

Loadings for average occupants and baggage loaded in the center of the baggage area. For other than average loading situations, the Sample Loading Problem lists fuselage stations for these items to indicate their forward and aft c.g. range limitation (seat travel or baggage area limitation). Additional moment calculations, based on the actual weight and c.g. arm (fuselage station) of the item being loaded, must be made if the position of the load is different from that shown on the Loading Graph.

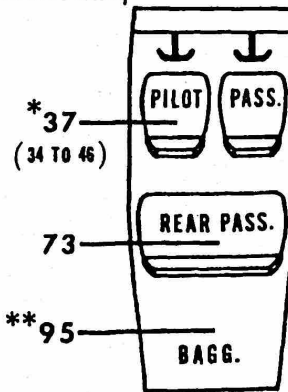
Total the weights and moments/1000 and plot these values on the Center of Gravity Moment Envelope to determine whether the point falls within the envelope, and if the loading is acceptable.

## LOADING ARRANGEMENTS

\* Pilot or passenger center of gravity on adjustable seats positioned for average occupant. Numbers in parenthesis indicate forward and aft limits of occupant center of gravity range.

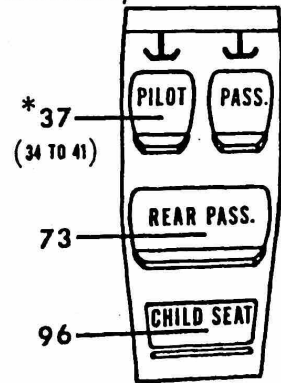
\*\* Arm measured to the center of the area shown.

STATION  
(C.G. ARM)



STANDARD SEATING

STATION  
(C.G. ARM)



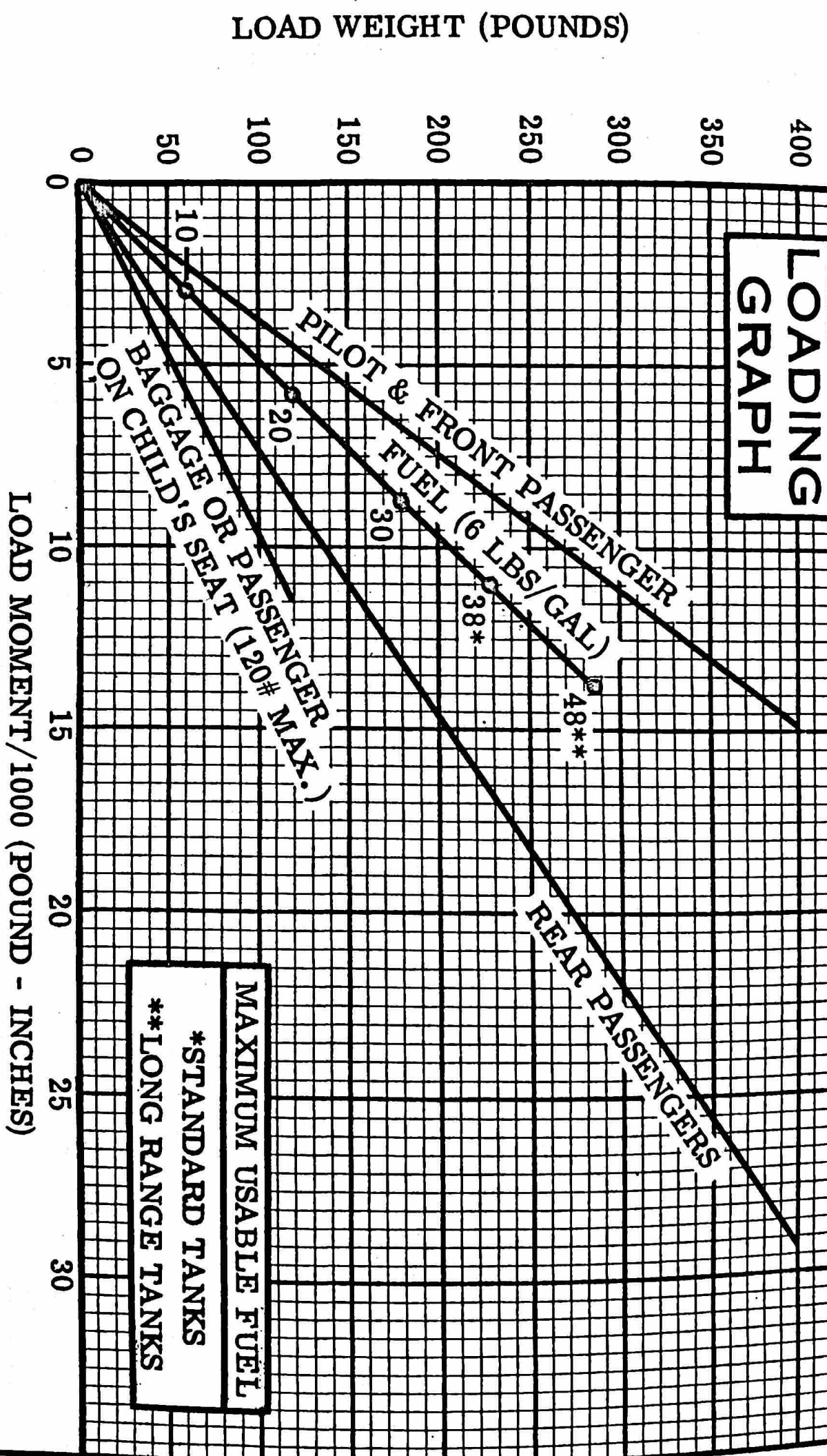
OPTIONAL SEATING

# SAMPLE LOADING PROBLEM

	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (lb. -ins. /1000)	Weight (lbs.)	Moment (lb. -ins. /1000)
1. Licensed Empty Weight (Sample Airplane) . . .	1364	51.7		
2. Oil (8 qts. - Full oil may be assumed for all flights) . . . . .	15	-0.2	15	-0.2
3. Fuel (Standard - 38 Gal at 6#/Gal) . . . . .	228	10.9		
Fuel (Long Range - 48 Gal at 6#/Gal) . . . . .				
4. Pilot and Front Passenger (Station 34 to 46) . . .	340	12.6		
5. Rear Passengers . . . . .	340	24.8		
6. Baggage (or Passenger on Child's Seat) (Station 82 to 108) . . . . .	13	1.2		
7. TOTAL WEIGHT AND MOMENT	2300	101.0		

8. Locate this point (2300 at 101.0) on the center of gravity moment envelope, and since this point falls within the envelope, the loading is acceptable.

# LOADING GRAPH



LOAD WEIGHT (POUNDS)

LOAD MOMENT/1000 (POUND - INCHES)

- NOTES: (1) Lines representing adjustable seats show the pilot or passenger center of gravity on adjustable seats positioned for an average occupant. Refer to the Loading Arrangements diagram for forward and aft limits of occupant c.g. range.
- (2) Engine Oil: 8 Qts. = 15 Lbs. at -0.2 Moment/1000.

LOADED AIRCRAFT WEIGHT (POUNDS)

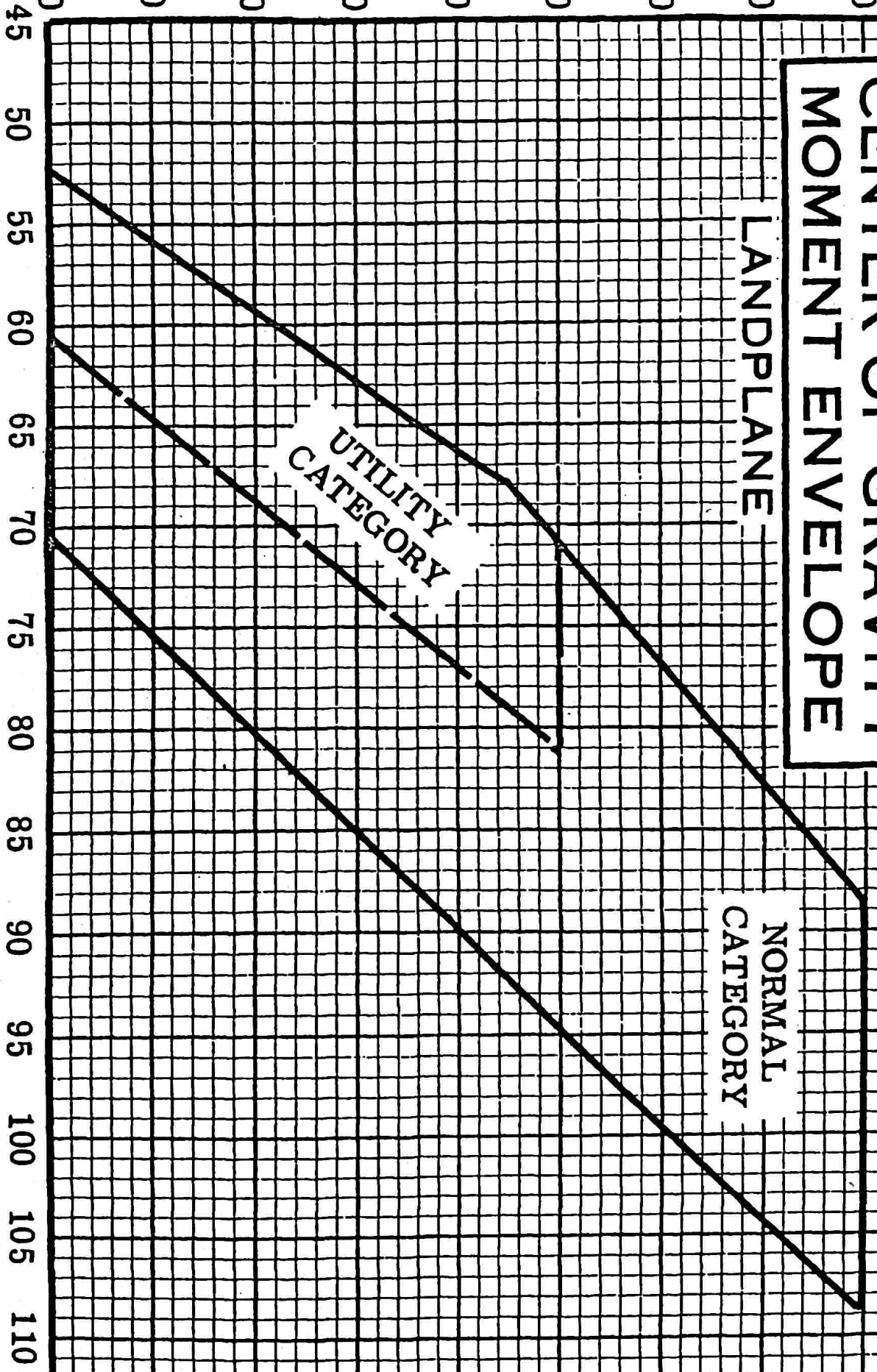
2300  
2200  
2100  
2000  
1900  
1800  
1700  
1600  
1500

CENTER OF GRAVITY  
MOMENT ENVELOPE

LANDPLANE

NORMAL  
CATEGORY

UTILITY  
CATEGORY



LOADED AIRCRAFT MOMENT/1000 (POUND-INCHES)

# Weight / Balance & Equipment List Revision

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BEVAN-RABELL, INC. - CRS KG2R951K

1880 S AIRPORT ROAD

WICHITA, KS 67209 Tel: 316-946-4870

A/C Tail # : N968HC

Register Name : HESSTON COLLEGE AVIATION

Name 2 :

Address 1 : MAINTENANCE SUPERVISOR

Address 2 : BOX 3000

City, State, PC : HESSTON, KS 67062

A/C Make : CESSNA

A/C Model : 172L

A/C Serial # : 17259752

WO Ref # : 70471

WB Date : Aug-12-2019

WB ID # : 968

Previous data taken from document dated Aug-22-2019 Previous useful load = 893.59

Model # Serial #	Description Part #	Weight	CG/Arm	Moment
	Previous data ->	1406.41	38.11	53595.07
<b>REMOVED ITEMS -----</b>				
	317A186	2.50	44.00	110.00
1C388-M		0.80	12.00	9.60
9465-G				
APC		0.25	12.00	3.00
REMOVED SUB TOTAL	3 Items @	3.55	34.54	122.60
<b>NO ITEMS INSTALLED</b>				
NEW DATA >>	NEW USEFUL LOAD = 897.14	1402.86	38.12	53472.47

Authorized Individual :  CRS KG2R951K Kent McIntyre, Insp.

# TAKE-OFF DATA

## TAKE-OFF DISTANCE FROM HARD SURFACE RUNWAY WITH FLAPS UP

GROSS WEIGHT POUNDS	IAS AT 50' MPH	HEAD WIND KNOTS	AT SEA LEVEL & 59°		AT 2500 FT. & 50°F		AT 5000 FT. & 41°F		AT 7500 FT. & 32°F	
			GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS
2300	68	0 10 20	865 615 405	1525 1170 850	1040 750 505	1910 1485 1100	1255 920 630	2480 1955 1480	1565 1160 810	3855 3110 2425
2000	63	0 10 20	630 435 275	1095 820 580	755 530 340	1325 1005 720	905 645 425	1625 1250 910	1120 810 595	2155 1685 1255
1700	58	0 10 20	435 290 175	780 570 385	520 355 215	920 680 470	625 430 270	1095 820 575	765 535 345	1370 1040 745

- NOTES:
1. Increase distance 10% for each 25° F above standard temperature for particular altitude.
  2. For operation on a dry, grass runway, increase distances (both "ground run" and "total to clear 50 ft. obstacle") by 7% of the "total to clear 50 ft. obstacle" figure.

# MAXIMUM RATE-OF-CLIMB DATA

GROSS WEIGHT POUNDS	AT SEA LEVEL & 59°F			AT 5000 FT. & 41°F			AT 10,000 FT. & 23°F			AT 15,000 FT. & 5°F		
	IAS MPH	RATE OF CLIMB FT/MIN	GAL. OF FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN	FROM S.L. FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN	FROM S.L. FUEL USED	IAS MPH	RATE OF CLIMB FT/MIN	FROM S.L. FUEL USED
2300	82	645	1.0	81	435	2.6	79	230	4.8	78	22	11.5
2000	79	840	1.0	79	610	2.2	76	380	3.6	75	155	6.3
1700	77	1085	1.0	76	825	1.9	73	570	2.9	72	315	4.4

- NOTES:
1. Flaps up, full throttle, mixture leaned for smooth operation above 3000 ft.
  2. Fuel used includes warm up and take-off allowance.
  3. For hot weather, decrease rate of climb 20 ft./min. for each 10°F above standard day temperature for particular altitude.

# CRUISE & RANGE PERFORMANCE

## SKYHAWK

Gross Weight- 2300 Lbs.  
Standard Conditions  
Zero Wind Lean Mixture

NOTE: Maximum cruise is normally limited to 75% power. Cruise speed for the standard Model 172 is approximately one MPH less than shown below for the Skyhawk configuration.

ALT.	RPM	% BHP	TAS MPH	GAL / HOUR	38 GAL (NO RESERVE)		48 GAL (NO RESERVE)	
					ENDR. HOURS	RANGE MILES	ENDR. HOURS	RANGE MILES
2500	2700	86	134	9.7	3.9	525	4.9	660
	2600	79	129	8.6	4.4	570	5.6	720
	2500	72	123	7.8	4.9	600	6.2	760
	2400	65	117	7.2	5.3	620	6.7	780
	2300	58	111	6.7	5.7	630	7.2	795
	2200	52	103	6.3	6.1	625	7.7	790
5000	2700	82	134	9.0	4.2	565	5.3	710
	2600	75	128	8.1	4.7	600	5.9	760
	2500	68	122	7.4	5.1	625	6.4	790
	2400	61	116	6.9	5.5	635	6.9	805
	2300	55	108	6.5	5.9	635	7.4	805
	2200	49	100	6.0	6.3	630	7.9	795
7500	2700	78	133	8.4	4.5	600	5.7	755
	2600	71	127	7.7	4.9	625	6.2	790
	2500	64	121	7.1	5.3	645	6.7	810
	2400	58	113	6.7	5.7	645	7.2	820
	2300	52	105	6.2	6.1	640	7.7	810
10,000	2650	70	129	7.6	5.0	640	6.3	810
	2600	67	125	7.3	5.2	650	6.5	820
	2500	61	118	6.9	5.5	655	7.0	830
	2400	55	110	6.4	5.9	650	7.5	825
	2300	49	100	6.0	6.3	635	8.0	800
12,500	2600	63	123	7.0	5.4	665	6.8	840
	2500	57	115	6.6	5.8	665	7.3	835
	2400	51	105	6.2	6.1	645	7.8	815



# LANDING DATA

**LANDING DISTANCE ON HARD SURFACE RUNWAY  
NO WIND - 40° FLAPS - POWER OFF**

GROSS WEIGHT LBS.	APPROACH IAS MPH	@ S.L. & 59° F		@ 2500 ft. & 50° F		@ 5000 ft. & 41° F		@ 7500 ft. & 32° F	
		GROUND ROLL	TOTAL TO CLEAR 50' OBS.	GROUND ROLL	TOTAL TO CLEAR 50' OBS.	GROUND ROLL	TOTAL TO CLEAR 50' OBS.	GROUND ROLL	TOTAL TO CLEAR 50' OBS.
2300	69	520	1250	560	1310	605	1385	650	1455

- NOTES: 1. Reduce landing distance 10% for each 5 knot headwind.  
 2. For operation on a dry, grass runway, increase distances (both "ground roll" and "total to clear 50 ft. obstacle") by 20% of the "total to clear 50 ft. obstacle" figure.