Weight and Balance Estimation for N840NK
By Peter Jumper
6/24/09

Assumptions:

1. Aircraft weight and balance data used is from a copy of what is believed to be the current weight and balance figures for N840NK copied from the airplane's POH, done by Byerly Avionics dated 2/27/06:
    a. Empty Weight = 7323.7
    b. Empty Weight CG = 214.52
    c. Moment = 1571077.05
2. Passenger and cargo weights were provided by the NTSB:
    a. Left front seat occupant = 234 lbs
    b. Right front seat occupant = 317 lbs
    c. Left forward-facing rear bench occupant = 210 lbs
    d. Cargo in cargo area = 77 lbs
        i. 15 lbs – maintenance records
        ii. 52 lbs – two portable power packs at 26 lbs each
        iii. 10 lbs – personal effects
3. Fuel at takeoff airport is assumed to be full fuel (474 gal).
4. Weight of fuel per gallon used is 6.7 lbs per gallon of Jet A fuel. Fuel moments are taken from or interpolated from Twin Commander fuel charts.
5. Twin Commander operating rule of thumb is to use 50 lbs of fuel for start, taxi, takeoff.
6. Our pilots' experiences suggest that it generally takes 350-400 lbs of fuel to fly from KAPA to 2V5, including an approach. I have used 400 lbs in this calculation.
    a. Beyond a normal approach and landing, each additional 10 minutes of flight at lower altitudes would consume anywhere from 60-100 lbs of fuel depending on power settings.
7. Attached are pages from another 840 model Commander showing the related weight and balance information. These should be the same as in N840NK's POH.
8. Our information obtained from the Type Certificate Data Sheet, TCDS 2A4, shows the following info on this model Commander:

    <u>C.G. Range Forward</u>
    210.51 inches aft of datum (20.06% MAC) at 10,325 lbs.
    204.70 inches aft of datum (12.03% MAC) at 7,500 lbs.
    204.70 inches aft of datum (12.03% MAC) at 6,798 lbs.
    215.10 inches aft of datum (26.42% MAC) at 6,240 lbs.
    Straight line variation between points.

    <u>C.G. Rande Aft</u>
    218.67 inches aft of datum (31.35% MAC) at 10,325 lbs.
    217.88 inches aft of datum (30.25% MAC) at 6,332 lbs.

    <u>Variation between points:</u>
    Inches aft of datum = 219.93 - (13029/Weight)
    Datum 196 in. forward of wing leading edge at center section
    Leveling means Longitudinal - Top of fuselage on centerline aft of wing trailing edge.
    Lateral - Transverse beams at front of rear baggage compartment floor.
    Maximum weight Maximum takeoff 10,325 lbs. (ramp weight 10,375 lbs.)
    Maximum landing 9675 lbs.
    Zero fuel 8800 lbs.

N840NK Weight and Balance Calculation:

Item		Weight (lbs)	Arm	Moment
Empty weight of N840NK		7,323.7	214.52	1,571,077.05
Left front seat occupant		234	94	21,996.0
Right front seat occupant		317	94	29,798.0
Left forward-facing rear passenger seat occupant		210	217	45,570.0
Cargo area		77	270	20,790.0
Zero Fuel Weight (8800 max)		8,161.7	206.97	1,689,231.05
Fuel	474 gal	3,176		710,000.0
Ramp Weight (10,375 max)		11,337.7	211.62	2,399,231.05
Start, taxi, takeoff	-7.5 gal	50		-4,900.0
Takeoff Weight (10,325 max) [zero fuel weight + Fuel weight – STTO fuel]		11,287.7	212.12	2,394,331.05
Estimated Fuel used in flight	-59.7 gal	400		
Estimated Fuel at end of flight	406.8 gal	2,725.6		614,208.8
Estimated Weight/CG of aircraft at end of flight (9675 max landing weight) [zero fuel weight + fuel at end of flight]		10,887.3	211.57	2,303,439.85

Comments:

1. The aircraft is estimated to have been 962.7 lbs over maximum takeoff weight at time of takeoff.
2. Using the fuel consumption assumptions above, the aircraft is estimated to have been 562.3 lbs over maximum takeoff weight at the end of the flight.

N840NK

BYERLY AVIONICS

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Revised Wgt. and Bal./Equipment List

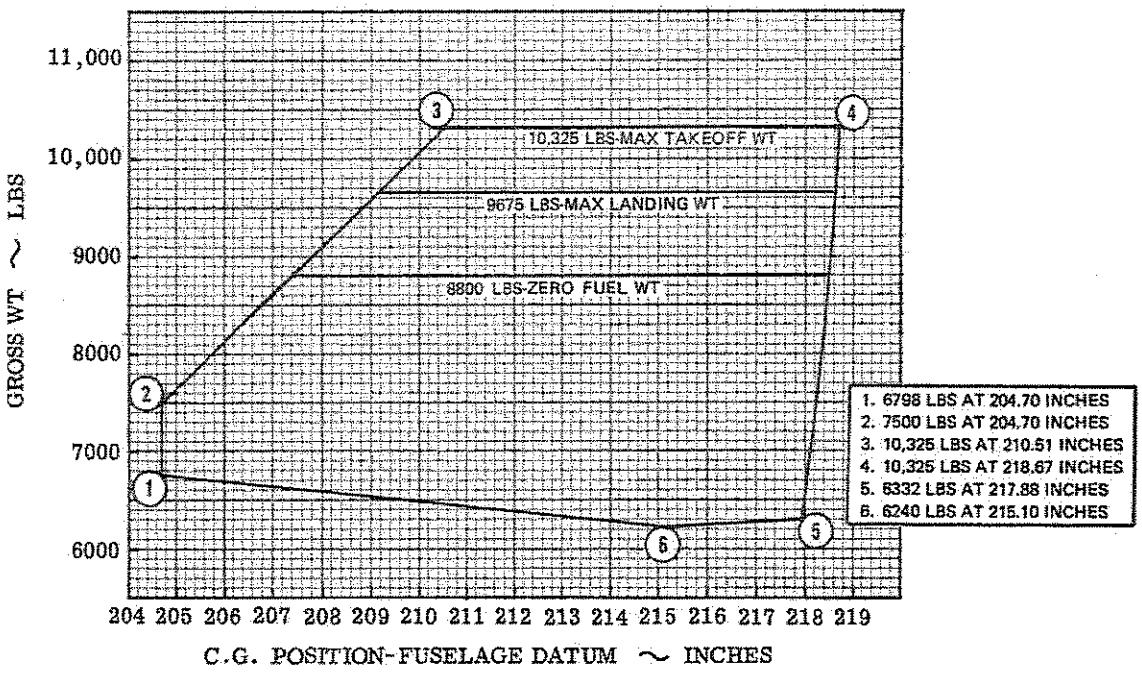
Aircraft Make: Twin Commander Model: 690C N# 840NK Serial # 11734

ITEM	WEIGHT	ARM	MOMENT
Weight and Balance from: 7-15-05	7307	214.24	1565451.6
Installed:			
PM1000-DAP Intercom	1	75.5	75.5
SPS-206 Cabin Inverter	15.7	353.5	5549.95
Totals:	16.7		5625.45
TOTALS:	7323.7	214.52	1571077.05

NEW EMPTY WEIGHT 7323.7
NEW EMPTY WEIGHT C.G. 214.52
NEW USEFUL LOAD 3051.3
NEW MOMENT 1571077.05

This aircraft, airframe, engine, propeller, or appliance identified above was repaired and inspected in accordance with current regulations of the federal aviation agency and is approved for return to service.
Pertinent details of this alteration are on file at this repair station under Invoice # 85 ir Station BOER548C

Signature



AIRPLANE OPERATION LIMITATION

- APPROVED GROSS WEIGHT/CENTER OF GRAVITY ENVELOPE
- OPERATION OF THE AIRPLANE OUTSIDE THE ENVELOPE IS PROHIBITED
- ENVELOPE MUST BE OBSERVED WITH LANDING GEAR EXTENDED
- ALLOWANCE FOR LANDING GEAR RETRACTION IS AUTOMATIC

L.E. MAC	196.00 INCHES AFT OF DATUM
MAC LENGTH	72.32 INCHES

Figure 2-5. Flight Envelope

CENTER OF GRAVITY LIMITS

Limits are given for landing gear down. Datum location is 196 inches forward of the wing leading edge and 50 inches forward of Fuselage Station Zero. Mean Aerodynamic Chord (MAC) length is 72.32 inches (see Figure 2-5.).

Forward Limits:	210.51 inches aft of datum (20.06% MAC) at 10,325 lbs. 204.70 inches aft of datum (12.03% MAC) at 7500 lbs. 204.70 inches aft of datum (12.03% MAC) at 6798 lbs. Straight line variation between points.
Aft Limits:	218.67 inches aft of datum (31.35% MAC) at 10,325 lbs. 217.88 inches aft of datum (30.25% MAC) at 6332 lbs. Variation between points: Inches aft of datum = 219.93 - (13,029 ÷ Weight)
Min. Flying Weight:	215.10 inches aft of datum (26.42% MAC) at 6240 lbs.

Number of Blades: Three

Propeller Model Number: (c) R306/3-82-F/7-(c) VP 2926 with 12" deicer boots or
(c) R306/3-82-F/7-(c) VP 3027 with 21" deicer boots.

Propeller Diameter:

a. Minimum - 105 Inches.
b. Maximum - 106 Inches.

Propeller Blade Angles (at 0.7 Radius):

a. Reverse -13.75 (± 1.0) Degrees
b. Start Locks -1.25 (± 1.0) Degrees
c. Flight Idle +6.0 (± 0.5) Degrees
d. Feather +83 Degrees, 10 minutes (± 20 Minutes).

Propeller Reverse Thrust Restrictions:

Reverse thrust is limited to ground operation only.

WARNING

Positioning of power levers below the flight idle stop in flight is prohibited. Such positioning may lead to loss of airplane control or may result in an engine overspeed condition and consequent loss of engine power.

POWER PLANT INSTRUMENT MARKINGS

INSTRUMENTS	Red Radial Minimum Limit	Yellow Arc Caution Range	Green Arc Normal Operating	Yellow Arc Caution Range	Red Radial Maximum Limit
POWER INDICATOR (SHP) (1)	-	-	-	-	717.5
POWER INDICATOR (% TQ)(2)	-	-	-	-	102.5
INTERSTAGE TURBINE (3) TEMPERATURE (°C)	-	-	-	-	923
TACHOMETER (% RPM)	-	-	96 - 100	-	101
OIL TEMPERATURE (°C) (4)	-40	-40 - +55	+55 - +110	+110 - +127	+127
OIL PRESSURE (PSI) (5)	40	40 - 50	70 - 120	-	120
FUEL PRESSURE (PSI)	15	15 - 20	20 - 80	80 - 90	90

(1) SHP - Applicable to airplanes S/N 11600 thru 11718.
(2) % TQ - Applicable to airplanes S/N 11719 thru 11999.
(3) Maximum starting limit of 1149°C is indicated by an orange radial.
(4) Operation at +110°C to +127°C is permissible for a maximum of 5 minutes during takeoff and for all ground operation with MIL-L-23699A oil.
(5) Operation in white arc (50 to 70 psi) is permissible above 23,000 ft.

Figure 2-4. Power Plant Instrument Markings

WEIGHT LIMITS

a. Maximum Ramp Weight - 10,375 lbs.
b. Maximum Takeoff Weight:
Jet Fuels - 10,325 lbs.
Aviation Gasoline - 10,260 lbs.
c. Maximum Landing Weight - 9675 lbs.
d. Maximum Zero Fuel Weight - 8800 lbs.
e. Maximum Weight in Baggage Compartment - 600 lbs.

Issued: 15 October 1979
Revised: 23 December 1996

SECTION VI

WEIGHT AND BALANCE/EQUIPMENT LIST

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INTRODUCTION

This section provides procedures for establishing the airplane's basic empty weight and moment. Procedures for determining the weight and balance for flight are included.

This section includes weight and balance information on all items of equipment installed on the airplane as it was delivered from the factory. Required and optional equipment items are identified as such.

A form is included for easily keeping track of changes to the airplane which affect weight and balance (such as installation or removal of optional equipment).

The airplane Weight and Balance Statement and the Equipment list are prepared for each individual airplane and pertain only to that airplane.

AIRPLANE WEIGHING PROCEDURES

Periodic weighing of the Model 690C may be necessary to keep the Basic Empty weight current. Frequency of weighing must be determined by the operator. All changes to the airplane affecting weight and/or balance are the responsibility of the airplane operator.

Configuration

The airplane must be weighed in the following configuration:

1. Oil
   Oil tanks should be full. Total engine oil (when both engines are full) is 25 pounds at an ARM of 188.0 inches. A small portion of this oil is undrainable (4 pounds at an ARM of 188.0 inches).

2. Fuel
   The unusable fuel quantity should be in the fuel tanks. This amounts to:
   a. Standard Fuel System - 33.5 pounds at an ARM of 230.0 inches.
   b. Optional Fuel System - 53.6 pounds at an ARM of 230.0 inches.

3. Hydraulic Fluid
   Hydraulic tank should be full. This amounts to 31 pounds at an ARM of 279.2 inches.

4. Wing Flaps
The wing flaps should be retracted.

5. Parking Brake
The Parking brake should be released.

6. External Gust Locks
The external gust locks should be removed from the control surfaces.

7. Seat Position
Seats should be located per Page 2 of Weight and Balance Statement (Form No. AC 1747) with the seat backs in a vertical position.

8. Installed Equipment
Installed equipment should be checked against the airplane equipment list and/or superseding forms. All installed equipment must be in its proper place during weighing.

Fuel Draining

Refer to Chapter 28, 690C Maintenance Manual, for correct draining procedures. The airplane must be level when draining fuel. When tanks have been drained, 13 pounds of unusable fuel remains in the airplane. Add an additional 34 pounds, 17 pounds per side, of unusable fuel before weighing.

Leveling

Leveling can be accomplished as follows:

1. Lateral
Lateral leveling is accomplished by placing a spirit level across the seat tracks on the cabin floor forward of the rear seat and deflating the tire or strut on the high side of the airplane until the bubble in the spirit level is centered.

2. Longitudinal
Longitudinal leveling is accomplished by placing a spirit level on the centerline on top of the fuselage in a fore and aft position between Stations 160.8 and 178.8. Inflating or deflating the nose tire or strut raises or lowers the nose of the airplane as required until the bubble of the spirit level is centered.

Scale Capacity

A scale with a minimum capacity of 4000 pounds is required under each main landing gear wheel. A scale with at least a 1000 pound capacity should be used under the nose wheel. Read weight directly from scale.

The scales should be properly calibrated and certified.

Scale Location

Weighings should always be accomplished in an enclosed area, free of air currents.

Measuring

Stretch a line between the centers of the main gear (from centerline of left axle to centerline of right axle). Measure directly fore and aft along the airplane centerline to each side of the nose gear centerline and average the measurements. This is the distance "L" used in the Airplane Weight and Balance Statement.

By using this "L" distance, and the wheel weights, just obtained, the airplane weight and C.G. can be determined. The factory Weight and Balance Statement can be followed as an example.

WEIGHT AND BALANCE RECORD

At the time of delivery, Rockwell International provides the necessary weight and balance data to compute individual loadings. All subsequent changes in airplane weight and balance are the responsibility of the airplane owner and/or operator.

The ballast requirements are determined from the airplane as weighed condition. If ballast is required, due to factory installed optional equipment, it will be included in the basic empty weight. Any changes in equipment which are made by the owner should be entered on the Weight and Balance Records of the airplane and ballast requirements checked to assure that the airplane is still within the C.G. Envelope.

WEIGHT AND BALANCE DETERMINATION FOR FLIGHT

To assure acceptable stability, control, performance and structural loads, it is essential that the airplane be loaded within the limits defined by the flight envelope. This is the pilot's responsibility and should be accomplished prior to each flight.

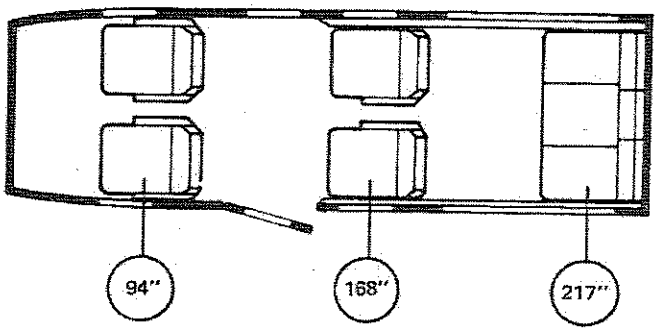
A sample loading computation has been included with the Weight and Balance Statement (Form No. AC 1747).

SAMPLE WEIGHT AND BALANCE RECORD

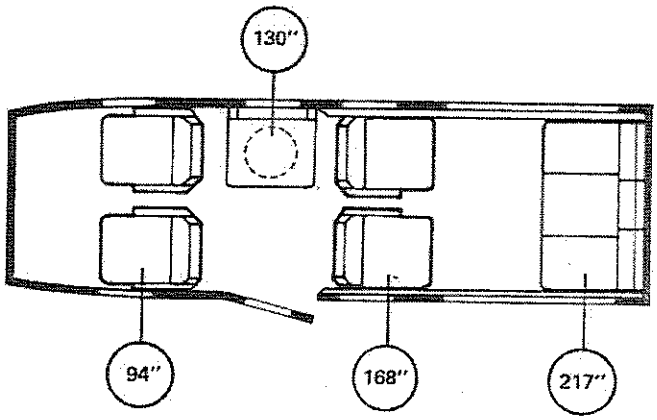
AIRPLANE MODEL				SERIAL NUMBER						PAGE NUMBER	
DATE	ITEM NO.		DESCRIPTION OF ARTICLE OR MODIFICATION	WEIGHT CHANGE						RUNNING BASIC EMPTY WEIGHT	
				ADDED (+)			REMOVED (–)				
	IN	OUT		WT. (lb.)	ARM (In.)	MOMENT /1000	WT. (lb.)	ARM (In.)	MOMENT /1000	WT. (lb.)	MOMENT /1000

SEATING PLANS

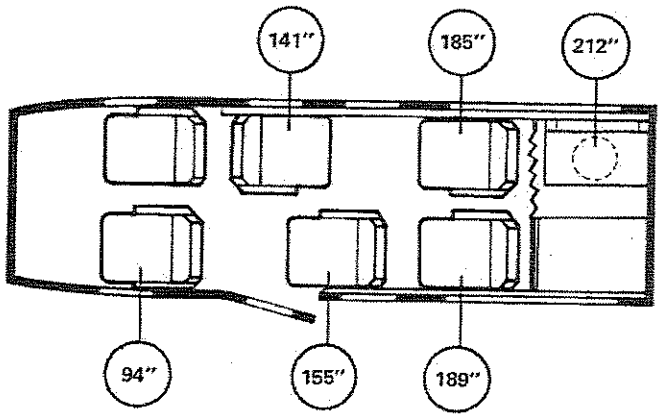
WEIGHT	PILOT CO-PILOT ARM 94	CABIN SEATS	
		FWD ARM 168	AFT BENCH ARM 217
	MOMENT/1000		
120	11	20	26
130	12	22	28
140	13	23	30
150	14	25	33
160	15	27	35
170	16	29	37
180	17	30	39
190	18	32	41
200	19	34	43



WEIGHT	PILOT CO-PILOT ARM 94	CABIN SEATS		
		FWD LAV ARM 130	CTR ARM 168	AFT BENCH ARM 217
	MOMENT/1000			
120	11	16	20	26
130	12	17	22	28
140	13	18	23	30
150	14	20	25	33
160	15	21	27	35
170	16	22	29	37
180	17	23	30	39
190	18	25	32	41
200	19	26	34	43



WEIGHT	PILOT CO-PILOT ARM 94	CABIN SEATS				
		FWD ARM 141	FWD ARM 155	CTR ARM 185	CTR ARM 189	AFT LAV ARM 212
	MOMENT/1000					
120	11	17	19	22	23	25
130	12	18	20	24	25	28
140	13	20	22	26	26	30
150	14	21	23	28	28	32
160	15	23	25	30	30	34
170	16	24	26	31	32	36
180	17	25	28	33	34	38
190	18	27	29	35	36	40
200	19	28	31	37	38	42



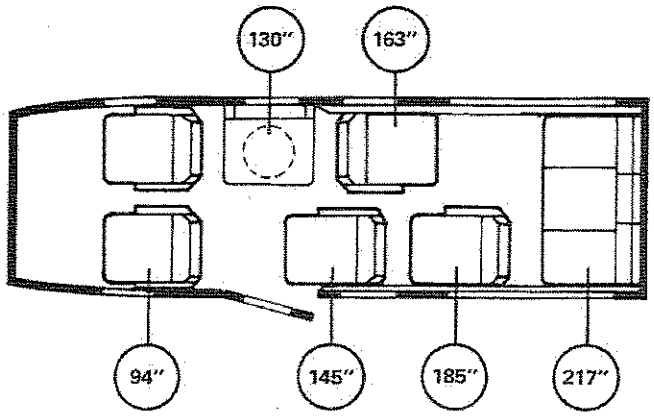
NOTE

DIMENSIONS SHOWN ARE "H" ARMS IN INCHES AFT OF THE DATUM

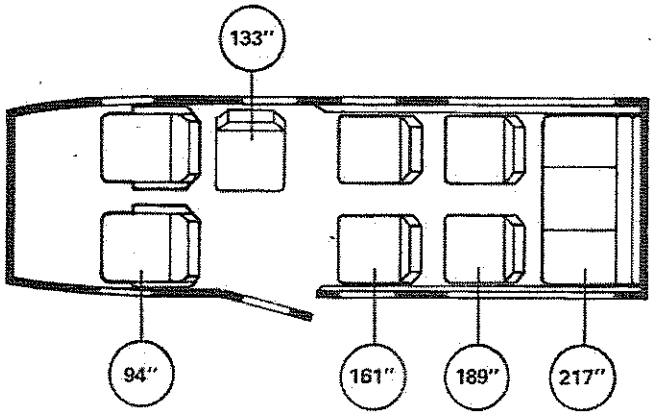
X16 8

Reissued: 15 October 1979
Revised: 8 January 1982

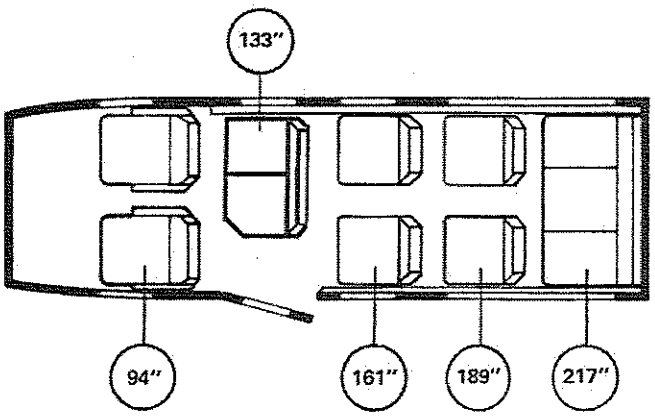
WEIGHT	PILOT CO-PILOT ARM 94	CABIN SEATS				
		FWD LAV ARM 130	FWD ARM 145	CTR ARM 163	CTR ARM 185	AFT BENCH ARM 217
	MOMENT/1000					
120	11	16	17	20	22	26
130	12	17	19	21	24	28
140	13	18	20	23	26	30
150	14	20	22	24	28	33
160	15	21	23	26	30	35
170	16	22	25	28	31	37
180	17	23	26	29	33	39
190	18	25	28	31	35	41
200	19	26	29	33	37	43



WEIGHT	PILOT CO-PILOT ARM 94	CABIN SEATS			
		FWD ARM 133	CTR ARM 161	CTR ARM 189	AFT BENCH ARM 217
	MOMENT/1000				
120	11	16	19	23	26
130	12	17	21	25	28
140	13	19	23	26	30
150	14	20	24	28	33
160	15	21	26	30	35
170	16	23	27	32	37
180	17	24	29	34	39
190	18	25	31	36	41
200	19	27	32	43	43



WEIGHT	PILOT CO-PILOT ARM 94	CABIN SEATS			
		FWD ARM 133	CTR ARM 161	CTR ARM 189	AFT BENCH ARM 217
	MOMENT/1000				
120	11	16	19	23	26
130	12	17	21	25	28
140	13	19	23	26	30
150	14	20	24	28	33
160	15	21	26	30	35
170	16	23	27	32	37
180	17	24	29	34	39
190	18	25	31	36	41
200	19	27	32	38	43



USABLE FUEL WEIGHT AND MOMENT TABLE (STANDARD FUEL SYSTEM)

U.S. GALLONS USABLE	LITERS (Reference)	ARM INCHES (Datum)	FUEL DATA 6.0 Lb/Gallon		FUEL DATA 6.5 Lb/Gallon		FUEL DATA 6.7 Lb/Gallon	
			Wt. (lb)	Mom/1000	Wt. (lb)	Mom/1000	Wt. (lb)	Mom/1000
10	37.85	230.0	60	14	65	15	67	15
20	75.70	230.0	120	28	130	30	134	31
30	113.55	229.9	180	41	195	45	201	46
40	151.40	229.8	240	55	260	60	268	62
50	189.25	229.6	300	69	325	75	335	77
60	227.10	229.5	360	83	390	90	402	92
70	264.95	229.3	420	96	455	104	469	108
80	302.80	229.2	480	110	520	119	536	123
90	340.65	229.0	540	124	585	134	603	138
100	378.50	228.8	600	137	650	149	670	153
110	416.35	228.6	660	151	715	163	737	168
120	454.20	228.4	720	164	780	178	804	184
130	492.05	228.2	780	178	845	193	871	199
140	529.90	227.9	840	191	910	207	938	214
150	567.75	227.7	900	205	975	222	1005	229
160	605.60	227.5	960	218	1040	237	1072	244
170	643.45	227.2	1020	232	1105	251	1139	259
180	681.30	227.0	1080	245	1170	266	1206	274
190	719.15	226.8	1140	259	1235	280	1273	289
200	757.00	226.6	1200	272	1300	295	1340	304
210	794.85	226.4	1260	285	1365	309	1407	319
220	832.70	226.2	1320	299	1430	323	1474	333
230	870.55	226.0	1380	312	1495	338	1541	348
240	908.40	225.8	1440	325	1560	352	1608	363
250	946.25	225.6	1500	338	1625	367	1675	378
260	984.10	225.3	1560	351	1690	381	1742	393
270	1021.95	225.1	1620	365	1755	400	1809	407
280	1059.80	224.9	1680	378	1820	409	1876	422
290	1097.65	224.7	1740	391	1885	424	1943	437
300	1135.50	224.5	1800	404	1950	438	2010	451
310	1173.35	224.3	1860	417	2015	452	2077	466
320	1211.20	224.1	1920	430	2080	466	2144	481
330	1249.05	223.9	1980	443	2145	480	2211	495
340	1286.90	223.6	2040	456	2210	494	2278	509
350	1324.75	223.4	2100	469	2275	508	2345	524
360	1362.60	223.2	2160	482	2340	522	2412	538
370	1400.45	223.0	2220	495	2405	536	2479	553
380	1438.30	222.8	2280	508	2470	550	2546	567
390	1476.15	222.6	2340	521	2535	564	2613	582
400	1514.99	222.4	2400	534	2600	578	2680	596
410	1551.85	222.1	2460	546	2665	592	2747	610
420	1589.70	221.9	2520	559	2730	606	2814	625
425	1608.63	221.8	2550	565	2763	613	2848	632

USABLE FUEL WEIGHT AND MOMENT TABLE (OPTIONAL FUEL SYSTEM)

U.S. GALLONS USABLE	LITERS (Reference)	ARM INCHES (Datum)	FUEL DATA 6.0 Lb/Gallon		FUEL DATA 6.5 Lb/Gallon		FUEL DATA 6.7 Lb/Gallon	
			Wt. (lb)	Mom/1000	Wt. (lb)	Mom/1000	Wt. (lb)	Mom/1000
10	37.85	235.04	60	14	65	15	67	16
20	75.70	234.46	120	28	130	30	134	31
30	113.55	233.88	180	42	195	46	201	47
40	151.40	233.30	240	56	260	61	268	63
50	189.25	232.72	300	70	325	76	335	78
60	227.10	232.16	360	84	390	91	402	93
70	264.95	232.12	420	97	455	106	469	109
80	302.80	232.09	480	111	520	121	536	124
90	340.65	232.05	540	125	585	136	603	140
100	378.50	232.02	600	139	650	151	670	155
110	416.35	231.98	660	153	715	166	737	171
120	454.20	231.95	720	167	780	181	804	186
130	492.05	231.91	780	181	845	196	871	202
140	529.90	231.87	840	195	910	211	938	217
150	567.75	231.84	900	209	975	226	1005	233
160	605.60	231.80	960	223	1040	241	1072	248
170	643.45	231.63	1020	236	1105	256	1139	264
180	681.30	231.37	1080	250	1170	271	1206	279
190	719.15	231.10	1140	263	1235	285	1273	294
200	757.00	230.83	1200	277	1300	300	1340	309
210	794.85	230.56	1260	291	1365	315	1407	324
220	832.70	230.30	1320	304	1430	329	1474	339
230	870.55	230.03	1380	317	1495	344	1541	354
240	908.40	229.76	1440	331	1560	358	1608	369
250	946.25	229.49	1500	344	1625	373	1675	384
260	984.10	229.23	1560	358	1690	387	1742	399
270	1021.95	228.96	1620	371	1755	402	1809	414
280	1059.80	228.69	1680	384	1820	416	1876	429
290	1097.65	228.42	1740	397	1885	431	1943	444
300	1135.50	228.16	1800	411	1950	445	2010	459
310	1173.35	227.89	1860	424	2015	459	2077	473
320	1211.20	227.62	1920	437	2080	473	2144	488
330	1249.05	227.35	1980	450	2145	488	2211	503
340	1286.90	227.09	2040	463	2210	502	2278	517
350	1324.75	226.82	2100	476	2275	516	2345	532
360	1362.60	226.55	2160	489	2340	530	2412	546
370	1400.45	226.28	2220	502	2405	544	2479	561
380	1438.30	226.02	2280	515	2470	558	2546	575
390	1476.15	225.75	2340	528	2535	572	2613	590
400	1514.99	225.48	2400	541	2600	586	2680	604
410	1551.85	225.21	2460	554	2665	600	2747	619
420	1589.70	224.95	2520	567	2730	614	2814	633
430	1627.55	224.68	2580	580	2795	628	2881	647
440	1665.40	224.41	2640	592	2860	642	2948	662
450	1703.25	224.14	2700	605	2925	656	3015	676
460	1741.10	223.88	2760	618	2990	669	3082	690
470	1778.95	223.61	2820	631	3055	683	3149	704
474	1794.09	223.50	2844	636	3081	689	3176	710

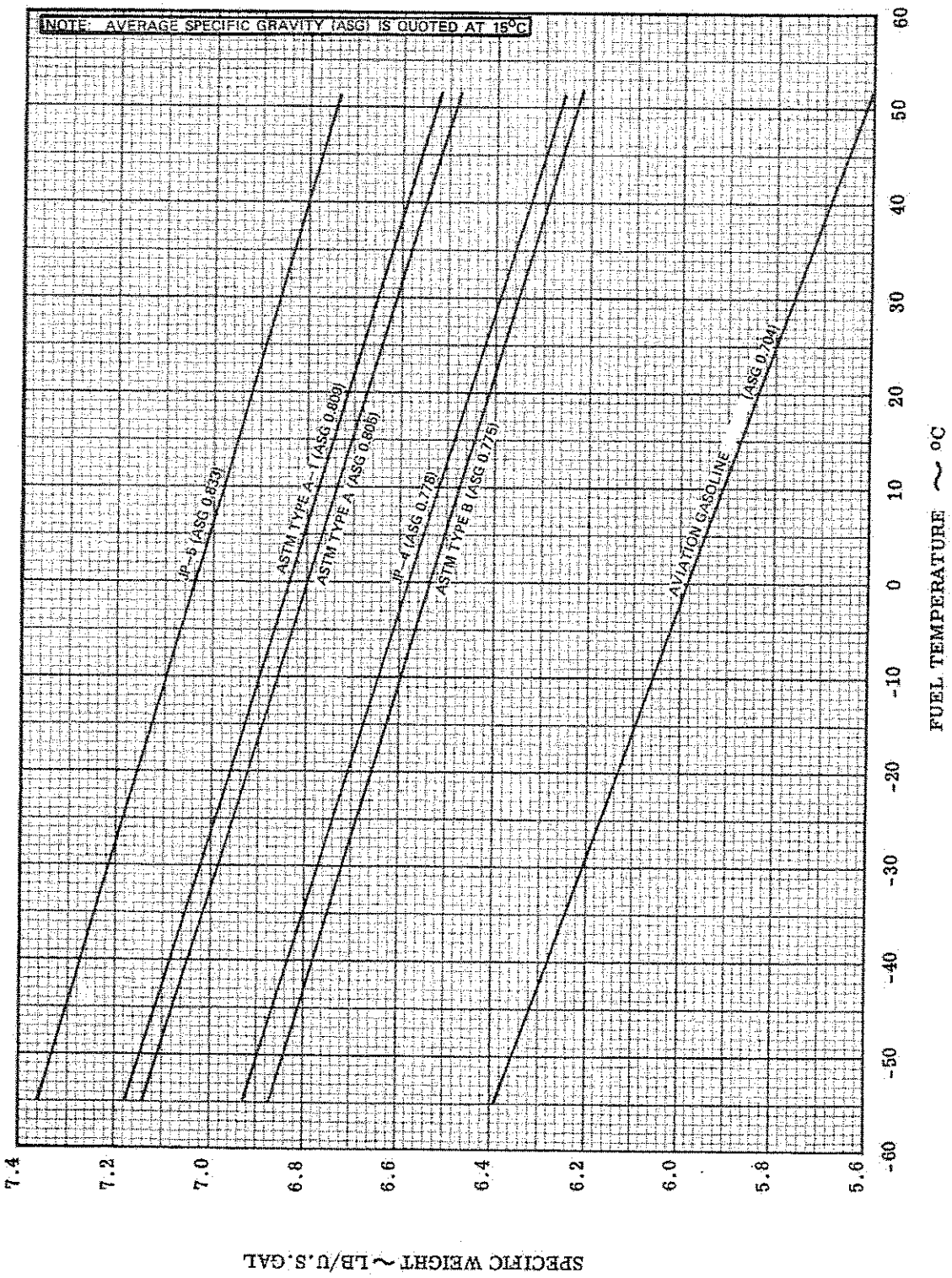
Reissued: 15 October 1979
Revised: 1 September 1981

AIRPLANE OPERATIONAL LIMITATIONS

WEIGHT AND MOMENT ALLOWABLES
(Gear Retraction Moment Accounted For)

WT.	MIN. MOM/1000	MAX. MOM/1000
6240	1342	1342
6286	1347	1361
6332	1351	1380
6350	1353	1384
6400	1358	1395
6450	1362	1406
6500	1367	1417
6550	1371	1428
6600	1375	1439
6650	1380	1450
6700	1384	1461
6750	1388	1472
6798	1392	1482
6850	1402	1493
6900	1412	1504
6950	1423	1515
7000	1433	1526
7050	1443	1537
7100	1453	1548
7150	1464	1559
7200	1474	1570
7250	1484	1581
7300	1494	1592
7350	1505	1603
7400	1515	1614
7450	1525	1625
7500	1535	1636
7550	1546	1647
7600	1557	1658
7650	1568	1669
7700	1579	1680
7750	1590	1691
7800	1601	1702
7850	1613	1713
7900	1624	1724
7950	1635	1735
8000	1646	1746
8050	1657	1757
8100	1668	1768
8150	1679	1779
8200	1690	1790
8250	1701	1801
8300	1713	1812
8350	1724	1823
8400	1735	1834
8450	1746	1845
8500	1757	1856
8550	1768	1867
8600	1779	1878
8650	1791	1889
8700	1802	1900
8750	1814	1911
8800	1825	1922
MAX ZERO FUEL WT: 8800		
8850	1836	1933
8900	1847	1944
8950	1859	1955
9000	1870	1966
9050	1881	1977
9100	1843	1988
9150	1904	1999
9200	1915	2010
9250	1927	2021
9300	1938	2032
9350	1950	2043
9400	1961	2054
9450	1972	2065
9500	1984	2076
9550	1995	2087
9600	2007	2098
9650	2018	2109
9675	2024	2115
MAX LANDING WT: 9675		
9700	2029	2120
9750	2041	2131
9800	2052	2142
9850	2064	2153
9900	2075	2164
9950	2087	2175
10000	2098	2186
10050	2110	2197
10100	2121	2208
10150	2133	2219
10200	2145	2230
10250	2156	2241
10300	2168	2252
10325	2174	2258
MAX T.O. WT: 10,325		
10375	2185	2269
MAX RAMP WT: 10,375		

DENSITY VARIATION OF AVIATION FUELS



Reissued: 15 October 1979
Revised: 16 May 1980