena and dangers,
 - Lugano orographic and topographic situation, including all relevant obstacles,
 - APCH and DEP procedures (VFR and IFR),
 - Noise abatement and communication procedures,
 - ACFT PER (All Engines Operating (AEO) and OEI), including calculations of MTOM, MLM gradients and applicable minima,
 - EMERG procedures.

To apply for the Pilot Qualification type A, the pilot shall contact Lugano AP Authority or consult Lugano AP's website.

URL: <http://www.lugano-qualification.ch/>

1.2.2.2 Pilot qualification type B and C

Initial and recurrence training for Pilot Qualification types B and C are to be conducted under the jurisdiction of the respective NAA.

1.2.2.3 Procedures to obtain the qualification

Qualification A:

The pilot applies for the Pilot qualification type A to the Lugano Airport Authority on : www.lugano-qualification.ch. The qualification consist in a familiarization briefing and a test with multiple-choice questions. The Lugano Airport Authority verifies the validity of the application and updates the Type A qualified pilots list.

Qualification B:

The operator submits its training syllabus with the related approved contingency procedure to the respective NAA for approval and transmits the approval confirmation to the Lugano Airport Authority.

The pilot in command performs the training according to the training syllabus approved by the respective NAA. Once done, the operator transmits an updated list of pilots who obtained the Type B qualification to the Lugano Airport Authority which will update the list of qualified pilots accordingly.

Qualification C:

The operator submits its training syllabus to the respective NAA for approval and transmits the approval confirmation to the Lugano Airport Authority.

The operator presents the corresponding AFM supplements or a "Letter of non-objection" (described in chapter 2.3.4) to the Lugano Airport Authority.

The pilot in command performs the training according to the training syllabus approved by the respective NAA. Once done, the operator transmits an updated list of pilots who obtained the Type C qualification to the Lugano Airport Authority which will update the list of qualified pilots accordingly.

1.2.2.4 Airport qualification validity

Qualification Type A:

Airport qualification type A is valid for two years.

Qualification Type B and C:

Pilots must hold a valid qualification type A.

The pilot in command shall fly at least 1 IFR approach into and 1 IFR departure from LSZA within a 12 months period.

In case of an interruption of the recency of 12 months and more, the applicable minima for the first 3 APP shall be augmented by 500 feet for Ceiling and the applicable visibility by 1000 meters.

In case of an interruption of the recency of 24 months and more, a new qualification B or C is required.

1.3 Charts

- 1.3.1 Procedures to be followed by arriving and departing ACFT are contained on the charts STAR/SID and IAC.
- 1.3.2 The MNM vectoring levels chart for CTR/TMA Lugano is AVBL under AIP Italy, ENR 2.1.

1.4 VFR procedure

Private OPS refer to VFR Manual, LSZA AD INFO. Commercial OPS see also 1.1.10.

1.5 Description of Instrument Guidance System (IGS)

Non-precision APCH with ILS components.

DEV are: Angle HYR than standard (6.65°) and the definition of a MAPT.

1.5.1 IGS components

- ILS (LOC/GP/DME) for line-up and final APCH
- SRN VOR/DME

1.5.2 Procedure

The IGS procedure is a steep APCH of 6.65° GP reference.

IGS PROC may be flown as an ILS PROC.

The published ALT at D5.3 ILU and D3.7 ILU are to be strictly OBS without undershooting.

After MAPT, PCD to RWY maintaining visual ground contact and by following the PAPI of 6.0° reference angle. LOC track is aligned with RWY 01 axis.

1.6 Minima for IFR departures (TKOF minima)

RWY	ACFT CAT	Vis (m) / Ceiling (ft AGL)			RMK
		No LGT AVBL	REDL or RCLL AVBL	REDL and RCLL AVBL	
01	A	1500/---	1500/---	1500/---	
	B	1500/---	1500/---	1500/---	
	C	1500/---	1500/---	1500/---	
19	A	800/---	400/---	400/---	
	B	800/---	400/---	400/---	
	C	800/---	400/---	400/---	

LSZA AD 2.23 ADDITIONAL INFORMATION**1. List of significant points**

NAV point	COORD WGS84		Back-up Definition			Purpose
	N LAT	E LONG	Radial	DME	NAV	
1	2		3			4
BAVMI	45 42 13	008 24 28	276	26	SRN	SID LSZA
CALDO	45 54 33.2	008 51 50.9	017	---	MMP	STAR LSZA
LUSIL	46 02 35	010 07 00	---	6.5	ILU	
OMETO	45 44 12.0	008 02 34.0	035	28.2	BEG	STAR LSZA
PINIK	45 52 26.8	008 50 55.9	276	42	SRN	SID LSZA
			017	14.8	MMP	STAR/SID LSZA, HLDG
			---	8.7	ILU	
SULUR	45 44 57	008 56 36	330	7	SRN	SID LSZA
ZA505	46 00 16	008 55 29	347	22	SRN	SID LSZA
ZA506	46 05 14	008 54 09	347	27	SRN	SID LSZA
ZA526	45 50 31	008 59 11	287	32.1	BEG	SID LSZA
			351	---	SRN	
ZA527	45 48 18	009 08 41	287	25.1	BEG	SID LSZA
			026	---	SRN	
ZA552	45 46 17	008 47 49	017	8	MMP	SID LSZA
ZA557	45 47 35.8	008 41 16.7	300	16.6	SRN	SID LSZA
ZA558	45 41 45.0	008 29 42.8	276	22.4	SRN	SID LSZA
ZA559	45 51 50.0	008 31 35.6	300	24.6	SRN	SID LSZA
ZA631	45 48 18	009 08 41	287	25.1	BEG	STAR LSZA
			026	---	SRN	
ZA632	45 50 31	008 59 11	287	32.1	BEG	STAR LSZA
			351	---	SRN	

(Tracks and radials calculated with VAR 2° East)

LSZA AD 2.24 CHARTS RELATED TO AN AERODROME

Name	Page
Aerodrome Chart	LSZA AD 2.24.1 - 1
ACFT Parking Chart	LSZA AD 2.24.2 - 1
Aerodrome Obstacle Chart - Type A - RWY 01	LSZA AD 2.24.4 - 1
Aerodrome Obstacle Chart - Type A - RWY 19	LSZA AD 2.24.4 - 3
SID RWY 01/19 - RNAV 1	LSZA AD 2.24.7 - 1
SID RWY 01	LSZA AD 2.24.7 - 3
SID RWY 19 HIGH PERFORMANCE	LSZA AD 2.24.7 - 5
STAR RWY 01/19	LSZA AD 2.24.9 - 1
IAC IGS RWY 01 STEEP APPROACH 6.65°	LSZA AD 2.24.10 - 1
IAC LOC RWY 01 / CIRCLING RWY 19	LSZA AD 2.24.10 - 3
IAC DAY ONLY / CIRCLING FOXTROT RWY 19	LSZA AD 2.24.10 - 5
IAC CIRCLING CHARLIE RWY 19	LSZA AD 2.24.10 - 7