

(A59) 直昇機載重平衡

最近更新日期：無；更新題號：無

原始題號:0015380 題組:1 難易度:中

- (A) 1. (參照圖1) 航空器落地後，前座乘客(180磅)離機，後座乘客(204磅)則移至前座位置。若乘客移動前的飛機總重為2,690磅，力距/100為2,260，對航空器重心有何影響?" (如圖A59_Fig1)
- (A)重心前移約3吋。(B)重量改變，但重心不影響。(C)重心前移約0.1吋。

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS				MOMENT LIMITS vs WEIGHT (Continued)			
OCCUPANTS		USABLE FUEL		Minimum		Minimum	
FRONT SEATS ARM 85	REAR SEATS ARM 151	MAIN WING TANKS ARM 75	Moment	Weight	Moment	Weight	Moment
Weight	Moment	Weight	Moment	100	100	100	100
120	102	120	145	2102	1817	1800	2020
130	110	130	157	2110	1825	1808	2028
140	119	140	169	2120	1832	1817	2036
150	128	150	182	2130	1840	1825	2044
160	136	160	194	2140	1848	1834	2052
170	144	170	206	2150	1856	1842	2060
180	153	180	218	2160	1864	1851	2068
190	162	190	230	2170	1872	1860	2076
200	170	200	242	2180	1880	1868	2084
		44	254	2190	1888	1877	2092
				2200	1896	1885	2100
				2210	1904	1894	2108
				2220	1912	1903	2116
				2230	1920	1911	2124
				2240	1928	1920	2132
				2250	1936	1928	2140
				2260	1944	1937	2148
				2270	1952	1945	2156
				2280	1960	1954	2164
				2290	1968	1962	2172
				2300	1976	1971	2180
				2310	1984	1980	2188
				2320	1992	1988	2196
				2330	2000	1997	2204
				2340	2008	2005	2212
				2350	2016	2014	2220
				2360	2024	2022	2228
				2370	2032	2031	2236
				2380	2040	2040	2244
				2390	2048	2048	2252
				2400	2056	2057	2260
				2410	2064	2065	2268
				2420	2072	2074	2276
				2430	2080	2082	2284
				2440	2088	2091	2292
				2450	2096	2100	2300
				2460	2104	2108	2308
				2470	2112	2117	2316
				2480	2120	2125	2324
				2490	2128	2134	2332
				2500	2136	2143	2340
				2510	2144	2151	2348
				2520	2152	2160	2356
				2530	2160	2168	2364
				2540	2168	2177	2372
				2550	2176	2185	2380
				2560	2184	2194	2388
				2570	2192	2202	2396
				2580	2200	2211	2404
				2590	2208	2219	2412
				2600	2216	2228	2420
				2610	2224	2236	2428
				2620	2232	2245	2436
				2630	2240	2253	2444
				2640	2248	2262	2452
				2650	2256	2270	2460
				2660	2264	2279	2468
				2670	2272	2287	2476
				2680	2280	2296	2484
				2690	2288	2304	2492
				2700	2296	2313	2500
				2710	2304	2321	2508
				2720	2312	2330	2516
				2730	2320	2338	2524
				2740	2328	2347	2532
				2750	2336	2355	2540
				2760	2344	2364	2548
				2770	2352	2372	2556
				2780	2360	2381	2564
				2790	2368	2389	2572
				2800	2376	2398	2580
				2810	2384	2406	2588
				2820	2392	2415	2596
				2830	2400	2423	2604
				2840	2408	2432	2612
				2850	2416	2440	2620
				2860	2424	2449	2628
				2870	2432	2457	2636
				2880	2440	2466	2644
				2890	2448	2474	2652
				2900	2456	2483	2660
				2910	2464	2491	2668
				2920	2472	2500	2676
				2930	2480	2508	2684
				2940	2488	2517	2692
				2950	2496	2525	2700
				2960	2504	2534	2708
				2970	2512	2542	2716
				2980	2520	2551	2724
				2990	2528	2559	2732
				3000	2536	2568	2740
				3010	2544	2576	2748
				3020	2552	2585	2756
				3030	2560	2593	2764
				3040	2568	2602	2772
				3050	2576	2610	2780
				3060	2584	2619	2788
				3070	2592	2627	2796
				3080	2600	2636	2804
				3090	2608	2644	2812
				3100	2616	2653	2820
				3110	2624	2661	2828
				3120	2632	2670	2836
				3130	2640	2678	2844
				3140	2648	2687	2852
				3150	2656	2695	2860
				3160	2664	2704	2868
				3170	2672	2712	2876
				3180	2680	2721	2884
				3190	2688	2729	2892
				3200	2696	2738	2900
				3210	2704	2746	2908
				3220	2712	2755	2916
				3230	2720	2763	2924
				3240	2728	2772	2932
				3250	2736	2780	2940
				3260	2744	2789	2948
				3270	2752	2797	2956
				3280	2760	2806	2964
				3290	2768	2814	2972
				3300	2776	2823	2980
				3310	2784	2831	2988
				3320	2792	2840	2996
				3330	2800	2848	3004
				3340	2808	2857	3012
				3350	2816	2865	3020
				3360	2824	2874	3028
				3370	2832	2882	3036
				3380	2840	2891	3044
				3390	2848	2900	3052
				3400	2856	2908	3060
				3410	2864	2917	3068
				3420	2872	2925	3076
				3430	2880	2934	3084
				3440	2888	2942	3092
				3450	2896	2951	3100
				3460	2904	2959	3108
				3470	2912	2968	3116
				3480	2920	2976	3124
				3490	2928	2985	3132
				3500	2936	2993	3140
				3510	2944	3002	3148
				3520	2952	3010	3156
				3530	2960	3019	3164
				3540	2968	3027	3172
				3550	2976	3036	3180
				3560	2984	3044	3188
				3570	2992	3053	3196
				3580	3000	3061	3204
				3590	3008	3070	3212
				3600	3016	3078	3220
				3610	3024	3087	3228
				3620	3032	3095	3236
				3630	3040	3104	3244
				3640	3048	3112	3252
				3650	3056	3121	3260
				3660	3064	3129	3268
				3670	3072	3138	3276
				3680	3080	3146	3284
				3690	3088	3155	3292
				3700	3096	3163	3300
				3710	3104	3172	3308
				3720	3112	3180	3316
				3730	3120	3189	3324
				3740	3128	3197	3332
				3750	3136	3206	3340
				3760	3144	3214	3348
				3770	3152	3223	3356
				3780	3160	3231	3364
				3790	3168	3240	3372
				3800	3176	3248	3380
				3810	3184	3257	3388
				3820	3192	3265	3396
				3830	3200	3274	3404
				3840	3208	3282	3412
				3850	3216	3291	3420
				3860	3224	3299	3428
				3870	3232	3308	3436
				3880	3240	3316	3444
				3890	3248	3325	3452
				3900	3256	3333	3460
				3910	3264	3342	3468
				3920	3272	3350	3476
				3930	3280	3359	3484
				3940	3288	3367	3492
				3950	3296	3376	3500
				3960	3304	3384	3508
				3970	3312	3393	3516
				3980	3320	3401	3524
				3990	3328	3410	3532
				4000	3336	3418	3540
				4010	3344	3427	3548
				4020	3352	3435	3556
				4030	3360	3444	3564
				4040	3368	3452	3572
				4050	3376	3461	3580
				4060	3384	3469	3588
				4070	3392	3478	3596
				4080	3400	3486	3604
				4090	3408	3495	3612
				4100	3416	3503	3620
				4110	3424	3512	3628
				4120	3432	3520	3636
				4130	3440	3529	3644
				4140	3448	3537	3652
				4150	3456	3546	3

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

FRONT SEATS ARM 85		REAR SEATS ARM 121	
Weight	Moment 100	Weight	Moment 100
120	102	120	145
130	110	130	157
140	119	140	169
150	128	150	182
160	136	160	194
170	144	170	206
180	153	180	218
190	162	190	230
200	170	200	242

USABLE FUEL

MAIN WING TANKS ARM 75		
Gallons	Weight	Moment 100
5	30	22
10	60	45
15	90	68
20	120	90
25	150	112
30	180	135
35	210	158
40	240	180
44	264	198

BAGGAGE OR 8TH SEAT OCCUPANT ARM 180

Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378

AUXILIARY WING TANKS ARM 84

Gallons	Weight	Moment 100
5	30	28
10	60	56
15	90	85
19	114	107

*OIL		
Quarts	Weight	Moment 100
12	19	5

*Based on 15.7 lb per U.S. Gallon

MOM / 100 - 1554

WEIGHT LIMITS are based on:

Moment limits are based on the following weight and center of gravity limit data (landing gear down)

WEIGHT CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
2900 lb (takeoff or landing)	82.1	84.7
2925 lb	77.5	85.7
2475 lb or less	77.0	85.7

FIGURE 33—Airplane Weight and Balance Tables

MOMENT LIMITS vs WEIGHT (Continued)									
Weight	Minimum Moment 100	Maximum Moment 100	Weight	Minimum Moment 100	Maximum Moment 100				
2100	1817	1800	2600	2637	2524				
2110	1825	1809	2610	2648	2532				
2120	1832	1817	2620	2658	2539				
2130	1840	1825	2630	2668	2547				
2140	1848	1834	2640	2678	2555				
2150	1856	1843	2650	2688	2563				
2160	1863	1851	2660	2697	2571				
2170	1871	1860	2670	2707	2579				
2180	1879	1868	2680	2717	2587				
2190	1888	1877	2690	2726	2595				
2200	1896	1885	2700	2736	2603				
2210	1905	1894	2710	2746	2611				
2220	1913	1903	2720	2756	2619				
2230	1922	1911	2730	2766	2627				
2240	1930	1920	2740	2776	2635				
2250	1939	1929	2750	2786	2643				
2260	1947	1937	2760	2796	2651				
2270	1956	1946	2770	2806	2659				
2280	1964	1954	2780	2816	2667				
2290	1973	1963	2790	2826	2675				
2300	1981	1971	2800	2836	2683				
2310	1990	1980	2810	2846	2691				
2320	1998	1989	2820	2856	2699				
2330	2007	1997	2830	2866	2707				
2340	2015	2005	2840	2876	2715				
2350	2024	2014	2850	2886	2723				
2360	2032	2022	2860	2896	2731				
2370	2041	2031	2870	2906	2739				
2380	2049	2040	2880	2916	2747				
2390	2058	2050	2890	2926	2755				
2400	2066	2060	2900	2936	2763				
2410	2075	2069	2910	2946	2771				
2420	2083	2074	2920	2956	2779				
2430	2092	2083	2930	2966	2787				
2440	2100	2091	2940	2976	2795				
2450	2109	2100	2950	2986	2803				
2460	2117	2109	2960	2996	2811				
2470	2125	2117	2970	3006	2819				
2480	2134	2125	2980	3016	2827				
2490	2142	2134	2990	3026	2835				
2500	2150	2143	3000	3036	2843				
2510	2159	2151	3010	3046	2851				
2520	2167	2160	3020	3056	2859				
2530	2176	2169	3030	3066	2867				
2540	2184	2178	3040	3076	2875				
2550	2193	2186	3050	3086	2883				
2560	2201	2194	3060	3096	2891				
2570	2210	2202	3070	3106	2900				
2580	2218	2210	3080	3116	2908				
2590	2227	2219	3090	3126	2916				

FIGURE 34—Airplane Weight and Balance Tables

原始題號:0015383 題組:4 難易度:中

- (B) 4. (參照圖1)若航空器裝載方式如下，則應採取何措施以維持航空器在重心限制範圍內？前座乘客：411磅，後座乘客：100磅，主油箱：44加侖。
(如圖A59_Fig1)
(A)加滿副油箱。(B)在行李艙加100磅重量。(C)自主油箱轉移10加侖燃油至副油箱。

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

FRONT SEATS ARM 85		REAR SEATS ARM 121	
Weight	Moment 100	Weight	Moment 100
120	102	120	145
130	110	130	157
140	119	140	169
150	128	150	182
160	136	160	194
170	144	170	206
180	153	180	218
190	162	190	230
200	170	200	242

USABLE FUEL

MAIN WING TANKS ARM 75		
Gallons	Weight	Moment 100
5	30	22
10	60	45
15	90	68
20	120	90
25	150	112
30	180	135
35	210	158
40	240	180
44	264	198

BAGGAGE OR 8TH SEAT OCCUPANT ARM 180

Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378
280	392

AUXILIARY WING TANKS ARM 84

Gallons	Weight	Moment 100
5	30	28
10	60	56
15	90	85
19	114	107

*OIL		
Quarts	Weight	Moment 100
10	19	5

*Based on 15.7 lb per U.S. Gallon

MOMENT LIMITS

Moment limits are based on the following weight and center of gravity limit data (landing gear down)

WEIGHT CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
20,000 lbs (gross or landing)	82.1	84.7
24,000 lbs or less	77.5	83.7
24,000 lbs or less	77.0	83.7

原始題號:0015385 題組:6 難易度:中

- (A) 6. (參照圖1) 當航空器載重情形如下時，最大行李載重量為何？前座乘客：387磅，後座乘客：293磅，燃油：35加侖。
(如圖A59_Fig1)
(A)45磅。(B)63磅。(C)220磅。

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

FRONT SEATS ARM 85		REAR SEATS ARM 121	
Weight	Moment 100	Weight	Moment 100
120	102	120	145
130	110	130	157
140	119	140	169
150	128	150	182
160	136	160	194
170	144	170	206
180	153	180	218
190	162	190	230
200	170	200	242
210	179	210	254

USABLE FUEL

MAIN WING TANKS ARM 75		
Gallons	Weight	Moment 100
5	30	22
10	60	45
15	90	68
20	120	90
25	150	112
30	180	135
35	210	158
40	240	180
44	264	199

BAGGAGE OR 8TH SEAT OCCUPANT

ARM 180	
Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378

AUXILIARY WING TANKS

ARM 84		
Gallons	Weight	Moment 100
5	30	28
10	60	56
15	90	85
19	114	107

*OIL

Quarts	Weight	Moment 100
10	19	5

Empty Weight - 2015

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Moment limits are based on the following weight and center of gravity limit data (landing gear down)			
WEIGHT	CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
2900	lb takeoff	82.1	84.7
2875	or landing	77.5	85.7
2875	lb or less	77.0	85.7

MOMENT LIMITS vs WEIGHT (Continued)

Weight	Minimum Moment		Maximum Moment		Weight	Minimum Moment		Maximum Moment	
	100	100	100	100		100	100		
2110	1617	1800	2600	2037	2224				
2120	1632	1814	2610	2048	2230				
2130	1647	1827	2620	2058	2236				
2140	1662	1839	2630	2069	2255				
2150	1677	1851	2640	2079	2260				
2160	1693	1863	2650	2090	2271				
2170	1708	1875	2660	2100	2276				
2180	1723	1888	2670	2111	2287				
2190	1738	1900	2680	2121	2299				
2200	1754	1912	2690	2132	2303				
2210	1769	1925	2700	2144	2303				
2220	1784	1937	2710	2155	2311				
2230	1799	1950	2720	2166	2319				
2240	1814	1962	2730	2177	2324				
2250	1829	1975	2740	2188	2329				
2260	1844	1987	2750	2199	2342				
2270	1859	2000	2760	2210	2346				
2280	1874	2012	2770	2221	2358				
2290	1889	2025	2780	2232	2369				
2300	1904	2037	2790	2243	2374				
2310	1919	2050	2800	2254	2381				
2320	1934	2062	2810	2265	2385				
2330	1949	2075	2820	2276	2397				
2340	1964	2087	2830	2287	2407				
2350	1979	2100	2840	2298	2413				
2360	1994	2112	2850	2309	2423				
2370	2009	2125	2860	2320	2428				
2380	2024	2137	2870	2331	2434				
2390	2039	2150	2880	2342	2442				
2400	2054	2162	2890	2353	2448				
2410	2069	2175	2900	2364	2453				
2420	2084	2187	2910	2375	2460				
2430	2099	2200	2920	2386	2467				
2440	2114	2212	2930	2397	2475				
2450	2129	2225	2940	2408	2481				
2460	2144	2237	2950	2419	2488				
2470	2159	2250	2960	2430	2495				
2480	2174	2262	2970	2441	2500				
2490	2189	2275	2980	2452	2506				
2500	2204	2287	2990	2463	2511				
2510	2219	2300	3000	2474	2517				
2520	2234	2312	3010	2485	2522				
2530	2249	2325	3020	2496	2528				
2540	2264	2337	3030	2507	2533				
2550	2279	2350	3040	2518	2539				
2560	2294	2362	3050	2529	2544				
2570	2309	2375	3060	2540	2550				
2580	2324	2387	3070	2551	2555				
2590	2339	2400	3080	2562	2561				
2600	2354	2412	3090	2573	2566				
2610	2369	2425	3100	2584	2572				
2620	2384	2437	3110	2595	2577				
2630	2399	2450	3120	2606	2583				
2640	2414	2462	3130	2617	2588				
2650	2429	2475	3140	2628	2594				
2660	2444	2487	3150	2639	2599				
2670	2459	2500	3160	2650	2604				
2680	2474	2512	3170	2661	2610				
2690	2489	2525	3180	2672	2615				
2700	2504	2537	3190	2683	2621				
2710	2519	2550	3200	2694	2626				
2720	2534	2562	3210	2705	2632				
2730	2549	2575	3220	2716	2637				
2740	2564	2587	3230	2727	2643				
2750	2579	2600	3240	2738	2648				
2760	2594	2612	3250	2749	2654				
2770	2609	2625	3260	2760	2659				
2780	2624	2637	3270	2771	2665				
2790	2639	2650	3280	2782	2670				
2800	2654	2662	3290	2793	2676				
2810	2669	2675	3300	2804	2681				
2820	2684	2687	3310	2815	2687				
2830	2699	2700	3320	2826	2692				
2840	2714	2712	3330	2837	2698				
2850	2729	2725	3340	2848	2703				
2860	2744	2737	3350	2859	2709				
2870	2759	2750	3360	2870	2714				
2880	2774	2762	3370	2881	2720				
2890	2789	2775	3380	2892	2725				
2900	2804	2787	3390	2903	2731				
2910	2819	2800	3400	2914	2736				
2920	2834	2812	3410	2925	2742				
2930	2849	2825	3420	2936	2747				
2940	2864	2837	3430	2947	2753				
2950	2879	2850	3440	2958	2758				
2960	2894	2862	3450	2969	2764				
2970	2909	2875	3460	2980	2769				
2980	2924	2887	3470	2991	2775				
2990	2939	2900	3480	3002	2780				
3000	2954	2912	3490	3013	2786				
3010	2969	2925	3500	3024	2791				
3020	2984	2937	3510	3035	2797				
3030	2999	2950	3520	3046	2802				
3040	3014	2962	3530	3057	2808				
3050	3029	2975	3540	3068	2813				
3060	3044	2987	3550	3079	2819				
3070	3059	3000	3560	3090	2824				
3080	3074	3012	3570	3101	2830				
3090	3089	3025	3580	3112	2835				
3100	3104	3037	3590	3123	2841				
3110	3119	3050	3600	3134	2846				
3120	3134	3062	3610	3145	2852				
3130	3149	3075	3620	3156	2857				
3140	3164	3087	3630	3167	2863				
3150	3179	3100	3640	3178	2868				
3160	3194	3112	3650	3189	2874				
3170	3209	3125	3660	3200	2879				
3180	3224	3137	3670	3211	2885				
3190	3239	3150	3680	3222	2890				
3200	3254	3162	3690	3233	2896				
3210	3269	3175	3700	3244	2901				
3220	3284	3187	3710	3255	2907				
3230	3299	3200	3720	3266	2912				
3240	3314	3212	3730	3277	2918				
3250	3329	3225	3740	3288	2923				
3260	3344	3237	3750	3299	2929				
3270	3359	3250	3760	3310	2934				
3280	3374	3262	3770	3321	2940				
3290	3389	3275	3780	3332	2945				
3300	3404	3287	3790	3343	2951				
3310	3419	3300	3800	3354	2956				
3320	3434	3312	3810	3365	2962				
3330	3449	3325	3820	3376	2967				
3340	3464	3337	3830	3387	2973				
3350	3479	3350	3840	3398	2978				
3360	3494	3362	3850	3409	2984				
3370	3509	3375	3860	3420	2989				
3380	3524	3387	3870	3431	2995				
3390	3539	3400	3880	3442	3000				
3400	3554	3412	3890	3453	3006				
3410	3569	3425	3900	3464	3011				
3420	3584	3437	3910	3475	3017				
3430	3599	3450	3920	3486	3022				
3440	3614	3462	3930	3497	3028				
3450	3629	3475	3940	3508	3033				
3460	3644	3487	3950	3519	3039				
3470	3659	3500	3960	3530	3044				
3480	3674	3512	3970	3541	3050				
3490	3689	3525	3980	3552					

FIGURE 33—Airplane Weight and Balance Tables

MOMENT LIMITS vs WEIGHT (Continued)					
Weight	Minimum Moment 100	Maximum Moment 100	Weight	Minimum Moment 100	Maximum Moment 100
2100	1817	1820	2600	2037	2224
2110	1820	1829	2610	2048	2232
2120	1825	1837	2620	2058	2239
2130	1832	1844	2630	2068	2247
2140	1840	1854	2640	2078	2255
2150	1848	1863	2650	2088	2263
2160	1855	1871	2660	2097	2271
2170	1863	1880	2670	2107	2279
2180	1870	1888	2680	2117	2287
2190	1879	1897	2690	2127	2295
2200	1894	1895	2700	2144	2303
2210	1902	1894	2710	2155	2311
2220	1909	1893	2720	2166	2319
2230	1917	1911	2730	2177	2326
2240	1925	1903	2740	2188	2334
2250	1933	1909	2750	2199	2342
2260	1940	1927	2760	2210	2350
2270	1948	1945	2770	2221	2358
2280	1954	1944	2780	2232	2366
2290	1963	1963	2790	2243	2374
2300	1971	1971	2800	2254	2381
2310	1979	1969	2810	2265	2389
2320	1988	1987	2820	2276	2397
2330	1995	1993	2830	2287	2405
2340	2003	2004	2840	2298	2413
2350	2011	2011	2850	2309	2421
2360	2019	2018	2860	2320	2429
2370	2027	2027	2870	2332	2438
2380	2035	2040	2880	2343	2446
2390	2043	2046	2890	2354	2452
2400	2049	2057	2900	2365	2459
2410	2056	2065	2910	2377	2468
2420	2063	2074	2920	2388	2475
2430	2071	2081	2930	2399	2483
2440	2079	2091	2940	2411	2491
2450	2087	2100	2950	2422	2499
2460	2094	2109			
2470	2102	2117			
2480	2111	2125			
2490	2117	2134			
2500	2125	2143			
2510	2131	2151			
2520	2138	2160			
2530	2145	2168			
2540	2152	2176			
2550	2159	2184			
2560	2166	2193			
2570	2173	2202			
2580	2180	2210			
2590	2187	2219			

FIGURE 34—Aluminum Weight and Balance Tables.

FIGURE 34—Airplane Weight and Balance Tables

原始題號:0015386 題組:7 難易度:中

- (B) 7. (參照圖1) 計算載重與平衡，並決定航空器之重心與重量是否在限制範圍內。前座乘客：350磅，後座乘客：325磅，行李：27磅，燃油：35加侖。
(如圖A59_Fig1)
(A)重心81.7，超過前重心限制。(B)重心83.4，在重心範圍內。(C)重心84.1，在重心範圍內。

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS									
OCCUPANTS				USABLE FUEL					
FRONT SEATS ARM 85		REAR SEATS ARM 121		MAIN WING TANKS ARM 75					
Weight	Moment 100	Weight	Moment 100	Gallons	Weight	Moment 100			
120	102	120	145	5	30	22			
130	110	130	157	10	60	45			
140	119	140	169	15	90	68			
150	128	150	182	20	120	90			
160	136	160	194	25	150	112			
170	144	170	206	30	180	135			
180	153	180	218	35	210	158			
190	162	190	230	40	240	180			
200	170	200	242	44	264	199			
BAGGAGE OR 8TH SEAT OCCUPANT ARM 180				AUXILIARY WING TANKS ARM 84					
Weight	Moment 100			Gallons	Weight	Moment 100			
10	14			5	30	28			
20	28			10	60	56			
30	42			15	90	85			
40	56			19	114	107			
50	70			*OIL					
60	84								
70	98								
80	112								
90	126								
100	140								
110	154								
120	168								
130	182								
140	196								
150	210								
160	224								
170	238								
180	252								
190	266								
200	280								
210	294								
220	308								
230	322								
240	336								
250	350								
260	364								
270	378								
				MOMENT LIMITS AND WEIGHT					
				Moment limits are based on the following weight and center of gravity limit data (landing gear down).					
				WEIGHT FORWARD AFT CG LIMIT					
				CONDITION CG LIMIT					
				CG LIMIT					
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題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

MOMENT LIMITS vs WEIGHT (Continued)

OCCUPANTS				USABLE FUEL															
FRONT SEATS ARM 85		REAR SEATS ARM 121		MAIN WING TANKS ARM 75				AUXILIARY WING TANKS ARM 84											
Weight	Moment 100	Weight	Moment 100	Gallons	Weight	Moment 100		Gallons	Weight	Moment 100									
120	102	120	145	5	30	22		5	30	28									
130	110	130	157	10	60	45		10	60	56									
140	119	140	169	15	90	68		15	90	85									
150	128	150	182	20	120	90		19	114	107									
160	136	160	194	25	150	112													
170	144	170	206	30	180	135													
180	153	180	218	35	210	158													
190	162	190	230	40	240	180													
200	170	200	242	44	264	198													
BAGGAGE OR 8TH SEAT OCCUPANT ARM 180				Empty Weight - 2015 Moment / 100 - 1504															
Weight	Moment 100																		
10	14																		
20	28																		
30	42																		
40	56																		
50	70																		
60	84																		
70	98																		
80	112																		
90	126																		
100	140																		
110	154																		
120	168																		
130	182																		
140	196																		
150	210																		
160	224																		
170	238																		
180	252																		
190	266																		
200	280																		
210	294																		
220	308																		
230	322																		
240	336																		
250	350																		
260	364																		
270	378																		
				MOMENT LIMITS vs WEIGHT															
				Minimum Moment 100				Maximum Moment 100											
				2100	1617	1802	1802	2100	1617	1802	1802								
				2110	1625	1809	1810	2110	1625	1810	1810								
				2120	1632	1816	1817	2120	1632	1817	1817								
				2130	1640	1823	1824	2130	1640	1824	1824								
				2140	1648	1830	1831	2140	1648	1831	1831								
				2150	1656	1837	1838	2150	1656	1838	1838								
				2160	1664	1844	1845	2160	1664	1845	1845								
				2170	1671	1850	1850	2170	1671	1850	1850								
				2180	1679	1858	1858	2180	1679	1858	1858								
				2190	1687	1866	1867	2190	1687	1867	1867								
				2200	1694	1873	1874	2200	1694	1874	1874								
				2210	1702	1880	1881	2210	1702	1881	1881								
				2220	1710	1888	1888	2220	1710	1888	1888								
				2230	1718	1895	1896	2230	1718	1896	1896								
				2240	1726	1903	1903	2240	1726	1903	1903								
				2250	1734	1910	1911	2250	1734	1911	1911								
				2260	1742	1918	1918	2260	1742	1918	1918								
				2270	1750	1925	1926	2270	1750	1926	1926								
				2280	1758	1933	1933	2280	1758	1933	1933								
				2290	1766	1940	1941	2290	1766	1941	1941								
				2300	1774	1948	1948	2300	1774	1948	1948								
				2310	1782	1955	1956	2310	1782	1956	1956								
				2320	1790	1963	1963	2320	1790	1963	1963								
				2330	1798	1970	1971	2330	1798	1971	1971								
				2340	1806	1978	1978	2340	1806	1978	1978								
				2350	1814	1985	1986	2350	1814	1986	1986								
				2360	1822	1993	1993	2360	1822	1993	1993								
				2370	1830	2000	2001	2370	1830	2001	2001								
				2380	1838	2008	2008	2380	1838	2008	2008								
				2390	1846	2015	2016	2390	1846	2016	2016								
				2400	1854	2023	2023	2400	1854	2023	2023								
				2410	1862	2030	2031	2410	1862	2031	2031								
				2420	1870	2038	2038	2420	1870	2038	2038								
				2430	1878	2045	2046	2430	1878	2046	2046								
				2440	1886	2053	2053	2440	1886	2053	2053								
				2450	1894	2060	2061	2450	1894	2061	2061								
				2460	1902	2068	2068	2460	1902	2068	2068								
				2470	1910	2075	2076	2470	1910	2076	2076								
				2480	1918	2083	2083	2480	1918	2083	2083								
				2490	1926	2090	2091	2490	1926	2091	2091								
				2500	1934	2098	2098	2500	1934	2098	2098								
				2510	1942	2105	2106	2510	1942	2106	2106								
				2520	1950	2113	2113	2520	1950	2113	2113								
				2530	1958	2120	2121	2530	1958	2121	2121								
				2540	1966	2128	2128	2540	1966	2128	2128								
				2550	1974	2135	2136	2550	1974	2136	2136								
				2560	1982	2143	2143	2560	1982	2143	2143								
				2570	1990	2150	2151	2570	1990	2151	2151								
				2580	1998	2158	2158	2580	1998	2158	2158								
				2590	2006	2165	2166	2590	2006	2166	2166								
				2600	2014	2173	2173	2600	2014	2173	2173								
				2610	2022	2180	2181	2610	2022	2181	2181								
				2620	2030	2188	2188	2620	2030	2188	2188								
				2630	2038	2195	2196	2630	2038	2196	2196								
				2640	2046	2203	2203	2640	2046	2203	2203								
				2650	2054	2210	2211	2650	2054	2211	2211								
				2660	2062	2218	2218	2660	2062	2218	2218								
				2670	2070	2225	2226	2670	2070	2226	2226								
				2680	2078	2233	2233	2680	2078	2233	2233								
				2690	2086	2240	2241	2690	2086	2241	2241								
				2700	2094	2248	2248	2700	2094	2248	2248								
				2710	2102	2255	2256	2710	2102	2256	2256								
				2720	2110	2263	2263	2720	2110	2263	2263								
				2730	2118	2270	2271	2730	2118	2271	2271								
				2740	2126	2278	2278	2740	2126	2278	2278								
				2750	2134	2285	2286	2750	2134	2286	2286								
				2760	2142	229													

FIGURE 33—Airplane Weight and Balance Tables.

原始題號:0015388 題組:1 難易度:中

- (B) 9. (參照圖1)決定直昇機之載重與平衡。空重：1,495.0 磅，力距：151,593.0磅-吋；飛行員與乘客：350.0 磅，力臂：64.0吋；燃油（40加侖可用）：96.0吋。
(如圖A59_Fig1)
(A)超過總重限制，但在重心限制範圍內。(B)在總重及重心限制範圍內。(C)超過總重限制，超過重心後限制範圍。

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS				USABLE FUEL									
FRONT SEATS ARM 85		REAR SEATS ARM 121		MAIN WING TANKS ARM 75									
Weight	Moment 100	Weight	Moment 100	Gallons	Weight	Moment 100							
120	102	120	145	5	30	22							
130	110	130	157	10	60	45							
140	119	140	169	15	90	68							
150	128	150	182	20	120	90							
160	136	160	194	25	150	112							
170	144	170	206	30	180	135							
180	153	180	218	35	210	158							
190	162	190	230	40	240	180							
200	170	200	242	44	264	198							
BAGGAGE OR 8TH SEAT OCCUPANT ARM 180				AUXILIARY WING TANKS ARM 84									
Weight	Moment 100												
10	14												
20	28												
30	42												
40	56												
50	70												
60	84												
70	98												
80	112												
90	126												
100	140												
110	154												
120	168												
130	182												
140	196												
150	210												
160	224												
170	238												
180	252												
190	266												
200	280												
210	294												
220	308												
230	322												
240	336												
250	350												
260	364												
270	378												

MOMENT LIMITS BY WEIGHT (Continued)											
Minimum Moment		Maximum Moment		Weight		Minimum Moment		Maximum Moment			
2100	1617	1800	2600	2000	2037	2100	2224				
2100	1621	1800	2600	2000	2040						
2100	1625	1817	2610	2010	2049						
2100	1629	1832	2620	2020	2058						
2100	1633	1847	2630	2030	2068						
2100	1637	1861	2640	2040	2078						
2100	1641	1876	2650	2050	2087						
2100	1645	1890	2660	2060	2097						
2100	1649	1905	2670	2070	2107						
2100	1653	1919	2680	2080	2117						
2100	1657	1934	2690	2090	2127						
2100	1661	1948	2700	2100	2137						
2100	1665	1963	2710	2110	2147						
2100	1669	1977	2720	2120	2157						
2100	1673	1992	2730	2130	2167						
2100	1677	2006	2740	2140	2177						
2100	1681	2021	2750	2150	2187						
2100	1685	2035	2760	2160	2197						
2100	1689	2050	2770	2170	2207						
2100	1693	2064	2780	2180	2217						
2100	1697	2079	2790	2190	2227						
2100	1701	2093	2800	2200	2237						
2100	1705	2108	2810	2210	2247						
2100	1709	2122	2820	2220	2257						
2100	1713	2137	2830	2230	2267						
2100	1717	2151	2840	2240	2277						
2100	1721	2166	2850	2250	2287						
2100	1725	2180	2860	2260	2297						
2100	1729	2195	2870	2270	2307						
2100	1733	2209	2880	2280	2317						
2100	1737	2224	2890	2290	2327						
2100	1741	2238	2900	2300	2337						
2100	1745	2253	2910	2310	2347						
2100	1749	2267	2920	2320	2357						
2100	1753	2282	2930	2330	2367						
2100	1757	2296	2940	2340	2377						
2100	1761	2311	2950	2350	2387						
2100	1765	2325	2960	2360	2397						
2100	1769	2340	2970	2370	2407						
2100	1773	2354	2980	2380	2417						
2100	1777	2369	2990	2390	2427						
2100	1781	2383	3000	2400	2437						
2100	1785	2398	3010	2410	2447						
2100	1789	2412	3020	2420	2457						
2100	1793	2427	3030	2430	2467						
2100	1797	2441	3040	2440	2477						
2100	1801	2456	3050	2450	2487						
2100	1805	2470	3060	2460	2497						
2100	1809	2485	3070	2470	2507						
2100	1813	2499	3080	2480	2517						
2100	1817	2514	3090	2490	2527						
2100	1821	2528	3100	2500	2537						
2100	1825	2543	3110	2510	2547						
2100	1829	2558	3120	2520	2557						
2100	1833	2572	3130	2530	2567						
2100	1837	2587	3140	2540	2577						
2100	1841	2602	3150	2550	2587						
2100	1845	2616	3160	2560	2597						
2100	1849	2631	3170	2570	2607						
2100	1853	2645	3180	2580	2617						
2100	1857	2660	3190	2590	2627						
2100	1861	2674	3200	2600	2637						
2100	1865	2689	3210	2610	2647						
2100	1869	2703	3220	2620	2657						
2100	1873	2718	3230	2630	2667						
2100	1877	2732	3240	2640	2677						
2100	1881	2747	3250	2650	2687						
2100	1885	2761	3260	2660	2697						
2100	1889	2776	3270	2670	2707						
2100	1893	2790	3280	2680	2717						
2100	1897	2805	3290	2690	2727						
2100	1901	2819	3300	2700	2737						
2100	1905	2834	3310	2710	2747						
2100	1909	2848	3320	2720	2757						
2100	1913	2863	3330	2730	2767						
2100	1917	2877	3340	2740	2777						
2100	1921	2892	3350	2750	2787						
2100	1925	2906	3360	2760	2797						
2100	1929	2921	3370	2770	2807						
2100	1933	2935	3380	2780	2817						
2100	1937	2950	3390	2790	2827						
2100	1941	2964	3400	2800	2837						
2100	1945	2979	3410	2810	2847						
2100	1949	2993	3420	2820	2857						
2100	1953	3008	3430	2830	2867						
2100	1957	3022	3440	2840	2877						
2100	1961	3037	3450	2850	2887						
2100	1965	3051	3460	2860	2897						
2100	1969	3066	3470	2870	2907						
2100	1973	3080	3480	2880	2917						
2100	1977	3095	3490	2890	2927						
2100	1981	3109	3500	2900	2937						
2100	1985	3124	3510	2910	2947						
2100	1989	3138	3520	2920	2957						
2100	1993	3153	3530	2930	2967						
2100	1997	3167	3540	2940	2977						
2100	2001	3182	3550	2950	2987						
2100	2005	3196	3560	2960	2997						
2100	2009	3211	3570	2970	3007						
2100	2013	3225	3580	2980	3017						
2100	2017	3240	3590	2990	3027						
2100	2021	3254	3600	3000	3037						
2100	2025	3269	3610	3010	3047						
2100	2029	3283	3620	3020	3057						
2100	2033	3298	3630	3030	3067						
2100	2037	3312	3640	3040	3077				</		

FIGURE 33—Airplane Weight and Balance Tables.

原始題號:0015389 題組:1 難易度:中

- (A) 10. (參照圖3)若直昇機在載客前，總重1,380磅，力距在136,647.5磅/吋站位，於增加一位185磅乘客後之重心為何?"
(如圖A59_Fig3)
(A)CG前移1.78吋。(B)CG後移1.78吋。(C)CG前移2.36吋。

題目圖：

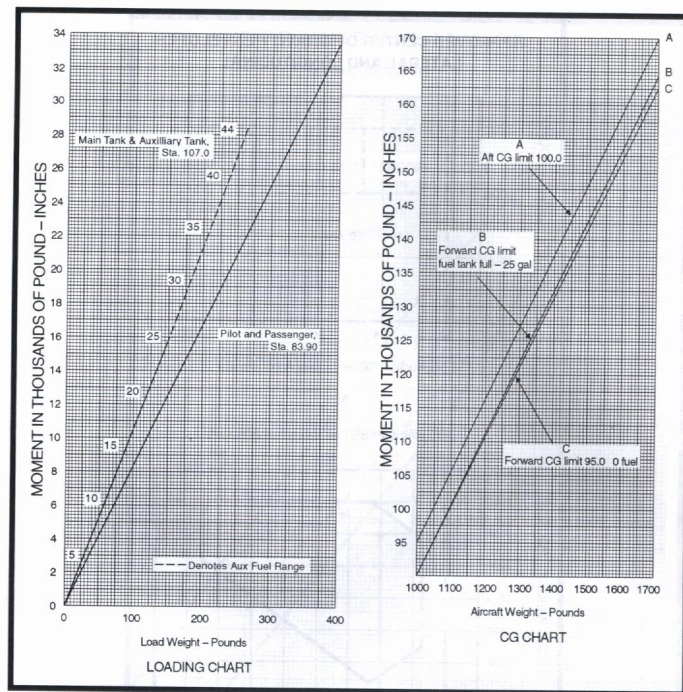


FIGURE 43.—Helicopter Weight and Balance Graphs.

原始題號:0015390 題組:2 難易度:中

- (B) 11. (參照圖3) 燃油消耗前總重1,660磅，力距159,898.5。當直昇機所有輔助油箱用盡後，直昇機重心如何變化?"
(如圖A59_Fig3)
(A)CG後移0.12吋。(B)CG前移0.78吋。(C)CG前移1.07吋。

題目圖：

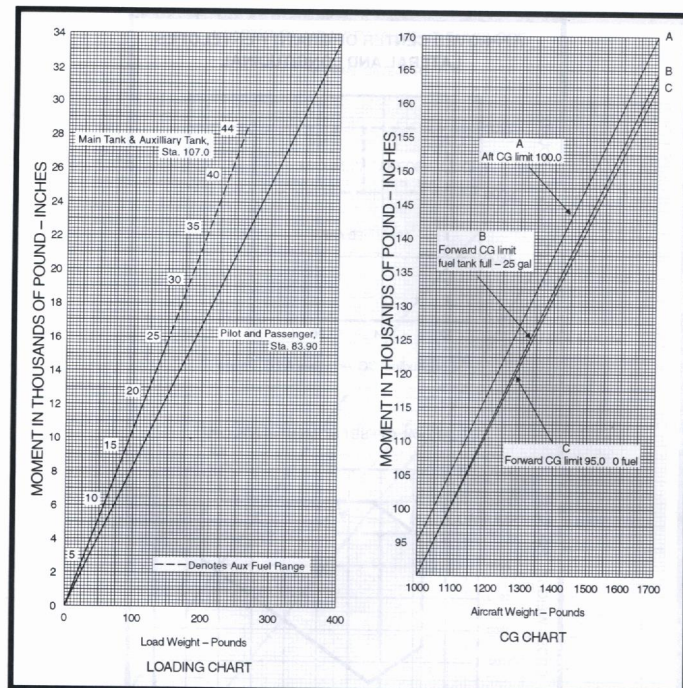


FIGURE 43.—Helicopter Weight and Balance Graphs.

原始題號:0015391 題組:3 難易度:中

- (B) 12. (參照圖3)決定直昇機重心是否在限制範圍內。空重(包括滑油)1,025磅，力距:102,705磅-吋；飛行員與乘客重量:345 磅；燃油，35加侖。"
(如圖A59_Fig3)
(A)超出前限制範圍。(B)在限制範圍內。(C)超出後限制範圍。

題目圖：

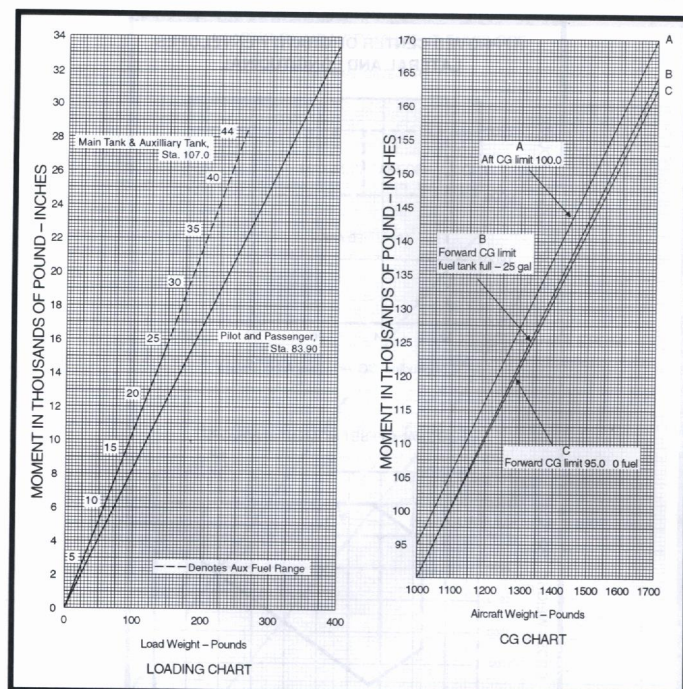


FIGURE 43.—Helicopter Weight and Balance Graphs.

原始題號:0015392 題組:1 難易度:中

- (C) 13. (參照圖4)若直昇機載重如下:總重1,800磅，正駕駛重140磅，力距在第0站向左13.5吋站位；副駕駛重180磅，力距在第0站向右13.5吋站位。需採取何作為使橫向重心平衡?" (如圖A59_Fig4)
- (A)在正駕駛座位增加10磅。(B)減少50磅總重。(C)不需改變。

題目圖：

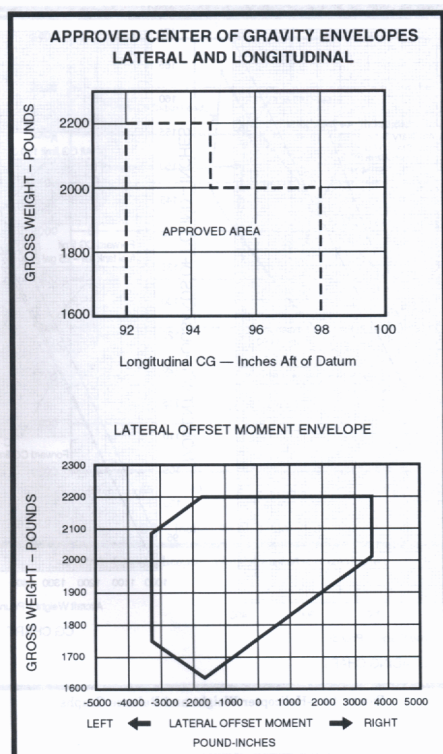
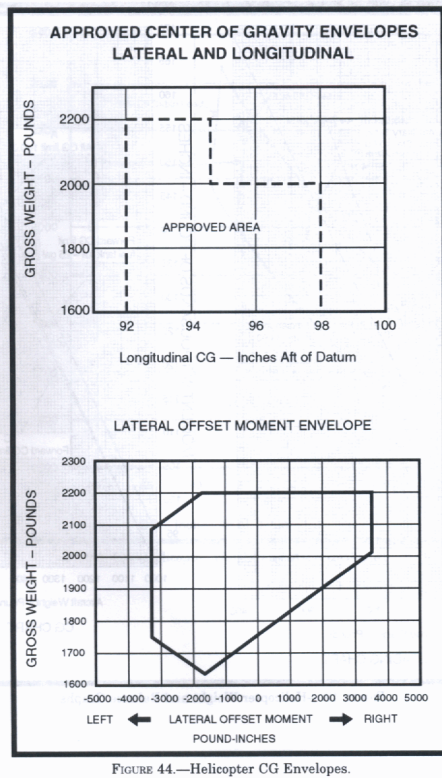


FIGURE 44.—Helicopter CG Envelopes.

原始題號:0015393 題組:2 難易度:中

- (A) 14. (參照圖4)若直昇機載重如下:總重1,800磅;正駕駛重:140磅,力距在第0站向左13.5吋站位;副駕駛重:200磅,力距在第0站向右13.5吋站位。需採取何作為使橫向重心平衡?" (如圖A59_Fig4)
- (A)在正駕駛座位增加50磅。(B)減少50磅總重。(C)不需改變。

題目圖：



原始題號:0015394 題組:3 難易度:中

- (C) 15. (參照圖4)計算直昇機載重與平衡,並決定重心是否在限制範圍內。空重:1,495.0磅,力臂:101.4 吋,力距:151,5.93 磅-吋;滑油,8 夸拖:100.5 吋;燃油,40 加侖:96.0 IN;正駕駛重量:160.0磅,力臂:64.0吋。 "
- (如圖A59_Fig4)
- (A)重心在90.48吋,超出前限制範圍。(B)重心在95.32吋,在重心限制範圍內。(C)重心在97.58吋,在重心限制範圍內。

題目圖：

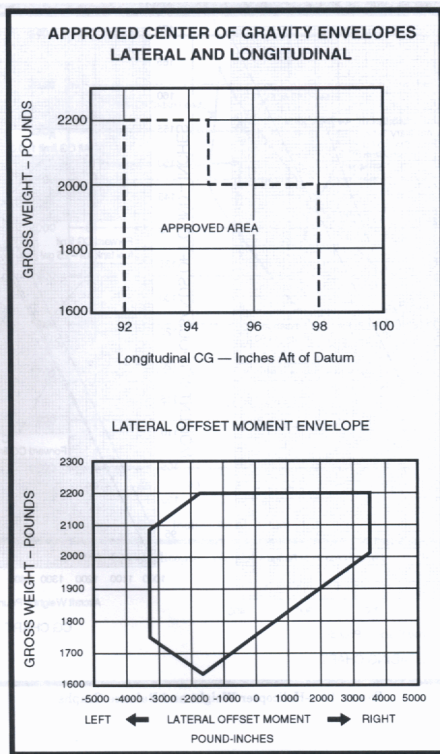


FIGURE 44.—Helicopter CG Envelopes.

原始題號:0015395 題組:4 難易度:中

- (B) 16. (參照圖4)決定直昇機重心是否在限制範圍內。空重：1,495.0磅，力臂：101.4 吋，力距：151,5.93 磅-吋；滑油，8 夸拖：100.5 吋；燃油，40 加侖：96.0 IN；正駕駛與副駕駛重量：300.0磅，力臂：64.0吋。 "

(如圖A59_Fig4)

(A)重心在95.2吋，在限制範圍內。(B)重心在95.3吋，重量與重心均超出限制範圍。(C)重心在95.4吋，在限制範圍內。

題目圖：

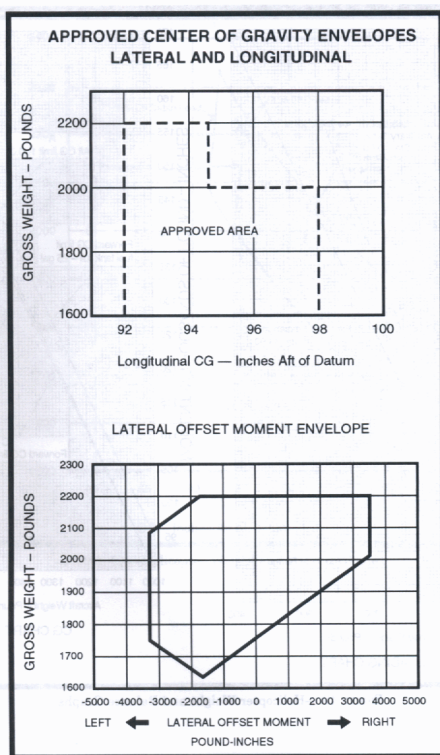


FIGURE 44.—Helicopter CG Envelopes.

原始題號:0015396 題組:1 難易度:中

(A) 17. (參照圖6) 500磅重量應移向何處，以使支點獲得平衡？

(如圖A59_Fig6)

(A)向左一呎。(B)向右一呎。(C)向右4.5呎。

題目圖：

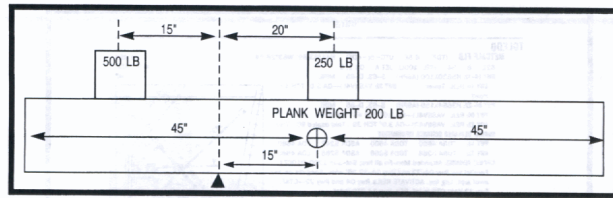


FIGURE 61.—Weight and Balance Diagram.

原始題號:0015397 題組:1 難易度:中

(C) 18. (參照圖7) 若50磅置於X點，100磅置於Z點，在Y點需放置多少重量，以獲得平衡？

(如圖A59_Fig7)

(A)30磅。(B)50磅。(C)300磅。

題目圖：

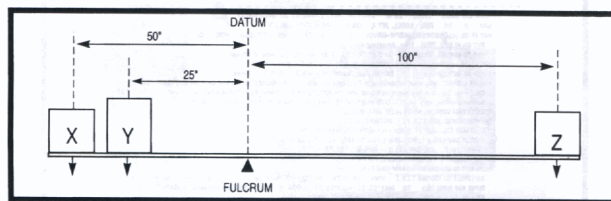


FIGURE 62.—Weight and Balance Diagram.

原始題號:0015398 題組:0 難易度:易

(A) 19. 導致航空器超載的因素包括

(A)爬升率降低，結構負載過量，及縮短航程。(B)增加升限，增加爬升角，及增加詢航空速。(C)減低起飛空速，增加操作性能，及縮短起飛距離。

原始題號:0015399 題組:0 難易度:易

(A) 20. 大多數航空器設計考量，即使在所有座位坐滿，行李艙擺滿所有行李，且所有油箱為滿油量時，航空器將會

(A)顯然超重。(B)低於最大起飛總重。(C)達最大起飛總重。

原始題號:0015400 題組:0 難易度:易

(A) 21. 操縱航空器時，機長負責使用

(A)最新的載重平衡數據。(B)製造廠商的載重平衡數據。(C)近期的載重平衡數據。

原始題號:0015401 題組:0 難易度:易

(A) 22. 哪些項次包括在航空器空重中？

(A)不可用之燃油與無法漏放之滑油。(B)只有機身，發動機，及選用裝備。(C)全油箱及引擎滑油容量。

原始題號:0015402 題組:0 難易度:中

(C) 23. 航空器總重超過最大許可載重110磅，若需漏放燃油(汽油)以使航空器重量在限制範圍內，應漏放多少燃油？

(A)15.7加侖。(B)16.2加侖。(C)18.4加侖。

原始題號:0015403 題組:0 難易度:中

- (C) 24. 若航空器總重超過最大許可載重90磅，且需漏放燃油(汽油)以使航空器重量在限制範圍內，應漏放多少燃油？
(A)10加侖。(B)12加侖。(C)15加侖。

原始題號:0015404 題組:0 難易度:中

- (B) 25. "燃油消耗前總重2,050磅，力距195,365磅-吋，燃油力臂96.9吋。燃油用掉20加侖後，直昇機重心為何？"
(A)CG前移1.0吋。(B)CG前移0.1吋。(C)CG後移1.0吋。

原始題號:0015405 題組:0 難易度:中

- (B) 26. 直昇機裝載時，其重心位於前重心許可限制內。則下列何者為真？
(A)如油箱位於主承桿之後位置，則燃油消耗後較安全。(B)如引擎失效，則迴旋控制量在自轉時，將不足以適當減速落地。(C)巡航期間如遭遇陣風使機頭仰起，向前之迴旋控制量將不足以使機頭回復。

原始題號:0015406 題組:0 難易度:中

- (C) 27. 直昇機裝載時，其重心位於接近後重心許可限制範圍內。則下列何者為真？
(A)自轉時，迴旋控制量將不足以適當減速落地。(B)如油箱位於主承桿之後位置，則燃油消耗後較不安全。(C)高速飛行期間如遭遇陣風使機頭仰起，向前之迴旋控制量將不足以使機頭回復。

原始題號:0015407 題組:0 難易度:中

- (A) 28. 計算載重平衡時，空重應包括機身、引擎、及其他安裝於機身的永久性裝備。空重亦應包括
(A)無法用到的燃油、液壓油、及無法漏放的滑油、或某些航空器的所有滑油。(B)所有可用燃油、液壓油，但不包括飛行員、乘客或行李重量。(C)所有可用燃油與滑油，但不包括無線電裝備或由原廠以外人員安裝之儀表。

原始題號:0015408 題組:0 難易度:中

- (C) 29. 航空器CG可由下列哪一種方式決定？
(A)總力臂除以總力距。(B)總力臂乘以總重。(C)總力距除以總重。

原始題號:0015409 題組:0 難易度:中

- (B) 30. 航空器CG可由_____方式決定。
(A)總力臂除以總力距。(B)總力距除以總重。(C)總力臂乘以總重。

原始題號:0015380 題組:1 難易度:中

- (A) 31. (Refer to Figures 1.) Upon landing, the front passenger (180 pounds) departs the airplane. A rear passenger (204 pounds) moves to the front passenger position. What effect does this have on the CG if the airplane weighted 2,690 pounds and the MOM/100 was 2,260 just prior to the passenger transfer?"(如圖A59_Fig1)
(A)The CG moves forward approximately 3 inches. (B)"The weight changes, but the CG is not affected." (C)The CG moves forward approximately 0.1 inch.

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

FRONT SEATS ARM 85		REAR SEATS ARM 121	
Weight	Moment 100	Weight	Moment 100
120	102	120	145
130	110	130	157
140	119	140	169
150	128	150	182
160	136	160	194
170	144	170	206
180	153	180	218
190	162	190	230
200	170	200	242

USABLE FUEL

MAIN WING TANKS ARM 75			
Gallons	Weight	Moment 100	
5	30	22	
10	60	45	
15	90	68	
20	120	90	
25	150	112	
30	180	135	
35	210	158	
40	240	180	
44	264	198	

AUXILIARY WING TANKS ARM 84

Gallons	Weight	Moment 100	
20	120	171	
22	132	183	
24	144	195	
26	156	207	
28	168	219	
30	180	231	
32	192	243	
34	204	255	
36	216	267	
38	228	279	
40	240	291	
42	252	303	
44	264	315	
46	276	327	
48	288	339	
50	300	351	
52	312	363	
54	324	375	
56	336	387	
58	348	399	
60	360	411	
62	372	423	
64	384	435	
66	396	447	
68	408	459	
70	420	471	
72	432	483	
74	444	495	
76	456	507	
78	468	519	
80	480	531	
82	492	543	
84	504	555	
86	516	567	
88	528	579	
90	540	591	
92	552	603	
94	564	615	
96	576	627	
98	588	639	
100	600	651	
102	612	663	
104	624	675	
106	636	687	
108	648	699	
110	660	711	
112	672	723	
114	684	735	
116	696	747	
118	708	759	
120	720	771	
122	732	783	
124	744	795	
126	756	807	
128	768	819	
130	780	831	
132	792	843	
134	804	855	
136	816	867	
138	828	879	
140	840	891	
142	852	903	
144	864	915	
146	876	927	
148	888	939	
150	900	951	
152	912	963	
154	924	975	
156	936	987	
158	948	999	
160	960	1011	
162	972	1023	
164	984	1035	
166	996	1047	
168	1008	1059	
170	1020	1071	
172	1032	1083	
174	1044	1095	
176	1056	1107	
178	1068	1119	
180	1080	1131	
182	1092	1143	
184	1104	1155	
186	1116	1167	
188	1128	1179	
190	1140	1191	
192	1152	1203	
194	1164	1215	
196	1176	1227	
198	1188	1239	
200	1200	1251	
202	1212	1263	
204	1224	1275	
206	1236	1287	
208	1248	1299	
210	1260	1311	
212	1272	1323	
214	1284	1335	
216	1296	1347	
218	1308	1359	
220	1320	1371	
222	1332	1383	
224	1344	1395	
226	1356	1407	
228	1368	1419	
230	1380	1431	
232	1392	1443	
234	1404	1455	
236	1416	1467	
238	1428	1479	
240	1440	1491	
242	1452	1503	
244	1464	1515	
246	1476	1527	
248	1488	1539	
250	1500	1551	
252	1512	1563	
254	1524	1575	
256	1536	1587	
258	1548	1599	
260	1560	1611	
262	1572	1623	
264	1584	1635	
266	1596	1647	
268	1608	1659	
270	1620	1671	
272	1632	1683	
274	1644	1695	
276	1656	1707	
278	1668	1719	
280	1680	1731	
282	1692	1743	
284	1704	1755	
286	1716	1767	
288	1728	1779	
290	1740	1791	
292	1752	1803	
294	1764	1815	
296	1776	1827	
298	1788	1839	
300	1800	1851	
302	1812	1863	
304	1824	1875	
306	1836	1887	
308	1848	1899	
310	1860	1911	
312	1872	1923	
314	1884	1935	
316	1896	1947	
318	1908	1959	
320	1920	1971	
322	1932	1983	
324	1944	1995	
326	1956	2007	
328	1968	2019	
330	1980	2031	
332	1992	2043	
334	2004	2055	
336	2016	2067	
338	2028	2079	
340	2040	2091	
342	2052	2103	
344	2064	2115	
346	2076	2127	
348	2088	2139	
350	2100	2151	
352	2112	2163	
354	2124	2175	
356	2136	2187	
358	2148	2199	
360	2160	2211	
362	2172	2223	
364	2184	2235	
366	2196	2247	
368	2208	2259	
370	2220	2271	
372	2232	2283	
374	2244	2295	
376	2256	2307	
378	2268	2319	
380	2280	2331	
382	2292	2343	
384	2304	2355	
386	2316	2367	
388	2328	2379	
390	2340	2391	
392	2352	2403	
394	2364	2415	
396	2376	2427	
398	2388	2439	
400	2400	2451	
402	2412	2463	
404	2424	2475	
406	2436	2487	
408	2448	2499	
410	2460	2511	
412	2472	2523	
414	2484	2535	
416	2496	2547	
418	2508	2559	
420	2520	2571	
422	2532	2583	
424	2544	2595	
426	2556	2607	
428	2568	2619	
430	2580	2631	
432	2592	2643	
434	2604	2655	
436	2616	2667	
438	2628	2679	
440	2640	2691	
442	2652	2703	
444	2664	2715	
446	2676	2727	
448	2688	2739	
450	2700	2751	
452	2712	2763	
454	2724	2775	
456	2736	2787	
458	2748	2799	
460	2760	2811	
462	2772	2823	
464	2784	2835	
466	2796	2847	
468	2808	2859	
470	2820	2871	
472	2832	2883	
474	2844	2895	
476	2856	2907	
478	2868	2919	

FIGURE 33—Airplane Weight and Balance Tables.

原始題號:0015381 題組:2 難易度:中

- (B) 32. (Refer to Figures 1.) Which action can adjust the weight to maximum gross weight and the CG within limits for takeoff? Front seat occupants-425 lb, Rear seat occupants-300 lb, Fuel main tanks-44 gal"(如圖A59_Fig1)
- (A)Drain 12 gallons of fuel. (B)Drain 9 gallons of fuel. (C)Transfer 12 gallons of fuel from the main tanks to the auxiliary tanks.

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS				USABLE FUEL			
FRONT SEATS ARM 85		REAR SEATS ARM 121		MAIN WING TANKS ARM 75			
Weight	Moment 100	Weight	Moment 100	Gallons	Weight	Moment 100	
120	102	120	145	5	30	22	
130	110	130	157	10	60	45	
140	119	140	169	15	90	68	
150	128	150	182	20	120	90	
160	136	160	194	25	150	112	
170	144	170	206	30	180	135	
180	153	180	218	35	210	158	
190	162	190	230	40	240	180	
200	170	200	242	44	264	198	

BAGGAGE OR 8TH SEAT OCCUPANT ARM 180

Weight	Moment 100	Gallons	Weight	Moment 100			
10	14	5	30	28			
20	28	10	60	56			
30	42	15	90	85			
40	56	19	114	107			
50	70	NOL					
60	84						
70	98						
80	112						
90	126						
Gallons	Weight	Moment 100					
10	19	5					

*Maximum useful load is 2000 lbs.

Empty Weight - 2015

WOM - 1000 / 1554

WOMENT LIMITS IN WEIGHT

WEIGHT LIMITS ARE BASED ON THE FOLLOWING WEIGHT AND CENTER OF GRAVITY LIMIT DATA (SEE FIG. 10-1)			
WEIGHT	FORWARD CG LIMIT	AFT CG LIMIT	
2000 TO 2500 LBS	80.1	84.7	
2500 TO 2750 LBS	81.0	85.7	
2750 TO 2950 LBS	77.0	85.7	

MOMENT LIMITS BY WEIGHT (Continued)

Weight	Minimum Moment 100	Maximum Moment 100	Weight	Minimum Moment 100	Maximum Moment 100
2100	1617	1800	2600	2037	2224
2110	1622	1810	2610	2048	2236
2120	1627	1820	2620	2059	2247
2130	1632	1830	2630	2070	2259
2140	1638	1843	2640	2080	2269
2150	1643	1853	2650	2091	2280
2160	1648	1863	2660	2102	2291
2170	1653	1873	2670	2112	2301
2180	1658	1883	2680	2123	2311
2190	1663	1893	2690	2133	2321
2200	1668	1897	2700	2144	2331
2210	1673	1908	2710	2154	2341
2220	1678	1918	2720	2164	2351
2230	1683	1928	2730	2175	2361
2240	1688	1938	2740	2185	2371
2250	1693	1948	2750	2195	2381
2260	1698	1958	2760	2205	2391
2270	1703	1968	2770	2215	2401
2280	1708	1978	2780	2225	2411
2290	1713	1988	2790	2235	2421
2300	1718	1998	2800	2245	2431
2310	1723	2008	2810	2255	2441
2320	1728	2018	2820	2265	2451
2330	1733	2028	2830	2275	2461
2340	1738	2038	2840	2285	2471
2350	1743	2048	2850	2295	2481
2360	1748	2058	2860	2305	2491
2370	1753	2068	2870	2315	2501
2380	1758	2078	2880	2325	2511
2390	1763	2088	2890	2335	2521
2400	1768	2098	2900	2345	2531
2410	1773	2108	2910	2355	2541
2420	1778	2118	2920	2365	2551
2430	1783	2128	2930	2375	2561
2440	1788	2138	2940	2385	2571
2450	1793	2148	2950	2395	2581
2460	1798	2158	2960	2405	2591
2470	1803	2168	2970	2415	2601
2480	1808	2178	2980	2425	2611
2490	1813	2188	2990	2435	2621
2500	1818	2198	3000	2445	2631
2510	1823	2208			
2520	1828	2218			
2530	1833	2228			
2540	1838	2238			
2550	1843	2248			
2560	1848	2258			
2570	1853	2268			
2580	1858	2278			
2590	1863	2288			
2600	1868	2298			

Page 35—Airframe Weights and Balance Tables

FIGURE 33—Airplane Weight and Balance Tables.

原始題號:0015382 題組:3 難易度:中

- (A) 33. (Refer to Figures 1.) What effect does a 35-gallon fuel burn (main tanks) have on the weight and balance if the airplane weighted 2,890 pounds and the MOM/100 was 2,452 at takeoff?"(如圖A59_Fig1)
- (A)Weight is reduced by 210 pounds and the CG is aft of limits. (B)Weight is reduced by 210 pounds and the CG is unaffected. (C)"Weight is reduced by 2,680 pounds and the CG moves forward."

題目圖：

OCCUPANTS				USABLE FUEL		
FRONT SEATS ARM 85		REAR SEATS ARM 121		MAIN WING TANKS ARM 75		
Weight	Moment 100	Weight	Moment 100	Gallons	Weight	Moment 100
120	102	120	145	5	30	22
130	110	130	157	10	60	45
140	119	140	169	15	90	68
150	128	150	182	20	120	90
160	136	160	194	25	150	112
170	144	170	206	30	180	135
180	153	180	218	35	210	158
190	162	190	230	40	240	180
200	170	200	242	44	264	198

Gallons	Weight	Moment 100
5	30	28
10	60	56
15	90	85
19	114	107

Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378

WEIGHT CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
2900 lb (baseline) or landing	82.1	84.7
2900 lb or less	77.5	85.7
2475 lb or less	77.0	85.7

FIGURE 33—Airplane Weight and Balance Tables.

Weight	Minimum Moment 100	Maximum Moment 100	Weight	Minimum Moment 100	Maximum Moment 100
2100	1617	1800	2600	2037	2224
2110	1625	1809	2610	2046	2232
2120	1632	1817	2620	2054	2239
2130	1640	1825	2630	2062	2247
2140	1648	1834	2640	2070	2255
2150	1656	1843	2650	2078	2263
2160	1663	1851	2660	2086	2271
2170	1671	1860	2670	2094	2279
2180	1679	1868	2680	2102	2287
2190	1688	1877	2690	2110	2295
2200	1696	1885	2700	2118	2303
2210	1702	1894	2710	2126	2311
2220	1709	1903	2720	2134	2319
2230	1717	1911	2730	2142	2327
2240	1725	1920	2740	2150	2335
2250	1733	1928	2750	2158	2343
2260	1740	1937	2760	2166	2351
2270	1748	1945	2770	2174	2359
2280	1756	1954	2780	2182	2367
2290	1763	1963	2790	2190	2375
2300	1771	1971	2800	2198	2383
2310	1779	1980	2810	2206	2391
2320	1786	1988	2820	2214	2399
2330	1794	1997	2830	2222	2407
2340	1802	2005	2840	2230	2415
2350	1810	2014	2850	2238	2423
2360	1817	2023	2860	2246	2431
2370	1825	2032	2870	2254	2439
2380	1833	2040	2880	2262	2447
2390	1841	2049	2890	2270	2455
2400	1849	2057	2900	2278	2463
2410	1856	2065	2910	2286	2471
2420	1863	2074	2920	2294	2479
2430	1871	2083	2930	2302	2487
2440	1879	2091	2940	2310	2495
2450	1887	2100	2950	2318	2503
2460	1894	2108	2960	2326	2511
2470	1902	2117	2970	2334	2519
2480	1911	2125	2980	2342	2527
2490	1919	2134	2990	2350	2535
2500	1927	2143	3000	2358	2543
2510	1932	2151	3010	2366	2551
2520	1939	2159	3020	2374	2559
2530	1947	2168	3030	2382	2567
2540	1954	2176	3040	2390	2575
2550	1961	2184	3050	2398	2583
2560	1969	2192	3060	2406	2591
2570	1976	2200	3070	2414	2599
2580	1984	2209	3080	2422	2607
2590	1992	2216	3090	2430	2615

FIGURE 34—Airplane Weight and Balance Tables.

原始題號:0015383 題組:4 難易度:中

- (B) 34. (Refer to Figures 1.) With the airplane loaded as follows what action can be taken to balance the airplane? Front seat occupants-411 lb, Rear seat occupants-100 lb, Fuel main tanks-44 gal"(如圖A59_Fig1)
- (A)Fill the auxiliary wing tanks. (B)Add a 100-pound weight to the baggage compartment. (C)Transfer 10 gallons of fuel from the main tanks to the auxiliary tanks.

題目圖：

OCCUPANTS				USABLE FUEL		
FRONT SEATS ARM 85		REAR SEATS ARM 121		MAIN WING TANKS ARM 75		
Weight	Moment 100	Weight	Moment 100	Gallons	Weight	Moment 100
120	102	120	145	5	30	22
130	110	130	157	10	60	45
140	119	140	169	15	90	68
150	128	150	182	20	120	90
160	136	160	194	25	150	112
170	144	170	206	30	180	135
180	153	180	218	35	210	158
190	162	190	230	40	240	180
200	170	200	242	44	264	198

Gallons	Weight	Moment 100
5	30	28
10	60	56
15	90	85
19	114	107

Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378

WEIGHT CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
2900 lb (baseline) or landing	82.1	84.7
2900 lb or less	77.5	85.7
2475 lb or less	77.0	85.7

FIGURE 33—Airplane Weight and Balance Tables.

Weight	Minimum Moment 100	Maximum Moment 100	Weight	Minimum Moment 100	Maximum Moment 100
2100	1617	1800	2600	2037	2224
2110	1625	1809	2610	2046	2232
2120	1632	1817	2620	2054	2239
2130	1640	1825	2630	2062	2247
2140	1648	1834	2640	2070	2255
2150	1656	1843	2650	2078	2263
2160	1663	1851	2660	2086	2271
2170	1671	1860	2670	2094	2279
2180	1679	1868	2680	2102	2287
2190	1688	1877	2690	2110	2295
2200	1696	1885	2700	2118	2303
2210	1702	1894	2710	2126	2311
2220	1710	1903	2720	2134	2319
2230	1717	1911	2730	2142	2327
2240	1725	1920	2740	2150	2335
2250	1733	1928	2750	2158	2343
2260	1740	1937	2760	2166	2351
2270	1748	1945	2770	2174	2359
2280	1756	1954	2780	2182	2367
2290	1763	1963	2790	2190	2375
2300	1771	1971	2800	2198	2383
2310	1779	1980	2810	2206	2391
2320	1786	1988	2820	2214	2399
2330	1794	1997	2830	2222	2407
2340	1802	2005	2840	2230	2415
2350	1810	2014	2850	2238	2423
2360	1817	2023	2860	2246	2431
2370	1825	2032	2870	2254	2439
2380	1833	2040	2880	2262	2447
2390	1841	2049	2890	2270	2455
2400	1849	2057	2900	2278	2463
2410	1856	2065	2910	2286	2471
2420	1863	2074	2920	2294	2479
2430	1871	2083	2930	2302	2487
2440	1879	2091	2940	2310	2495
2450	1887	2100	2950	2318	2503
2460	1894	2108	2960	2326	2511
2470	1902	2117	2970	2334	2519
2480	1911	2125	2980	2342	2527
2490	1919	2134	2990	2350	2535
2500	1927	2143	3000	2358	2543
2510	1932	2151	3010	2366	2551
2520	1939	2159	3020	2374	2559
2530	1947	2168	3030	2382	2567
2540	1954	2176	3040	2390	2575
2550	1961	2184	3050	2398	2583
2560	1969	2192	3060	2406	2591
2570	1976	2200	3070	2414	2599
2580	1984	2209	3080	2422	2607
2590	1992	2216	3090	2430	2615

FIGURE 34—Airplane Weight and Balance Tables.

原始題號:0015384 題組:5 難易度:中

- (B) 35. (Refer to Figures 1.) Determine if the airplane weight and balance is within limits. Front seat occupants-340 lb, Rear seat occupants-295 lb, Fuel (main wing tanks)-44 gal, Baggage-56 lb"(如圖A59_Fig1)
- (A)"20 pounds overweight, CG aft of aft limits." (B)"20 pounds overweight, CG within limits." (C)"20 pounds overweight, CG forward of forward limits."

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

FRONT SEATS AFM 65		REAR SEATS AFM 121	
Weight	Moment 100	Weight	Moment 100
120	102	120	145
130	110	130	157
140	118	140	169
150	128	150	181
160	136	160	194
170	144	170	206
180	152	180	218
190	162	190	230
200	170	200	242

USABLE FUEL

MAIN WING TANKS AFM 75			
Gallons	Weight	Moment	100
5	30	22	
15	60	45	
20	120	90	
30	180	135	
35	210	158	
40	240	180	
50	300	225	

BAGGAGE ON SEAT BEHIND AFM 100

Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
80	112
90	126
100	140
120	168
140	196
160	224
180	252
200	280
220	308
240	336
260	364
270	378
280	392

AUXILIARY MAIN TANKS AFM 64

Gallons	Weight	Moment	100
5	40	28	
10	80	56	
15	90	85	
19	114	107	
*OL			
Gallons	Weight	Moment	100
10	19	5	

*Crew Weight (See Crew Weight)

Group Weight

2004 1100 - 1054

2004 1100 - 1054

2004 1100 - 1054

2004 1100 - 1054

2004 1100 - 1054

2004 1100 - 1054

2004 1100 - 1054

2004 1100 - 1054

2004 1100 - 1054

2004 1100 - 1054

FIGURE 33.—Airplane Weight and Balance Tables

Minimum Moment 100		Maximum Moment 100		Minimum Moment 150		Maximum Moment 150	
Weight				Weight			
2100	1617	1800	2050	2050	2037	2224	2484
2110	1622	1808	2058	2058	2044	2232	2492
2120	1628	1817	2067	2067	2052	2240	2500
2130	1634	1825	2075	2075	2060	2248	2508
2140	1640	1834	2084	2084	2068	2256	2516
2150	1646	1842	2092	2092	2076	2264	2524
2160	1653	1851	2101	2101	2084	2272	2532
2170	1659	1859	2110	2110	2092	2280	2540
2180	1666	1868	2118	2118	2100	2288	2548
2190	1672	1876	2127	2127	2108	2296	2556
2200	1678	1884	2135	2135	2116	2304	2564
2210	1684	1892	2144	2144	2124	2312	2572
2220	1690	1900	2152	2152	2132	2320	2580
2230	1697	1908	2161	2161	2140	2328	2588
2240	1703	1916	2169	2169	2148	2336	2596
2250	1710	1925	2178	2178	2156	2344	2604
2260	1716	1933	2187	2187	2164	2352	2612
2270	1723	1941	2195	2195	2172	2360	2620
2280	1729	1949	2204	2204	2180	2368	2628
2290	1735	1957	2212	2212	2188	2376	2636
2300	1742	1965	2221	2221	2196	2384	2644
2310	1748	1973	2229	2229	2204	2392	2652
2320	1754	1981	2238	2238	2212	2400	2660
2330	1760	1989	2246	2246	2220	2408	2668
2340	1767	1997	2255	2255	2228	2416	2676
2350	1773	2005	2263	2263	2236	2424	2684
2360	1779	2013	2272	2272	2244	2432	2692
2370	1785	2021	2280	2280	2252	2440	2700
2380	1791	2029	2289	2289	2260	2448	2708
2390	1797	2037	2297	2297	2268	2456	2716
2400	1803	2045	2306	2306	2276	2464	2724
2410	1809	2053	2314	2314	2284	2472	2732
2420	1815	2061	2323	2323	2292	2480	2740
2430	1821	2069	2331	2331	2300	2488	2748
2440	1827	2077	2340	2340	2308	2496	2756
2450	1833	2085	2348	2348	2316	2504	2764
2460	1839	2093	2357	2357	2324	2512	2772
2470	1845	2101	2365	2365	2332	2520	2780
2480	1851	2109	2374	2374	2340	2528	2788
2490	1857	2117	2382	2382	2348	2536	2796
2500	1863	2125	2391	2391	2356	2544	2804
2510	1869	2133	2400	2400	2364	2552	2812
2520	1875	2141	2408	2408	2372	2560	2820
2530	1881	2149	2417	2417	2380	2568	2828
2540	1887	2157	2425	2425	2388	2576	2836
2550	1893	2165	2434	2434	2396	2584	2844
2560	1899	2173	2442	2442	2404	2592	2852
2570	1905	2181	2451	2451	2412	2600	2860
2580	1911	2189	2460	2460	2420	2608	2868
2590	1917	2197	2468	2468	2428	2616	2876

FIGURE 34.—Airplane Weight and Balance Tables

原始題號:0015385 題組:6 難易度:中

(A) 36. (Refer to Figures 1.) What is the maximum amount of baggage that can be carried when the airplane is loaded as follows? Front seat occupants: 387 lb, Rear seat occupants: 293 lb, Fuel: 35 gal" (如圖A59_Fig1)

(A) 45 pounds. (B) 63 pounds. (C) 220 pounds.

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

FRONT SEATS AFM 65		REAR SEATS AFM 121		
Weight	Moment 100	Weight	Weight	Moment 100
120	102	120	120	145
130	110	130	130	157
140	120	140	140	169
150	128	150	150	181
160	136	160	160	193
170	144	170	170	206
180	153	180	180	218
190	162	190	230	230
200	170	200	240	242

EQUIPMENT

MAIN WING TASKS AFM 75			
Calculator	Weight	Weight	Moment 100
	5	30	22
	10	60	45
	15	90	68
	20	120	90
	25	150	112
	30	180	135
	35	210	158
	40	240	180
	44	264	198

BAGGAGE OR OTHER SEAT OCCUPANT AFM 140

Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378
280	392
290	406
300	420

AUXILIARY WING TASKS

Calculator	Weight	Moment 100
	5	20
	10	40
	15	60
	18	85
	18	114
	18	127
*OL		
Quartermaster	Weight	Moment 100
	10	19
	5	5

*OL = Outside Long Weight - 2015

CONVENTION	FORWARD CG LIMIT	AFT CG LIMIT
200 to 300lb (90 to 136 kg)	82.1	84.7
140 to 190 lb (63 to 86 kg)	77.5	85.7
245 to 275 lb (111 to 125 kg)	82.1	85.7

Moment limits are based on the following weight and center of gravity limits (all limits forward of center of gravity).

FIG. 33.—Airlane Weight and Balance Tables

MOMENT LIMITS vs WEIGHT (Continued)					
Minimum Moment			Maximum Moment		
Weight	100	150	Weight	100	150
2100	1617	1863	2600	2027	2224
2110	1625	1868	2610	2043	2232
2120	1632	1874	2620	2059	2239
2130	1640	1879	2630	2075	2247
2140	1648	1885	2640	2090	2255
2150	1656	1891	2650	2106	2263
2160	1664	1897	2660	2121	2271
2170	1671	1903	2670	2137	2279
2180	1679	1909	2680	2153	2287
2190	1686	1917	2690	2168	2295
2200	1694	1923	2700	2184	2303
2210	1702	1930	2710	2199	2311
2220	1709	1937	2720	2215	2319
2230	1717	1943	2730	2231	2327
2240	1725	1950	2740	2246	2335
2250	1733	1957	2750	2262	2343
2260	1740	1963	2760	2277	2351
2270	1748	1969	2770	2293	2359
2280	1756	1976	2780	2308	2367
2290	1764	1983	2790	2324	2375
2300	1771	1991	2800	2339	2383
2310	1779	1998	2810	2354	2391
2320	1786	2005	2820	2369	2399
2330	1794	2012	2830	2384	2407
2340	1801	2019	2840	2399	2415
2350	1809	2027	2850	2414	2423
2360	1816	2034	2860	2429	2431
2370	1824	2041	2870	2444	2439
2380	1831	2049	2880	2459	2447
2390	1839	2056	2890	2474	2455
2400	1846	2063	2900	2489	2463
2410	1854	2070	2910	2504	2471
2420	1862	2077	2920	2519	2479
2430	1870	2085	2930	2534	2487
2440	1878	2092	2940	2549	2495
2450	1886	2100	2950	2563	2503
2460	1894	2107			
2470	1902	2115			
2480	1910	2123			
2490	1918	2131			
2500	1926	2139			
2510	1934	2147			
2520	1942	2155			
2530	1950	2163			
2540	1958	2171			
2550	1966	2179			
2560	1974	2187			
2570	1982	2195			
2580	1990	2203			
2590	1998	2211			

026	2216
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Figure 24. A 7-3-year-old child with a 22q11.2 deletion syndrome.

原始題號:0015386 題組:7 難易度:中

(B) 37. (Refer to Figures 1.) Calculate the weight and balance and determine if the CG and the weight of the airplane are within limits. Front seat occupants-350 lb, Rear seat occupants-325 lb, Baggage-27 lb, Fuel-35 gal"(如圖A59_Fig1)

(A)"CG 81.7, out of limits forward." (B)"CG 83.4, within limits." (C)"CG 84.1, within limits."

題目圖：

[illegible]

FIGURE 33.—Airplane Weight and Balance Tables

Minimum Moment		Maximum Moment		Minimum Moment		Maximum Moment	
Weight	100	100	100	Weight	100	100	100
2100	1617	1800	2050	2037	2224		
2110	1625	1808	2058	2043	2231		
2120	1632	1817	2067	2050	2239		
2140	1648	1834	2080	2063	2255		
2150	1657	1843	2089	2070	2263		
2160	1663	1851	2096	2071	2271		
2170	1669	1859	2103	2077	2279		
2180	1676	1868	2110	2083	2287		
2190	1682	1877	2117	2089	2295		
2200	1688	1886	2125	2096	2303		
2210	1694	1895	2132	2104	2313		
2220	1700	1904	2140	2112	2321		
2230	1717	1911	2150	2127	2336		
2240	1725	1919	2158	2136	2345		
2250	1733	1929	2167	2145	2354		
2260	1741	1937	2175	2154	2363		
2270	1748	1945	2183	2163	2372		
2280	1756	1954	2192	2172	2381		
2290	1764	1962	2200	2181	2390		
2300	1771	1971	2209	2203	2374		
2310	1779	1980	2218	2212	2383		
2320	1786	1988	2227	2221	2392		
2330	1794	1997	2236	2230	2401		
2340	1802	2005	2245	2239	2410		
2350	1810	2014	2254	2248	2419		
2360	1817	2023	2263	2257	2428		
2370	1825	2031	2272	2266	2437		
2380	1833	2040	2281	2275	2446		
2390	1841	2048	2290	2284	2455		
2400	1848	2057	2299	2293	2462		
2410	1856	2065	2307	2302	2471		
2420	1864	2074	2316	2311	2479		
2430	1872	2081	2324	2320	2488		
2440	1880	2089	2333	2329	2497		
2450	1888	2098	2342	2338	2506		
2460	1896	2106	2350	2347	2515		
2470	1904	2115	2359	2356	2524		
2480	1912	2124	2368	2365	2533		
2490	1920	2133	2377	2374	2542		
2500	1928	2143	2386	2383	2551		
2510	1932	2151	2395	2392	2560		
2520	1936	2159	2404	2401	2569		
2530	1943	2168	2413	2410	2578		
2540	1949	2176	2422	2419	2587		
2550	1954	2184	2431	2428	2596		
2560	1960	2192	2440	2437	2605		
2570	1966	2200	2449	2446	2614		
2580	1971	2208	2458	2455	2623		
2590	1976	2216	2467	2464	2632		
2600	1981	2224	2476	2473	2641		

FIGURE 34.—Airplane Weight and Balance Tables

原始題號:0015387 題組:8 難易度:中

- (C) 38. (Refer to Figures 1.) Determine if the airplane weight and balance is within limits. Front seat occupants-415 lb, Rear seat occupants-110 lb, Fuel main tanks-44 gal, Fuel aux. tanks-19 gal, Baggage-32 lb" (如圖A59_Fig1)
- (A)"19 pounds overweight, CG within limits." (B)"19 pounds overweight, CG out of limits forward." (C)"Weight within limits, CG out of limits."

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

USABLE FUEL

FRONT SEATS ARM 85		REAR SEATS ARM 121	
Weight	Moment 100	Weight	Moment 100
120	102	120	145
130	110	130	157
140	119	140	169
150	128	150	182
160	136	160	194
170	144	170	206
180	153	180	218
190	162	190	230
200	170	200	242

MAIN WING TANKS ARM 75		
Gallons	Weight	Moment 100
5	30	22
10	60	45
15	90	68
20	120	90
25	150	112
30	180	135
35	210	158
40	240	180
44	264	198

BAGGAGE OR 5TH SEAT OCCUPANT
ARM 180

Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378

AUXILIARY WING TANKS
ARM 84

Gallons	Weight	Moment 100
5	30	28
10	60	56
15	90	85
19	114	107

*OIL

Quarts	Weight	Moment 100
10	19	5

Empty Weight - 2015

WOM / 100 - 1054

Moment limits are based on the following weight and center of gravity limit data (landing gear down)

WEIGHT	FORWARD	AFT CG LIMIT
CONDITION	CG LIMIT	
2000 lb (default)	82.1	84.7
or landing	77.5	85.7
2025 lb or less	77.0	85.7

FIGURE 33—Airplane Weight and Balance Tables

MOMENT LIMITS vs WEIGHT (Continued)									
Weight	Minimum Moment 100	Maximum Moment 100	Weight	Minimum Moment 100	Maximum Moment 100				
2100	1817	1820	2600	2637	2634				
2110	1825	1828	2610	2645	2642				
2120	1832	1835	2620	2653	2650				
2130	1840	1843	2630	2661	2658				
2140	1848	1851	2640	2669	2666				
2150	1856	1859	2650	2677	2674				
2160	1863	1866	2660	2685	2682				
2170	1871	1874	2670	2693	2690				
2180	1879	1882	2680	2701	2698				
2190	1886	1889	2690	2709	2706				
2200	1894	1897	2700	2717	2714				
2210	1902	1905	2710	2725	2722				
2220	1910	1913	2720	2733	2730				
2230	1918	1921	2730	2741	2738				
2240	1926	1929	2740	2749	2746				
2250	1934	1937	2750	2757	2754				
2260	1942	1945	2760	2765	2762				
2270	1950	1953	2770	2773	2770				
2280	1958	1961	2780	2781	2778				
2290	1966	1969	2790	2789	2786				
2300	1974	1977	2800	2797	2794				
2310	1982	1985	2810	2805	2802				
2320	1990	1993	2820	2813	2810				
2330	1998	2001	2830	2821	2818				
2340	2006	2009	2840	2829	2826				
2350	2014	2017	2850	2837	2834				
2360	2022	2025	2860	2845	2842				
2370	2030	2033	2870	2853	2850				
2380	2038	2041	2880	2861	2858				
2390	2046	2049	2890	2869	2866				
2400	2054	2057	2900	2877	2874				
2410	2062	2065	2910	2885	2882				
2420	2070	2073	2920	2893	2890				
2430	2078	2081	2930	2901	2898				
2440	2086	2089	2940	2909	2906				
2450	2094	2097	2950	2917	2914				
2460	2102	2105	2960	2925	2922				
2470	2110	2113	2970	2933	2930				
2480	2118	2121	2980	2941	2938				
2490	2126	2129	2990	2949	2946				
2500	2134	2137	3000	2957	2954				
2510	2142	2145	3010	2965	2962				
2520	2150	2153	3020	2973	2970				
2530	2158	2161	3030	2981	2978				
2540	2166	2169	3040	2989	2986				
2550	2174	2177	3050	2997	2994				
2560	2182	2185	3060	3005	3002				
2570	2190	2193	3070	3013	3010				
2580	2198	2201	3080	3021	3018				
2590	2206	2209	3090	3029	3026				
2600	2214	2217	3100	3037	3034				

FIGURE 34—Airplane Weight and Balance Tables

原始題號:0015388 題組:1 難易度:中

- (B) 39. (Refer to Figure 1) Determine the weight and balance of the helicopter. Empty weight: 1,495.0 LB, Moment: 151,593.0 LB-IN; Pilot and one passenger weight 350.0 LB, ARM: 64.0 IN; Fuel (40 gal usable): 96.0 IN." (如圖A59_Fig1)
- (A)"Over gross weight limit, but within CG limit." (B)Within gross weight limit and at the aft CG limit. (C)Over gross weight limit and exceeds the aft CG limit.

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

FRONT SEATS ARM 85		REAR SEATS ARM 121	
Weight	Moment 100	Weight	Moment 100
120	102	120	145
130	110	130	157
140	119	140	169
150	128	150	182
160	136	160	194
170	144	170	206
180	153	180	218
190	162	190	230
200	170	200	242

USABLE FUEL

MAIN WING TANKS ARM 75		
Gallons	Weight	Moment 100
5	30	22
10	60	45
15	90	68
20	120	90
25	150	112
30	180	135
35	210	158
40	240	180
44	264	198

BAGGAGE OR 5TH SEAT OCCUPANT ARM 180

Weight	Moment 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378
280	392

AUXILIARY WING TANKS ARM 84

Gallons	Weight	Moment 100
5	30	28
10	60	56
15	90	85
19	114	107
*OIL		
Quarts	Weight	Moment 100
10	19	5

*Based on a 150 Gallon Capacity

Empty Weight - 2015

WOMAR 100 - 1054

Moment limits are based on the following weight and center of gravity limit data (landing gear down)

WEIGHT CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
200 to 2450 lbs	82.1	94.7
14		
2525 to 2775	77.5	89.7
2475 to 2775	71.0	89.7

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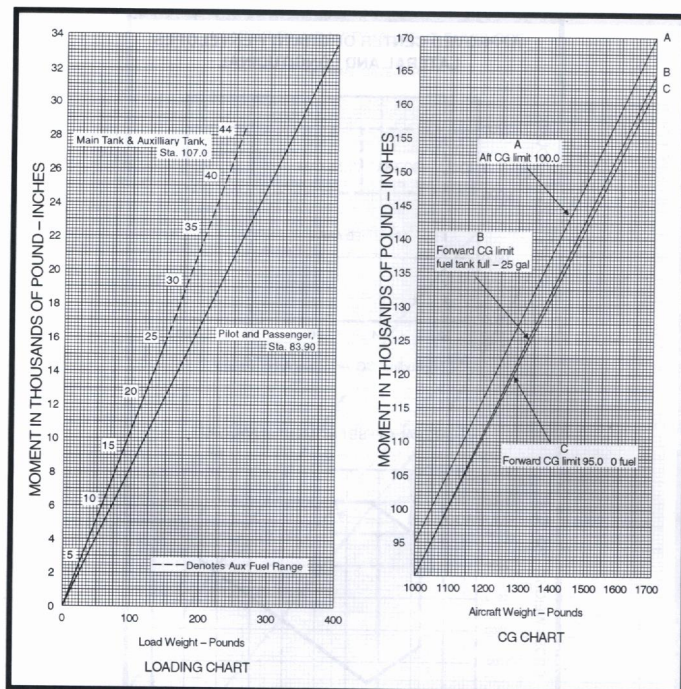


FIGURE 43.—Helicopter Weight and Balance Graphs.

原始題號:0015390 題組:2 難易度:中

- (B) 41. (Refer to Figure 3.) How is the CG of the helicopter affected when all of the auxiliary fuel is burned off? Gross weight prior to fuel burn-1,660 lb, Moment-159,898.5 "(如圖A59_Fig3)
 (A)CG moves aft 0.12 inch. (B)CG moves forward 0.78 inch. (C)CG moves forward 1.07 inches.

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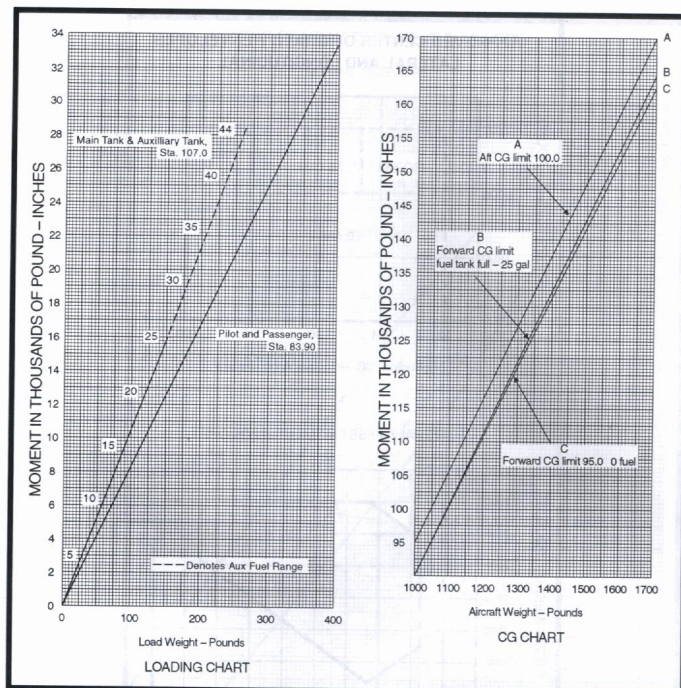


FIGURE 43.—Helicopter Weight and Balance Graphs.

原始題號:0015391 題組:3 難易度:中

- (B) 42. (Refer to Figure 3) Determine if the helicopter's CG is within limits. Empty weight(including oil): 1,025 LB, Moment: 102,705 LB-IN; Pilot and passenger weight: 345 LB; Fuel, 35 gal."(如圖A59_Fig3)
 (A)Out of limits forward. (B)Within limits. (C)Out of limits aft.

題目圖：

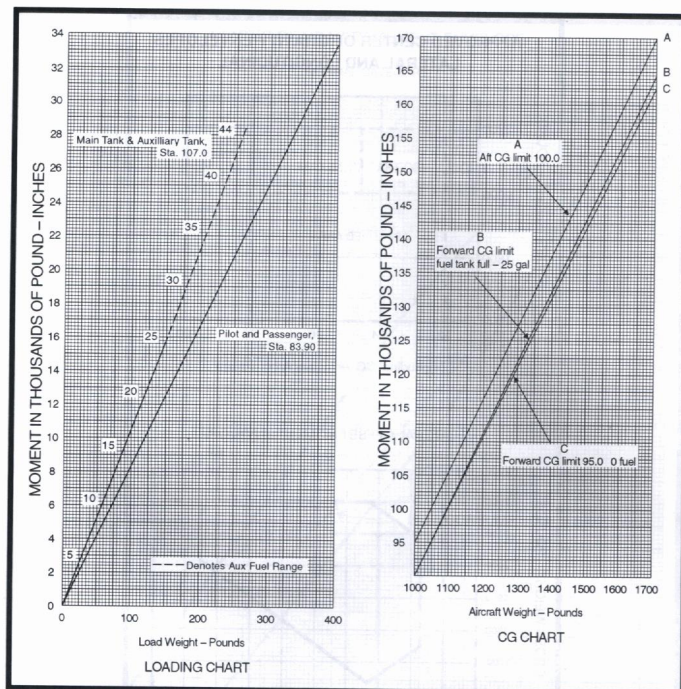


FIGURE 43.—Helicopter Weight and Balance Graphs.

原始題號:0015392 題組:1 難易度:中

- (C) 43. (Refer to Figure 4.) What action, if any, should be taken for lateral balance if the helicopter is loaded as follows? Gross weight-1,800 lb; Pilot-140 lb, 13.5 in. left of "0" MOM arm; Copilot-180 lb, 13.5 in. right of "0" MOM arm (如圖A59_Fig4)
- (A) Add 10 pounds weight to the pilot's side. (B) Decrease the gross weight 50 pounds. (C) No action is required.

題目圖：

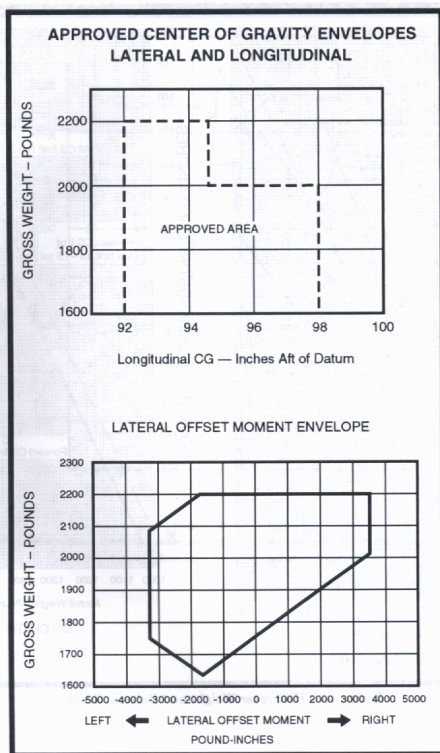


FIGURE 44.—Helicopter CG Envelopes.

原始題號:0015393 題組:2 難易度:中

- (A) 44. (Refer to Figure 4.) What action should be taken for lateral balance if the helicopter is loaded as follows? Gross weight-1,800 lb; Pilot-140 lb, 13.5 in. left of "0" MOM arm; Copilot-200 lb, 13.5 in. right of "0" MOM arm"(如圖A59_Fig4)
- (A)Add 50 pounds weight to the pilot's side. (B)Decrease the gross weight 50 pounds. (C)No action is required.

題目圖：

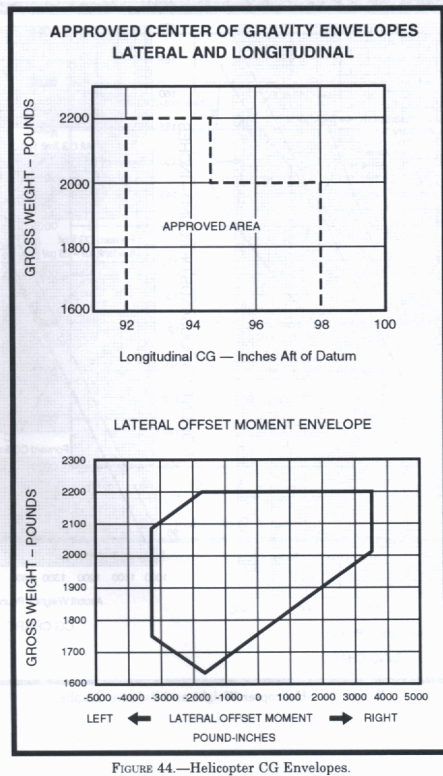


FIGURE 44.—Helicopter CG Envelopes.

原始題號:0015394 題組:3 難易度:中

- (C) 45. (Refer to Figure 4) Calculate the weight and balance of the helicopter, and determine if the CG is within limits. Empty weight: 1,495.0 LB, ARM: 101.4 IN, Moment: 151,5.93 LB-IN; Oil, 8 qt: 100.5 IN; Fuel, 40 gal: 96.0 IN; Pilot weight: 160.0 LB, ARM: 64.0 IN. "(如圖A59_Fig4)
- (A)"CG 90.48 inches, out of limits forward." (B)"CG 95.32 inches, within limits." (C)"CG 97.58 inches, within limits."

題目圖：

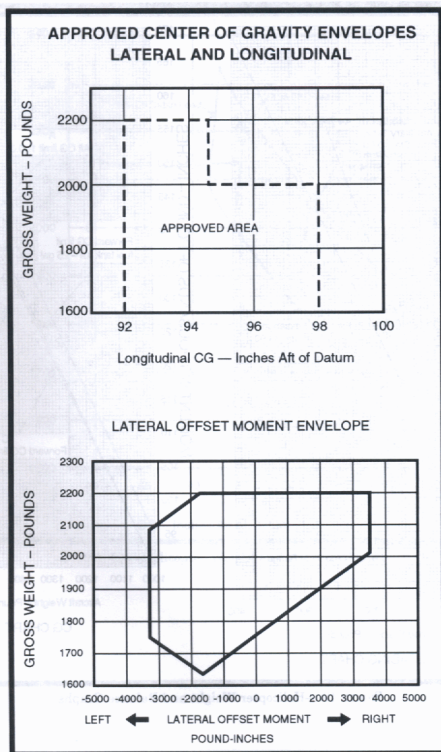


FIGURE 44.—Helicopter CG Envelopes.

原始題號:0015395 題組:4 難易度:中

- (B) 46. (Refer to Figure 4) Determine if the helicopter's CG is within limits.
 Empty weight: 1,495.0 LB, ARM: 101.4 IN, Moment: 151,5.93 LB-IN; Oil, 8 qt: 100.5 IN; Fuel, 40 gal: 96.0 IN; Pilot and copilot weight: 300.0 LB, ARM: 64.0 IN .
 "(如圖A59_Fig4)
 (A)"CG 95.2 inches, within limits." (B)"CG 95.3 inches, weight and CG out of limits." (C)"CG 95.4 inches, within limits."

題目圖：

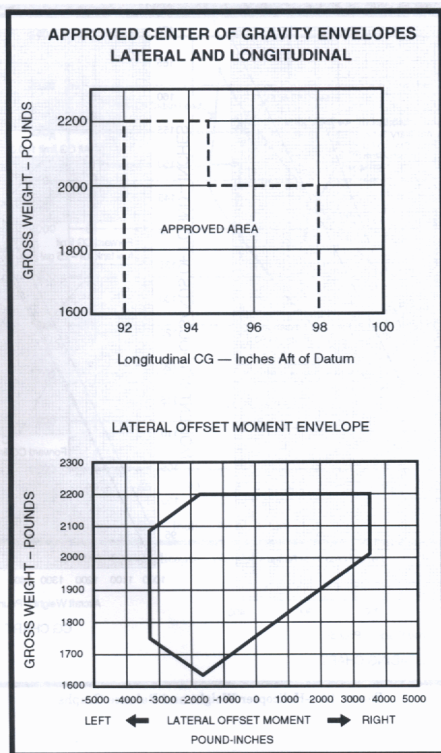
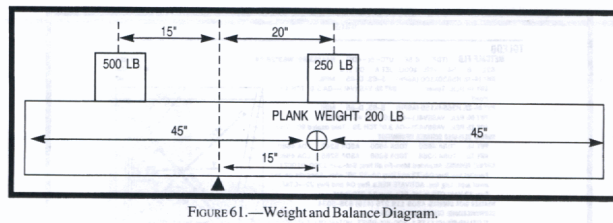


FIGURE 44.—Helicopter CG Envelopes.

原始題號:0015396 題組:1 難易度:中

- (A) 47. (Refer to Figure 6.) How should the 500-pound weight be shifted to balance the plank on the fulcrum?(如圖A59_Fig6)
 (A)1 inch to the left. (B)1 inch to the right. (C)4.5 inches to the right.

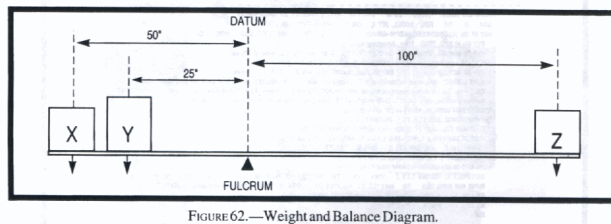
題目圖：



原始題號:0015397 題組:1 難易度:中

- (C) 48. (Refer to Figure 7.) If 50 pounds of weight is located at point X and 100 pounds at point Z, how much weight must be located at point Y to balance the plank?"(如圖A59_Fig7)
 (A)30 pounds. (B)50pounds. (C)300 pounds.

題目圖：



原始題號:0015398 題組:0 難易度:易

- (A) 49. Problems caused by overloading an aircraft include
 (A)"reduced climb rate, excessive structural loads, and shortened cruising range." (B)"increased service ceiling, increased angle of climb, and increased cruising speed." (C)"slower takeoff speed, increased maneuverability, and shorter takeoff roll."

原始題號:0015399 題組:0 難易度:易

- (A) 50. "Most aircraft are so designed that if all seats are occupied, all baggage allowed by the baggage compartment structure is carried, and all the fuel tanks are full, the aircraft will be"
 (A)grossly overloaded. (B)under maximum gross weight. (C)at maximum gross weight.

原始題號:0015400 題組:0 難易度:易

- (A) 51. "When operating an aircraft, the pilot-in-command is responsible for using"
 (A)the most current weight and balance data. (B)weight and balance data from the factory. (C)recent weight and balance data.

原始題號:0015401 題組:0 難易度:易

- (A) 52. Which items are included in the empty weight of an aircraft?
 (A)Unusable fuel and undrainable oil. (B)"Only the airframe, powerplant, and optional equipment." (C)Full fuel tanks and engine oil to capacity.

原始題號:0015402 題組:0 難易度:中

- (C) 53. "An aircraft is loaded 110 pounds over maximum certificated gross weight. If fuel (gasoline) is drained to bring the aircraft weight within limits, how much fuel should be drained?"
(A)15.7 gallons. (B)16.2 gallons. (C)18.4 gallons.

原始題號:0015403 題組:0 難易度:中

- (C) 54. "If an aircraft is loaded 90 pounds over maximum certificated gross weight and fuel (gasoline) is drained to bring the aircraft weight within limits, how much fuel should be drained?"
(A)10 gallons. (B)12 gallons. (C)15 gallons.

原始題號:0015404 題組:0 難易度:中

- (B) 55. "How is the CG of the helicopter affected after a fuel burn of 20 gallons? Gross weight prior to fuel burn-2,050 lb, Moment-195,365 lb-in, Fuel arm-96.9 in"
(A)CG shifts forward 1.0 inch. (B)CG shifts forward 0.1 inch. (C)CG shifts aft 1.0 inch.

原始題號:0015405 題組:0 難易度:中

- (B) 56. A helicopter is loaded in such a manner that the CG is located forward of the allowable CG limit. Which is true about this situation?
(A)This condition would become less hazardous as fuel is consumed if the fuel tank is located aft of the rotor mast. (B)"In case of engine failure and the resulting autorotation, sufficient cyclic control may not be available to flare properly to land." (C)"Should the aircraft pitchup during cruise flight due to gusty winds, there may not be enough forward cyclic control available to lower the nose."

原始題號:0015406 題組:0 難易度:中

- (C) 57. A helicopter is loaded in such a manner that the CG is located aft of the allowable CG limit. Which is true about this situation?
(A)"In case of an autorotation, sufficient aft cyclic control may not be available to flare properly." (B)"This condition would become more hazardous as fuel is consumed, if the main fuel tank is located aft of the rotor mast." (C)"If the helicopter should pitchup due to gusty winds during high-speed flight, there may not be sufficient forward cyclic control available to lower the nose."

原始題號:0015407 題組:0 難易度:中

- (A) 58. "When computing weight and balance, the empty weight include the weight of the airframe, engine(s), and all items of operating equipment permanently installed. Empty weight also includes"
(A)"the unusable fuel, hydraulic fluid, and undrainable oil or, in some aircraft, all of the oil." (B)"all usable fuel, hydraulic fluid, but does not include the weight of pilot, passengers, or baggage." (C)"all usable fuel and oil, but does not include any radio equipment or instruments that were installed by someone other than the manufacturer."

原始題號:0015408 題組:0 難易度:中

- (C) 59. The CG of an aircraft can be determined by which of the following methods?
(A)Dividing total arms by total moments. (B)Multiplying total arms by total weight. (C)Dividing total moments by total weight.

原始題號:0015409 題組:0 難易度:中

- (B) 60. The CG of an aircraft can be determined by
(A)dividing total arms by total moments. (B)dividing total moments by total weight. (C)multiplying total arms by total weight.