

Landing Distance Calculations

Last METAR available prior to the accident time from TJSJ:

METAR TJSJ 242356Z 11006KT 10SM SCT022 BKN028 OVC060 26/23 A2997 RMK AO2 SLP147 VCSH W T02560228 10278 20250 53016=

Wind Components: **5.8 knot headwind, 1.6 knot (right) crosswind**

Landing weight reported on NTSB form 6120:

18,400 lbs

From Figure 5-251:

At OAT 25C, 18,000 lbs = 2,571 ft

At OAT 25°C, 19,000 lbs = 2,676 ft

(interpolate to 18,400 lbs) = 2,613 ft

(interpolate - add about 7 ft per degree for OAT 26°) = 2,620 ft

From Fig 5-280, using Landing Distance of 2,620, headwind component 6 knots, anti-skid ON, Runway Condition: Wet, no runway slope:

Corrected Landing Distance: 3,620 ft.

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**FIGURE 5-251. UNFACTORED LANDING DISTANCE FROM 50 FT
FLAPS - 40°; PART B; SEA LEVEL; DRY RUNWAY**

GW (LB)	OAT (°C)	0	5	10	15	20	25	30	35	40	45	50
	OAT (°F)	32	41	50	59	68	77	86	95	104	113	122
	MLW	21700	21700	21700	21700	21700	21700	21700	21700	21700	21700	21700
	Quick TA MLW (LB)	21700	21700	21700	21700	21700	21700	21700	21700	21700	21700	21700
26,100	LFL	3180	3226	3270	3316	3362	3406	3452	3497	3542		
	VAPP	142	142	142	142	142	142	142	142	142		
	VREF	142	142	142	142	142	142	142	142	142		
26,000	LFL	3171	3216	3261	3306	3352	3396	3441	3487	3532		
	VAPP	142	142	142	142	142	142	142	142	142		
	VREF	142	142	142	142	142	142	142	142	142		
25,000	LFL	3077	3120	3165	3209	3251	3296	3339	3383	3425	3469	
	VAPP	139	139	139	139	139	139	139	139	139	139	
	VREF	139	139	139	139	139	139	139	139	139	139	
24,000	LFL	2982	3025	3068	3109	3152	3194	3235	3278	3320	3362	3402
	VAPP	136	136	136	136	136	136	136	136	136	136	136
	VREF	136	136	136	136	136	136	136	136	136	136	136
23,000	LFL	2888	2929	2969	3011	3052	3091	3132	3173	3214	3253	3293
	VAPP	133	133	133	133	133	133	133	133	133	133	133
	VREF	133	133	133	133	133	133	133	133	133	133	133
22,000	LFL	2791	2832	2872	2911	2949	2989	3028	3068	3105	3145	3184
	VAPP	130	130	130	130	130	130	130	130	130	130	130
	VREF	130	130	130	130	130	130	130	130	130	130	130
MLW 21,700	LFL	2764	2802	2842	2881	2920	2958	2997	3036	3073	3112	3150
	VAPP	129	129	129	129	129	129	129	129	129	129	129
	VREF	129	129	129	129	129	129	129	129	129	129	129
21,000	LFL	2696	2735	2773	2810	2848	2886	2922	2960	2998	3036	3071
	VAPP	127	127	127	127	127	127	127	127	127	127	127
	VREF	127	127	127	127	127	127	127	127	127	127	127
20,000	LFL	2600	2637	2672	2709	2746	2780	2817	2854	2890	2924	2961
	VAPP	124	124	124	124	124	124	124	124	124	124	124
	VREF	124	124	124	124	124	124	124	124	124	124	124
19,000	LFL	2501	2537	2572	2608	2641	2676	2711	2746	2779	2814	2849
	VAPP	121	121	121	121	121	121	121	121	121	121	121
	VREF	121	121	121	121	121	121	121	121	121	121	121
18,000	LFL	2404	2438	2471	2504	2537	2571	2604	2636	2670	2703	2736
	VAPP	118	118	118	118	118	118	118	118	118	118	118
	VREF	118	118	118	118	118	118	118	118	118	118	118
17,000	LFL	2305	2337	2368	2401	2433	2465	2495	2527	2559	2590	2620
	VAPP	114	114	114	114	114	114	114	114	114	114	114
	VREF	114	114	114	114	114	114	114	114	114	114	114
16,000	LFL	2206	2235	2266	2297	2327	2356	2386	2417	2447	2475	2506
	VAPP	111	111	111	111	111	111	111	111	111	111	111
	VREF	111	111	111	111	111	111	111	111	111	111	111
15,000	LFL	2104	2133	2162	2191	2219	2248	2277	2305	2334	2361	2390
	VAPP	107	107	107	107	107	107	107	107	107	107	107
	VREF	107	107	107	107	107	107	107	107	107	107	107

Note: Increase landing distance by 18% and V_{REF} by 12% if surface de-ice (with MOD G15-10039) or engine anti-ice (without MOD G15-10039) is activated.

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UNFACTORED LANDING DISTANCE CORRECTIONS FLAPS 40°

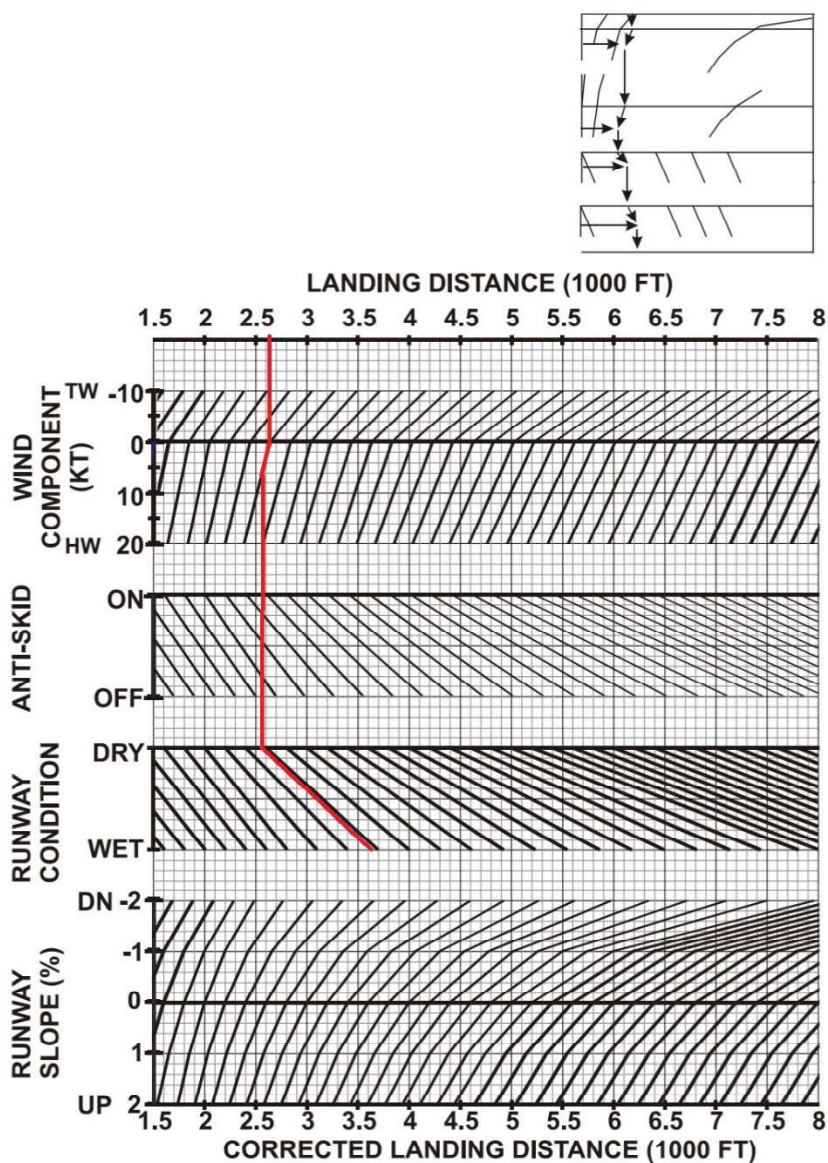


Figure 5-280. Unfactored Landing Distance Corrections

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For Contaminated Runway (Standing Water)

From Figure 6-4-389:

At OAT 25C, 18,000 lbs = 4,140 ft

At OAT 25°C, 19,000 lbs = 4,375 ft

(interpolate to 18,400 lbs) = 4,234 ft

(interpolate - add about 13 ft per degree for OAT 26°) = 4,247 ft

From Fig 6-4-418, using Landing Distance of 4,247 ft, headwind component 6 knots, Vref, no runway slope:

Corrected Landing Distance: 4,100 ft.

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**FIGURE 6-4-389. UNFACTORED LANDING DISTANCE -
SEA LEVEL;
RUNWAY CONTAMINATED BY SLUSH;
STANDING WATER OR WET SNOW; PART B**

GW (LB)	OAT (°C)	0	5	10	15	20	25	30	35	40	45	50
	OAT (°F)	32	41	50	59	68	77	86	95	104	113	122
	MLW	21700	21700	21700	21700	21700	21700	21700	21700	21700	21700	21700
	Quick TA MLW (LB)	21700	21700	21700	21700	21700	21700	21700	21700	21700	21700	21700
26,100	LFL	5506	5620	5734	5822	5936	6050	6165	6281	6396		
	VAPP	142	142	142	142	142	142	142	142	142		
	VREF	142	142	142	142	142	142	142	142	142		
26,000	LFL	5490	5602	5690	5803	5917	6031	6146	6261	6376		
	VAPP	142	142	142	142	142	142	142	142	142		
	VREF	142	142	142	142	142	142	142	142	142		
25,000	LFL	5264	5373	5482	5567	5677	5787	5898	6009	6120	6204	
	VAPP	139	139	139	139	139	139	139	139	139	139	
	VREF	139	139	139	139	139	139	139	139	139	139	
24,000	LFL	5040	5146	5252	5358	5438	5544	5651	5758	5866	5946	6053
	VAPP	136	136	136	136	136	136	136	136	136	136	136
	VREF	136	136	136	136	136	136	136	136	136	136	136
23,000	LFL	4818	4920	5022	5124	5200	5303	5406	5509	5612	5690	5794
	VAPP	133	133	133	133	133	133	133	133	133	133	133
	VREF	133	133	133	133	133	133	133	133	133	133	133
22,000	LFL	4621	4695	4793	4891	4989	5063	5161	5261	5360	5435	5535
	VAPP	130	130	130	130	130	130	130	130	130	130	130
	VREF	130	130	130	130	130	130	130	130	130	130	130
MLW 21,700	LFL	4546	4642	4739	4811	4907	5006	5079	5177	5275	5374	5447
	VAPP	129	129	129	129	129	129	129	129	129	129	129
	VREF	129	129	129	129	129	129	129	129	129	129	129
21,000	LFL	4401	4494	4566	4660	4754	4824	4919	5014	5086	5181	5277
	VAPP	127	127	127	127	127	127	127	127	127	127	127
	VREF	127	127	127	127	127	127	127	127	127	127	127
20,000	LFL	4183	4272	4362	4430	4520	4587	4678	4770	4837	4929	5021
	VAPP	124	124	124	124	124	124	124	124	124	124	124
	VREF	124	124	124	124	124	124	124	124	124	124	124
19,000	LFL	3967	4052	4138	4202	4288	4375	4440	4527	4590	4678	4766
	VAPP	121	121	121	121	121	121	121	121	121	121	121
	VREF	121	121	121	121	121	121	121	121	121	121	121
18,000	LFL	3773	3833	3916	3976	4058	4140	4202	4285	4345	4430	4514
	VAPP	118	118	118	118	118	118	118	118	118	118	118
	VREF	118	118	118	118	118	118	118	118	118	118	118
17,000	LFL	3560	3637	3695	3773	3830	3909	3966	4045	4103	4183	4263
	VAPP	114	114	114	114	114	114	114	114	114	114	114
	VREF	114	114	114	114	114	114	114	114	114	114	114
16,000	LFL	3349	3421	3476	3550	3603	3679	3732	3807	3862	3937	3992
	VAPP	111	111	111	111	111	111	111	111	111	111	111
	VREF	111	111	111	111	111	111	111	111	111	111	111
15,000	LFL	3158	3208	3278	3329	3380	3450	3500	3572	3623	3694	3745
	VAPP	107	107	107	107	107	107	107	107	107	107	107
	VREF	107	107	107	107	107	107	107	107	107	107	107

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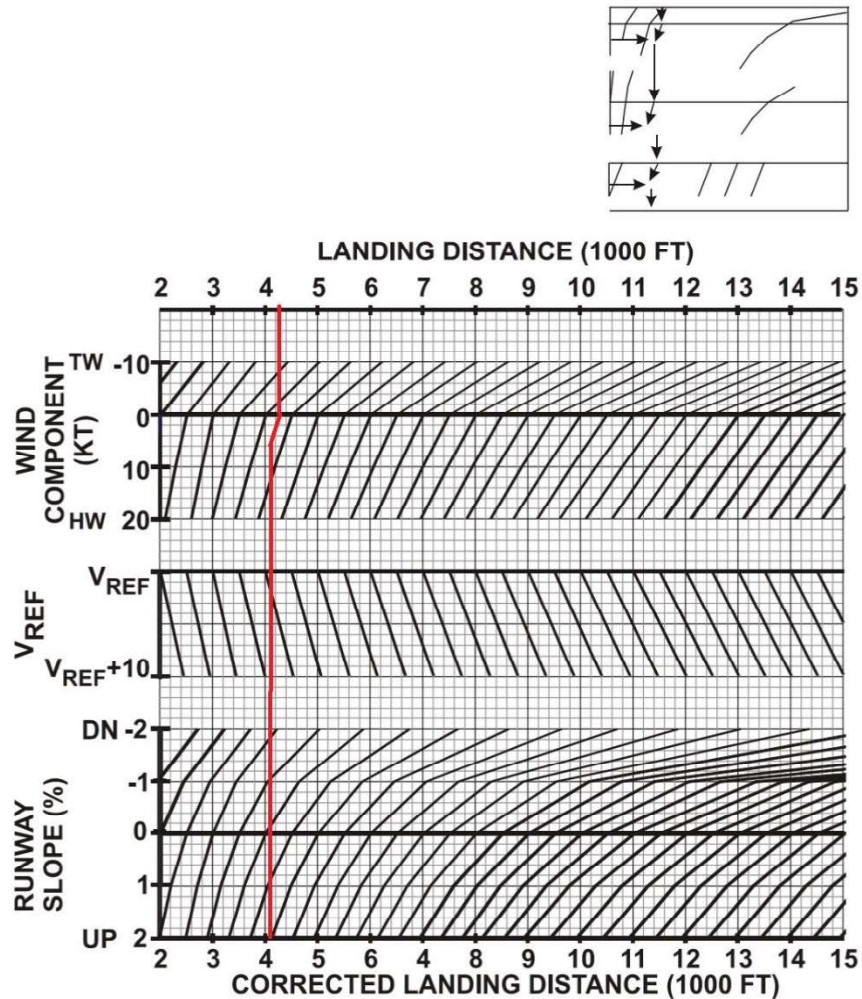
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UNFACTORED LANDING DISTANCE CORRECTIONS RUNWAY CONTAMINATED BY SLUSH; STANDING WATER OR WET SNOW



**Figure 6-4-418. Unfactored Landing Distance Corrections;
Runway Contaminated by Slush;
Standing Water or Wet Snow**

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UNFACTORED LANDING DISTANCE

Unfactored landing distance (LFL) represents the actual horizontal distance required to come to complete stop from a point 50 feet above runway surface as follows:

Runway Contaminated by Slush, Standing Water or Wet Snow	6-4-388 through 6-4-417
Runway Contaminated by Dry Snow	6-4-419 through 6-4-448
Runway Contaminated by Compacted Snow	6-4-451 through 6-4-480
Runway Contaminated by Ice	6-4-483 through 6-4-512

Landing distance data is provided for field elevations from sea level to 14,000 ft. Each field elevation data has two tables as follows:

Part A - For OAT between -54°C and -5°C

Part B - For OAT between 0°C and 50°C

Landing performance (flaps - 40°) is obtained as follows:

1. Descend at steady sink rate, corresponding to 3° glide path, at V_{REF} airspeed, down to 50 ft height, then retard power levers to idle.

(Continued)

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2. At touch-down, initiate maximum continuous wheel braking.

Continue brake application to full stop.

Enter table with pressure altitude, temperature and gross weight.

Read landing distance as follows:

Runway Contaminated by	6-4-388
Slush, Standing Water or	through
Wet Snow	6-4-417
Runway Contaminated by	6-4-419
Dry Snow	through
	6-4-448
Runway Contaminated by	6-4-451
Compacted Snow	through
	6-4-480
Runway Contaminated by	6-4-483
Ice	through
	6-4-512

Make appropriate corrections for runway slope, wind and $V_{REF}+10$ (see [LANDING DISTANCE CORRECTIONS](#), page VI-4-65).

3. The landing distance tables provide distances for anti-skid and ground A/B armed and anti-skid operative.
4. For ice contaminated runway, landing is not possible if runway slope is negative (DN).

NOTE

When ground air brakes (8 or 4 surfaces) are inoperative, see [GROUND A/B FAILURE DURING LANDING](#), page III-90.