DEFINITIONS

Confined Area (CAT 'A' Procedures) - Applicable both to Ground Based and Elevated Helipads/Helidecks. Also requires a lighter GW and does not require available surface in front of the Take-Off/landing path for Reject Take-Off or OEI landing. Thanks to the variable TDP/LDP, allows the presence of obstacle of significant height along Take-Off/landing path.

CAT A Take-Off - Operation of the helicopter taking into account a single engine failure at any time after the start of the Take-Off transition, to ensure the helicopter has the capability:
- at or prior to the Take-Off Decision Point (TDP), to return and safely land back on the Take-Off area;
- at or after the Take-Off Decision Point (TDP), climb away from the point of engine failure and continue forward flight with one engine inoperative (OEI).

Continued Take-Off distance - The Continued Take-Off (CTO) distance is the horizontal distance from the start of the Take-Off procedure to a point at least 35 ft ATS where VTOSS and a positive rate of climb (ROC) are attained following an engine failure at or after TDP.
For an elevated heliport/ helideck the Continued Take-Off distance is the horizontal distance along the Take-Off path from the start of the Take-Off to the point at which the rotorcraft attains and maintains a speed of at least VTOSS and establishes a positive rate of climb.

Landing distance - The horizontal distance required to land in an OEI condition and come to a complete stop from a point 50 ft ALS.

Balked landing distance - The horizontal distance from the LDP to the point at least 35 ft ALS where VBLSS and a positive rate of climb (ROC) are attained following an engine failure before LDP.

Take-Off Safety Speed (VTOSS) or Balked Landing Safety Speed (VBLSS) or Climb Out Safety Speed (VCOSS) - The airspeed at which the scheduled climb gradient OEI can be achieved.

Take-Off Decision Point (TDP) - The first point in the Take-Off path from which a CTO capability is assured and the last point from which a RTO is assured, within the rejected Take-Off distance.

Landing Decision Point (LDP) - The last point in the approach landing path from which it is possible either to land on a predetermined area or accomplish a Balked Landing.

CONFINED AREA HEIGHT AND DISTANCE (Distance in Metric Unit)

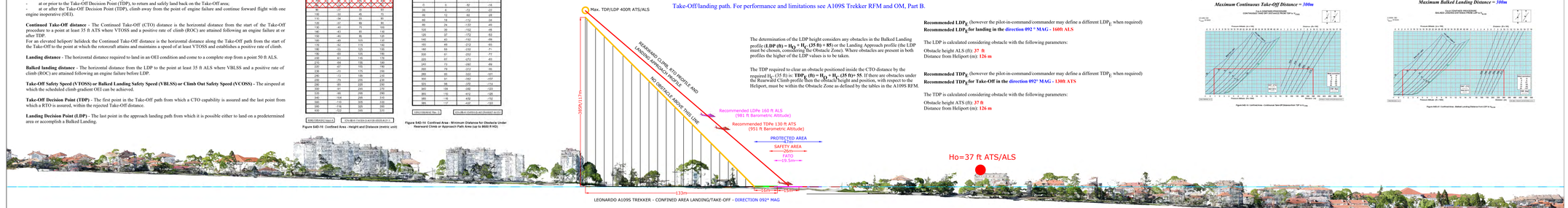
TDP Height ATS (ft)	Backup Height (ft)	Max Height ATS (ft)	Height ATS at Distance D = 0.7 D_{TDP} (ft)
0	0	0	0
90	90	90	90
110	58	93	90
130	23	93	90
136	40	75	150
140	43	80	150
150	49	93	150
160	55	113	150
170	61	125	150
180	67	135	150
190	73	145	150
200	79	155	150
210	85	165	150
220	91	175	150
230	97	185	150
240	103	195	150
250	109	205	150
260	115	215	150
270	121	225	150

Figure S4D-16 Confined Area - Height and Distance (metric unit)

CONFINED AREA OBSTACLE DISTANCE IN BACKUP PROFILE up to 6900 ft Hd

Obstacle height ATS [ft]	Obstacle height ATS [m]	Minimum obstacle Distance from Heliport [ft]	Minimum obstacle Distance from Heliport [m]
0	0	-50	-15
50	15	-33	-10
60	18	-50	-15
70	21	-66	-20
80	24	-115	-35
100	29	-152	-46
125	37	-173	-52
140	43	-102	-66
160	49	-213	-65
180	53	-210	-71
200	61	-200	-77
220	67	-272	-83
240	73	-282	-86
260	79	-277	-95
280	85	-282	-97
300	91	-292	-100
320	98	-300	-114
340	104	-305	-120
360	110	-315	-125
380	116	-325	-130
400	122	-335	-135

Figure S4D-14 Confined Area - Minimum Distance for Obstacle Under Rearward Climb or Approach Path Area (up to 6900 ft HD)



LEONARDO A109S TREKKER - CONFINED AREA LANDING/TAKE-OFF - DIRECTION 092° MAG

Helicopters conducting operations to/from a FATO at a hospital that is located in a congested hostile environment will be operated in accordance with performance class 1 (PC1). For these operations the approved "Confined Area" Category A procedures (according A109S Trekker RFM, Supplement 4, Category A Operations) will be used. The "Confined Area" procedures are applicable to Ground Based and Elevated Helipads/Helidecks. Also they require a lighter gross weight and does not require available surface in front of the Take-Off/landing path for Reject Take-Off or OEI landing. Thanks to the variable TDP/LDP, allows the presence of obstacle of significant height along Take-Off/landing path. For performance and limitations see A109S Trekker RFM and OM, Part B.

The determination of the LDP height considers any obstacles in the Balked Landing profile (**LDP (ft) = H_O * H_C (35 ft) + 85**) or the Landing Approach profile (the LDP must be chosen, considering the Obstacle Zone). Where obstacles are present in both profiles the higher of the LDP values is to be taken.

The TDP required to clear an obstacle positioned inside the CTO distance by the required H_C (35 ft) is: **TDP_E (ft) = H_O * H_C (35 ft)+ 55**. If there are obstacles under the Rearward Climb profile then the obstacle height and position, with respect to the Heliport, must be within the Obstacle Zone as defined by the tables in the A109S RFM.

Recommended LDP_E (however the pilot-in-command/commander may define a different LDP_E when required)
Recommended LDP_E for landing in the direction 092 ° MAG - 1600 ALS

The LDP is calculated considering obstacle with the following parameters:
Obstacle height ALS (ft): **37 ft**
Distance from Heliport (m): **126 m**

Recommended TDP_E (however the pilot-in-command/commander may define a different TDP_E when required)
Recommended TDP_E for Take-Off in the direction 092° MAG - 1300 ATS

The TDP is calculated considering obstacle with the following parameters:
Obstacle height ATS (ft): **37 ft**
Distance from Heliport (m): **126 m**

Calculating the ***Confined Area - Continuous Take-Off Distance from TDP to V_{TOSS}***: taking into account the "worst-case scenario" pressure (resp. pressure altitude), temperature and GW (3175 kg) as an additional safety measure for risk mitigation.

Maximum Continuous Take-Off Distance = 500m

Figure S4D-17 Confined Area - Continuous Take-Off Distance from TDP to V_{TOSS}

Calculating the ***Confined Area - Balked Landing Distance from LDP to V_{BLSS}***: taking into account the "worst-case scenario" pressure (resp. pressure altitude), temperature and GW (3175 kg) as an additional safety measure for risk mitigation

Maximum Balked Landing Distance = 300m

Figure S4D-18 Confined Area - Balked Landing Distance from LDP to V_{BLSS}

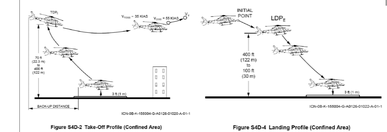


Figure S4D-2 Take-Off Profile (Confined Area)

Figure S4D-4 Landing Profile (Confined Area)

Figure S4D-6 Rejected Take-Off OEI (Confined Area)

Figure S4D-7 Continued Take-Off OEI (Confined Area)

Figure S4D-8 Balked Landing OEI (Confined Area)

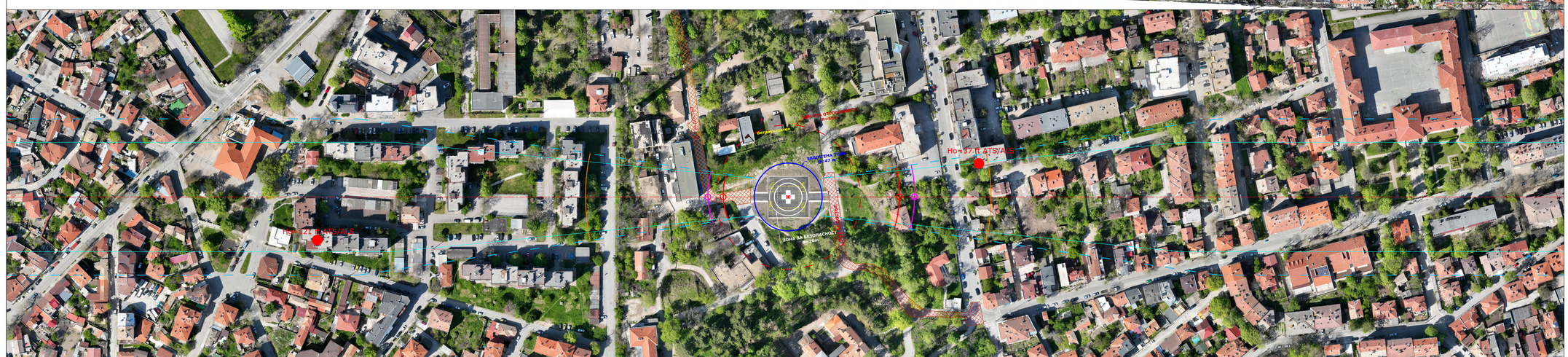
Figure S4D-9 OEI Landing (Confined Area)

Figure S4D-13 Obstacle in the Back Up Profile

Figure S4D-12 Obstacle in Take-Off Profile

Figure S4D-19 Obstacle in Approach Profile

Figure S4D-10 LDP with Obstacle in Balked Landing Profile



LEONARDO A109S TREKKER - CONFINED AREA LANDING/TAKE-OFF - DIRECTION 272° MAG

Calculating the ***Confined Area - Continuous Take-Off Distance from TDP to V_{TOSS}***: taking into account the "worst-case scenario" pressure (resp. pressure altitude), temperature and GW (3175 kg) as an additional safety measure for risk mitigation.

Maximum Continuous Take-Off Distance = 500m

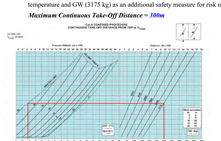


Figure S4D-17 Confined Area - Continuous Take-Off Distance from TDP to V_{TOSS}

Calculating the ***Confined Area - Balked Landing Distance from LDP to V_{BLSS}***: taking into account the "worst-case scenario" pressure (resp. pressure altitude), temperature and GW (3175 kg) as an additional safety measure for risk mitigation

Maximum Balked Landing Distance = 300m

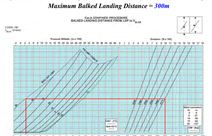


Figure S4D-18 Confined Area - Balked Landing Distance from LDP to V_{BLSS}

Evaluation of the obstacles according ***GM1 CAT.POL.H.205(b)(4) (Regulation (EU) No 965/2012)***.

The determination of the LDP height considers any obstacles in the Balked Landing profile (**LDP (ft) = H_O * H_C (35 ft) + 85**) or the Landing Approach profile (the LDP must be chosen, considering the Obstacle Zone). Where obstacles are present in both profiles the higher of the LDP values is to be taken.

The TDP required to clear an obstacle positioned inside the CTO distance by the required H_C (35 ft) is: **TDP_E (ft) = H_O * H_C (35 ft)+ 55**. If there are obstacles under the Rearward Climb profile then the obstacle height and position, with respect to the Heliport, must be within the Obstacle Zone as defined by the tables in the A109S RFM.

Recommended LDP_E (however the pilot-in-command/commander may define a different LDP_E when required)
Recommended LDP_E for landing in the direction 272 ° MAG - 2500 ALS

The LDP is calculated considering obstacle with the following parameters:
Obstacle height ALS (ft): **121 ft**
Distance from Heliport (m): **319 m**

Recommended TDP_E (however the pilot-in-command/commander may define a different TDP_E when required)
Recommended TDP_E for Take-Off in the direction 272 ° MAG - 220 ft ATS

The TDP is calculated considering obstacle with the following parameters:
Obstacle height ATS (ft): **121 ft**
Distance from Heliport (m): **319 m**

CONFINED AREA HEIGHT AND LANDING DISTANCE from LDP

LDP height ATS (ft)	LDP height ATS (m)	LDP - Landing Distance (ft)	LDP - Landing Distance (m)
120	37	120	37
140	43	140	43
160	49	160	49
180	55	180	55
200	61	200	61
220	67	220	67
240	73	240	73
260	79	260	79
280	85	280	85
300	91	300	91
320	98	320	98
340	104	340	104
360	110	360	110
380	116	380	116
400	122	400	122

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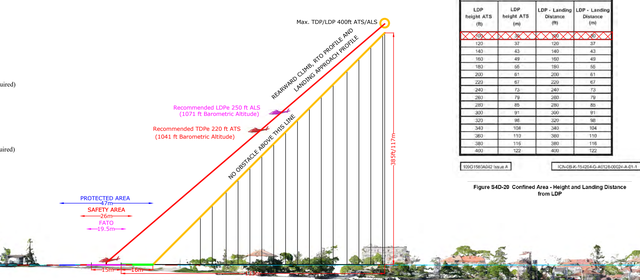

Figure S4D-20 Confined Area - Height and Landing Distance from LDP

ABBREVIATIONS

ALS - Above Landing Surface
ATS - Above Take-Off Surface
BL - Balked Landing
CTO - Continued Take-Off
LDP - Landing Decision Point
LDP_E - Extended Landing Decision Point
LDP_{MAX} - Maximum Landing Decision Point
LDP_{MIN} - Minimum Landing Decision Point
TDP - Take-Off Decision Point
TDP_E - Extended Take-Off Decision Point
TDP_{MAX} - Maximum Take-Off Decision Point
TDP_{MIN} - Minimum Take-Off Decision Point
V/BLSS - Balked Landing Safety Speed
V/COSS - Climb Out Safety Speed
V/TOSS - Take-Off Safety Speed
RFM - Rotorcraft Flight Manual
D/CTO - Continued Take-Off Distance (m)
D/O - Distance from Take-Off position to Obstacle (m)
H/BO - Height of Obstacle in Back-Up Profile (ft)
H/O - Height of Obstacle (ft)
H/C - Required clearance height above Obstacle (ft)

***Remark:**

FOR CURRENT PROFILES AND PROCEDURES, PLEASE REFER TO LATEST A109S TREKKER RFM VERSION

Scale / Мащаб 1:1000

10m 20m 30m 40m 50m 60m 70m 80m 90m 100m

FATO 099°/279° GEO
D=110.5m 092°/272° MAG

WGS 2000
N:43° 15' 31.09" E:26° 55' 01.86"
N:43°16.52' E:26°55.03'
N=251 m (EGM2008)
H=821 ft (EGM2008)
Declination - 6° 11 '(05-2025)

BULGARIA HELI MED SERVICE JSC.

Multidisciplinary District Hospital for Active Treatment Shumen

HOSPITAL HELIPORT SHUMEN

OPERATING MANUAL, Part C, Appendix 1
Heliport and operating site manual

AERONAUTICAL SURVEY

ЦРАЛЛАН ЕООД
STRAPLAN GmbH

№ 101-10-003

REVISION	0
PHASE	aeronautical
SCALE	1:1000
SHEET	1/1
DATE	05.2025
Aerial Survey	23.04.2025