DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A-812
Revision 27
Aero Spacelines, Inc.
(Boeing) 377
377SGT, 377MG

September 1, 1973

AIRCRAFT SPECIFICATION NO. A-812

Type Certificate Holder — Aero Spacelines, Incorporated
P. O. Drawer B
Santa Barbara Airport
Santa Barbara, California 93102

I - MODEL 377 (TRANSPORT CATEGORY) APPROVED 3 SEPTEMBER 1948

Engines — 4 P&W Wasp Major TSB3-G with two 3-1/2N dampers. Propeller gear ratio .375:1
(See Item 101 for optional engines)

Fuel — Aviation gasoline: Minimum grade 108/135 or 100/130
(See NOTE 8 for more information on fuel grades)

Engine limits — See NOTE 4 for more information on limits

Impeller Gear Ratio 6.375:1	HP	RPM	M.P. IN.HG.	ALT.
(a) Fuel Grade 108/135 or 115/145 (SEE NOTE 8)				
Take-off, Wet (Two minutes) See NOTE 6 for Water Injection Mixture	3500	9500	60.0	S.L.
Take-off, Dry (Two minutes)	3250	2700	60.0	S.L.
Maximum continuous	2800	2550	53.5	S.L.
Maximum continuous	2800	2550	53.5	1200'
(b) Fuel Grade 100/130 (See NOTE 8)				
Take-off, Wet (Two minutes) See NOTE 6 for Water Injection Mixture	3250	2700	56.5	S.L.
Take-off, Dry (Two minutes)	3000	2700	56.0	S.L.
Maximum continuous	2650	2500	50.5	S.L.
Maximum continuous	2650	2550	50.0	2800'

Airspeed limits

Vno (Normal operating)	312 MPH	(271 Knots) True Ind.
(Above 13,600' reduce speed	6 MPH	for each additional 1,000')
Vne (Never exceed)	351 MPH	(305 Knots) True Ind.
(Above 13,500' reduce speed	6 MPH	for each additional 1,000')
Vp (Maneuvering)	237 MPH	(206 Knots) True Ind.
Vf (Flaps Down 25°)	220 MPH	(191 Knots) True Ind.
Vf (Flaps Down 30°)	200 MPH	(175 Knots) True Ind.
Vf (Flaps Down 45°)	186 MPH	(162 Knots) True Ind.
Vlo (Ldg. Gr. Operation)	230 MPH	(200 Knots) True Ind.
Vle (Ldg. Gr. Extension)	230 MPH	(200 Knots) True Ind.

Mach. No. - Never exceed .585

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C.G. range (Straight line variation should be used between the forward C.G. locations for each condition group.)

Condition	Weight lbs.	Landing Gear	Fwd. Limit Station	Fwd. Limit % MAC	Aft Limit Station	Aft Limit % MAC
Using Item 1(a), Curtiss Propellers C644S-B302/1052/20C4-30, the following limits apply:						
With Wet Power, Using Fuel Grade 108/135 or 115/145 (see Note 8.)						
Takeoff	142,500	Down	535.7	28.6	541.8	32.6
Takeoff	140,000	Down	518.4	17.4	541.8	32.6
Takeoff	130,000	Down	515.6	15.6	541.8	32.6
Takeoff	121,700 or less	Down	514.0	14.6	541.8	32.6
Landing	121,700 or less	Down	514.0	14.6	541.8	32.6
Enroute	142,500	Up	534.7	28.0	544.0	34.0
(Flaps up)	139,500	Up	512.8	13.8	544.0	34.0
	114,000 or less	Up	506.9	10.0	544.0	34.0
With Dry Power, Using Fuel Grade 108/135 or 115/145 (see Note 8.)						
Takeoff	138,000	Down	535.7	28.6	541.8	32.6
Takeoff	135,000	Down	517.1	16.6	541.8	32.6
Takeoff	130,000	Down	515.6	15.6	541.8	32.6
Takeoff	121,700 or less	Down	514.0	14.6	541.8	32.6
Landing	121,700	Down	524.6	21.4	541.8	32.6
	120,500 or less	Down	514.0	14.6	541.8	32.6
Enroute	138,000	Up	512.5	13.6	544.0	34.0
(Flaps up)	114,000 or less	Up	506.9	10.0	544.0	34.0
With Wet Power, Using Fuel Grade 100/130 (see Note 8)						
Takeoff	137,600	Down	535.7	28.6	541.8	32.6
Takeoff	135,400	Down	517.2	16.6	541.8	32.6
Takeoff	130,000	Down	515.6	15.6	541.8	32.6
Takeoff	121,700 or less	Down	514.0	14.6	541.8	32.6
Landing	121,700	Down	524.6	21.4	541.8	32.6
Landing	120,500 or less	Down	514.0	14.6	541.8	32.6
Enroute	137,600	Up	534.7	28.0	544.0	34.0
(Flaps up)	135,000	Up	511.9	13.2	544.0	34.0
	114,000 or less	Up	506.9	10.0	544.0	34.0
With Dry Power, Using Fuel Grade 100/130 (see Note 8)						
Takeoff	131,700	Down	535.7	28.6	541.8	32.6
Takeoff	129,000	Down	515.3	15.4	541.8	32.6
Takeoff	121,700 or less	Down	514.0	14.6	541.8	32.6
Landing	117,300	Down	535.7	28.6	541.8	32.6
Landing	115,000 or less	Down	514.0	14.6	541.8	32.6
Enroute	131,800	Up	511.1	12.7	544.0	34.0
(Flaps up)	114,000 or less	Up	506.9	10.0	544.0	34.0

Using Item (1)b, Ham. Std. Propellers 24260/2J17B3-8W and operating in accordance with PAWA 377-10-26 Airplane Flight Manual D-9405, or BOAC 377-10-32 Airplane Manual D-8529, the following limits apply:

Takeoff	145,800	Down	535.7	28.6	541.8	32.6
Takeoff	144,000	Down	519.5	18.1	541.8	32,6
Takeoff	130,000	Down	515.6	15.6	541.8	32.6
Takeoff	121,700 or less	Down	514.0	14.6	541.8	32.6

Using Item (1)b, Ham. Std. Propellers 24260/2J17B3-8W and operating in accordance with PAWA 377-10-26 Airplane Flight Manual D-9405, or BOAC 377-10-32 Airplane Manual D-8529, the following limits apply:

Landing	121,700 or less	Down	514.0	14.6	541.8	32.6
Enroute	145,800	Up	534.7	28.0	544.0	34.0
(Flaps up)	143,500	Up	513.7	14.4	544.0	34.0
	114,000 or	Up	506.9	10.0	544.0	34.0

With Dry Power, Using Fuel Grade 108/135 or 115/145 (see Note 8)

Takeoff	140,600	Down	535.7	28.6	541.8	32.6
Takeoff	138,000	Down	518.0	17.2	541.8	32.6
Takeoff	130,000	Down	515.6	15.6	541.8	32.6
Takeoff	121,700 or less	Down	514.0	14.6	541.8	32.6
Landing	121,700	Down	520.8	18.9	541.8	32.6
Landing	120,950 or less	Down	514.0	14.6	541.8	32.6
Enroute	140,600	Up	534.7	28.0	544.0	34.0
(Flaps up)	137,500	Up	512.5	13.6	544.0	34.0
	114,000 or less	Up	506.9	10.0	544.0	34.0

For C.G. limits applying to operation with the automatic feathering system inoperative, refer to the appropriate Airplane Flight Manual.

Maximum weight

(a) The following sea level maximum weights are permitted when 45° landing, 30° approach, 25° take-off, and 0° enroute flap settings are used and the automatic propeller feathering system is operative. Refer to the appropriate Airplane Flight Manual for maximum permissible weights at various altitudes. See NOTE 8 for limitations covering the mixed or interchangeable use of fuel grades.

Landing:

(Weight or dry power with 115/145 or 108/135 grade fuel and wet power only with 100/130 grade fuel)	121,700 lbs.
(Dry power with 100/130 grade fuel)	117,300 lbs.

Take-off: (Dump valves required. See NOTE 3)

(Wet power with 115/145 or 108/135 grade fuel)	142,500 lbs.
(Wet power with 100/130 grade fuel)	137,600 lbs.
(Dry power with 115/145 or 108/135 grade fuel)	138,000 lbs.
(Dry power with 100/130 grade fuel)	131,700 lbs.
Using Item (1)b, Ham. Std. Propellers 24260/2J17B3-8W & operating in accordance with PAWA 377-10-26 Airplane Flight Manual D-9405, or BOAC 377-10-32 Airplane Flight Manual D-8629 the following limits apply:	
(Wet power with 115/145 or 108/135 grade fuel)	145,800 lbs.
(Dry power with 115/145 or 108/135 grade fuel)	140,600 lbs.

(b) Dry Wing Gross Weight (See NOTE 5 regarding required fuel load distribution) 113,900 lbs.

(c) For 3-engine ferrying, see NOTE 9

(d) For maximum weights permitted for operation with the automatic propeller feathering System inoperative, refer to the appropriate Airplane Flight Manual.

Minimum crew

3 - Pilot and copilot (108.5) and Flight Engineer (148.0) (Additions to be above minimums may be specified by the CAA Air Carrier Safety Division for the long range flights and/or other special conditions.)

Maximum passengers

89 (4b.3812)

Maximum baggage and cargo

COMPARTMENT	WEIGHT	MAX. FLOOR LOADING PSF	ARM
Fwd.	12,000 lbs.	100	357.0
Aft	5,000 lbs.	100*	884.0

*Maximum floor loading aft of station 934 is 80 PSF.

Fuel capacity (Usable)

See NOTE 1B regarding unusable fuel.

#1 and #4 Main Tanks (See NOTE 13) (Composed of 12 cells ea.)	1770 gal. ea.	(547.5)
#2 and #3 Main Tanks (Composed of 4 cells ea.)	1520 gals. ea.	(536.0)
#5 Alternate Tank (3 cells in fuselage center wing)	1210 gals.	(534.5)

Oil capacity

See NOTE 1C regarding "System Oil".

Hamilton Standard propeller installation:	
33-1/2 gals. in each nacelle	(476.0) & (494.0)
Curtiss propeller installation:	
35 gals. in each nacelle	(476.0) & (494.0)
56 gals. central oil tank (fuselage)	(208.0)

Serial Nos. eligible

15922 and up

MAC

154.4 in. (L. E. of MAC is 491.5)

Leveling means

Indicator Below Floor in fwd. Baggage compartment (STA. 386)

Required equipment

In addition to the pertinent required basic equipment specified in CAR 4b, the following items of equipment must be installed:
1(a) or 1(b), 5(a), 7(a) & 8(a), 101(a), 103(a), 103(b) or 103(c), 201, 202, 203, 205, 206, 207, 302, 311, 401, 403, 409(a) or (b), 410 & 447.

II - MODEL 377MG (TRANSPORT CATEGORY) APPROVED 14 MARCH 1969

Engines

4 P&W Wasp Major TSB3-G with two 3-1/2N dampers. Propeller gear ratio .375:1.

Fuel

Aviation gasoline: Minimum grade 108/135

Engine limits

See NOTE 4 for more information on limits

Impeller Gear Ratio 6.375:1	HP	RPM	M.P. IN.HG.	ALT.
(a) Fuel Grade 108/135 or 115/145 (SEE NOTE 8)				
Take-off, wet (Two minutes) See NOTE 6 for Water Injection Mixture	3500	2700	60.0	S.L.
Takeoff, Dry (Two minutes)	3250	2700	60.0	S.L.
Maximum Continuous	2800	2550	53.5	S.L.
Maximum Continuous	2800	2550	53.5	1200'

Propeller and propeller limits

1. 4 Hamilton Standard Model No. 34E60/7015-2 (-349)
   Four bladed propellers installed in accordance with Supplemental Type Certificate No. SA-4-175
   Diameter - 16'
   Pitch Settings at 72 inch Station
   Minimum Low 19.5°
   Feathered 82°
   Reverse minus 21°
   Restrictions:
   Avoid continuous ground operation between 1300 and 1700 RPM.
   Avoid continuous flight operation between 1400 and 1700 RPM.
   Avoid ground operation above 2200 RPM except during the takeoff roll.

5.	(a)	1 Synchronizer Control Box Hamilton Standard 320300	40 lb. (170.0)
7.	(a)	4 Feathering pumps - Adel 51300	100 lb. (541.5)
8.	(a)	Propeller Governors - Hamilton tandard 5018-B23AE or 5018-E23AE	53 lb. (451.0)

Airspeed limits

Vmo	Maximum operating)	231 MPH (201 Knots) True Ind.
	(Above 16,300' reduce speed 4.8 MPH for each additional 1000')	
Vp	Maneuvering)	207 MPH (180 Knots) True Ind.
Vf	(Flaps Down 25°)	191 MPH (166 Knots) True Ind.
Vf	(Flaps Down 30°)	191 MPH (166 Knots) True Ind.
Vf	(Flaps Down 45°)	191 MPH (166 Knots) True Ind.
Vlo	(Ldg. Gr. Operation)	230 MPH (200 Knots) True Ind.
Vle	(Ldg. Gr. Extension)	230 MPH (200 Knots) True Ind.
Mmo	(Maximum Operating)	0.405

C.G. range

Most forward - 20% MAC (Sta. 587.8)
Most aft - 30% MAC (Sta. 603.6)
NOTE: Range given is applicable to all weights with the landing gear down.

Maximum weight

Landing	130,000 lbs.
Takeoff	142,800 lbs.
Max. zero fuel	126,120 lbs.

NOTE: Maximum weights noted are based on wet take-off power with 115/145 or 108/135 grade fuel only and with auto-feathering operative.

Minimum crew

Pilot and copilot (108.5), Flight Engineer (148.0), and Crew Cargo Attendant (1230) when cargo is being transported.

Maximum passengers

None. Approved for cargo only.

Fuel capacity (usable)

See NOTE 1B regarding unusable fuel.

#1 and #4 Main Tanks (See NOTE 13) (Composed of 12 cells ea.)	1770 gals. ea.	(617.5)
#2 and #3 Main Tanks (Composed of 4 cells ea.)	1520 gals. ea.	(606.0)

Oil capacity

See NOTE 1C regarding "System Oil." 33-1/2 gals. in each nacelle	(546.0) and (564.)
Maximum operating Altitude	20,000 ft.

Serial Number eligible

15937 only

MAC

159.2 in. (L.E. of MAC is 555.8 in. aft datum)

Leveling means

Indicator below floor in fwd. baggage compartment (Sta. 356)

Required equipment	In addition to the pertinent required basic equipment specified in CAR 4b, the equipment specified in CAR 4b, the equipment specified in Aero Spacelines, Inc. Empty Weight Equipment List, Boeing 377 MG-N1037, dated 30 April 1968, revised 23 January 1970, must be installed and operative.

SPECIFICATIONS PERTINENT TO ALL MODELS

Datum	50 in. fwd. of nose. (Distance from datum to nose jacking cone 228.6 in.)	
Control surface movements	Main surfaces:	
	Elevator:	20° Up 15° Down
	Aileron:	25° Up 25° Down
	Rudder:	+ or - 22° (Boost on)
	Rudder:	+ or - 22° (Boost off)
	Trim Devices:	
	Right elevator tab:	+ or - 12° (elevator in neutral)
	Left elevator tab:	Up 3° (when flap travels to full down position)
	Right & left aileron tabs:	From 6° droop, travel is 5-12° up and 5° down (Ailerons in neutral)
	Rudder tab:	+ or - 20°
	Aerodynamic Boost Tabs:	
	Right & left Elevator tabs:	15° down elevator, tab moves up 1-1/4° 20° up elevator, tab moves down 8°
	Right & left Ailerons Tabs:	25° down aileron, tab moves up 27-1/2° 25° up aileron, tab moves down 27-1/2° Aileron neutral, tab is drooped or down 6°
	Rudder Tab:	0° (Boost on)
Certification basis	Type Certificate No. A-812 (Transport Category), CAR, Part 04-0, effective 9 November 1945, and amendments 04-1 through 04b-10; and section 4b.292 of Part 4b, dated 1 October 1949.	
Production basis	"None. Prior to original certification of each aircraft a FAA representative must perform a detailed inspection for workmanship, materials, and conformity with the approved technical data, and a check of the flight characteristics."	
Export eligibility	Eligible for export to all countries subject to the provisions of Advisory Circular AC No. 21-2b.	

EQUIPMENT

Propellers and Propeller Accessories (Except Anti-icing Equipment

1. (a) 4 Curtiss propellers, Hubs C6445-B302, 3,869 lbs. (352.0) & (370.0)
Blades 1052-2004-30 (including electrical anti-icing provisions installed on propeller assembly such as boots, slip rings, blades and hub electrical equipment, etc.)
Diameter 16' 8".
Pitch settings at 72" sta.: Reverse -20.3°; Min. low +17.3°, high +57.3°, Feathered +84.5°.
Placard required:
"Above 312 MPH (TIAS) do not operate between 1500 and 2000 rpm."

	(b) 4 Hamilton Standard propellers, Hubs 24260,		
	(1) Blades 2J17B3-8W		3,122 lbs. (352) & (370)
	(2) Blades 2J17F3-8W	Use act. wt. change	(352) & (370)
	(3) Blades 2J17H3-8W	Use act. wt. change	(352) & (370)
	Limits for (1), (2), & (3): Diameter 16' 4-7/8"		
	Pitch settings at 72" sta: Reverse -18°		
	Min. low + 18°; Feathered + 86°		
	(4) Blades 2J17Z3-8W	Use act. wt. change	(352) & (370)
	Diameter: 16' 4-7/8"		
	Pitch settings at 72" sta: Reverse - 18°		
	Min. low + 20.3°; Feathered +86°		
	The 2J17B3, 2J17F3, 2J17H3 blades, and any of these blades modified to SK-31339, can be used interchangeably in the same propeller provided the prefix letters and cut-off dash numbers of the model designations are the same.		
	The 2J17Z3 blades can be used interchangeably in the same propeller with the 2J17B3, 2J17F3, 2J17H3 blades and any of these blades modified to SK-31339, provided the 2J17Z3 blades are used in pairs and installed in opposite propeller arms and that the prefix letters for the opposite blades and the cut-off dash number for all blades are the same.		
	Placards required: "Avoid ground running under static conditions above 2600 rpm"		
	"Avoid continuous ground operation between 1400 and 2000 rpm"		
	"Avoid continuous operation in flight below 1750 rpm except that 1400 rpm may be used for level cruise but not descent"		
5. (a)	1 Synchronizer Control Box - Hamilton Standard 320300		40 lbs. (170.0)
7. (a)	4 Feathering pumps - Hamilton Standard 66166-6		54 lbs. (471.5)
8. (a)	4 Propeller governors - Hamilton Standard 5U18-B23AE or 5U18-E23AE		53 lbs. (381.0)

Engine and Engine Accessories - Fuel and Oil System

101.	Engines	
(a)	4 P&W Wasp Major TSB3-G with two 3-1/2N dampers	13,588 lbs. (401.0) & (419.0)
(b)	4 P&W Wasp Major B-6 or B-7 with two 3-1/2N dampers	14,336 lbs. (401.0) & (419.0)
(c)	4 P&W Wasp Major CB-2	14,680 lbs. (401.0) & (419.0)
102.	Fuel dump system (Boeing Dwg. 15-12748, 15-22152, 15-23167) See NOTE 3 for more information on dump valves.	52 lbs. (592.5)
103.	Unusable fuel and system oil	
(a)	Unusable fuel, see NOTE 1B	444 lbs. (565.0)
(b)	System oil (with Curtiss propeller installed), see Note 1C.	514 lbs. (433.0)
(c)	System oil (with Ham. Std. propellers installed), see Note 1C.	563 lbs. (437.0)
111.	4 G.E. Turbo superchargers	
(a)	Model BH-4-A1	821 lbs. (478.0)
(b)	Model 7S-BH4-C1	900 lbs. (478.0)
115.	Water alcohol injection (Boeing Dwg. 15-25409) with water regulator P&W No. 106486. (Including 60 gals. fluid)	532 lbs. (563.0)

Landing Gear

201.	4 Main wheel-brake assemblies, 56", Type I	
(a)	Goodrich Model 5604M,	
	Wheel Assembly No. H-3-626-M-1	968 lbs. (558.0)
	Brake Assembly No. H-2-555-1 (2 per wheel)	293 lbs. (558.0)
202.	4 Main wheel 22-ply rating nylon tires, 56", Type I (Rating: 37,500 lbs. at 110 psi) See NOTE 7 re tire inflation pressure.	1,000 lbs. (558.0)
203.	4 Main wheel tubes, 56", Type I, Style "D" regular (weight includes 9 lbs. of air per tube).	175 lbs. (558.0)

205. 2 Nose wheels, 36", Type I
(a) Goodrich (Hayes) Model 3650M, Assembly No. H-3-102-M-1 — 74 lbs. (121.0)

206. 2 Nose wheel 12-ply rating nylon tires, 36", Type I — 111 lbs. (121.0)
(Rating: 11910 lbs. at 58 psi) See NOTE 7 re tire inflation pressure.

207. 2 Nose wheel tubes, 36", Type I, Style "S" — 22 lbs. (121.0)

208. Boeing (Hydro-Aire, Inc.) anti-skid brake per Hydro-Aire Dwg. 4700-0 and 4700-1 — 111 lbs. (+359.5)

Electrical Equipment

301. 2 Alternators (Westinghouse A14A-9730 or A-19A-6110) — 106 lbs. (460.5)
302. Generators (a) 6 General Electric 2CM75C-1A — 365 lbs. (448.5)
304. Batteries, 24 volt, 34 amp. hr.
(a) (2) at Sta. 131 and (1) at Sta. 149.5 (BACo Dwg. No. 15-23051, Shts. 2, 4, 5, 6, 7) — 225 lbs. (137.0)
(b) (2) at Sta. 131 (BACo Dwg. No. 15-23051, Sht. 3) — 150 lbs. (131.0)
311. 2 Landing lights (Grimes G-3800A-5) — 13 lbs. (595.0)

Interior Equipment

401. Airplane Flight Manual for Boeing Statocruiser (The manual may be carried as part of, or bound with, the operator's "Approved Operations Manual," but must remain in the airplane and must retain its identity as an individual manual). The following table identifies the Airplane Flight Manuals and the revisions thereto currently approved for each model:

Boeing Model No.	Boeing Document No. of Approved Flight Manual	Latest Approved Revision	Date of Latest Approved Revision
377-10-26 (PAWA)	D-9405	32	6-15-55
377-10-30 (NWA)	D-8626	48	11-15-56
377-10-32 (BOAC)	D-8629	14	6- 4-53
377-10-34 (UAL)	D-8630	22	12-28-53

402. Automatic Pilot
(a) Sperry A12 (Servo unit Part Nos. 661634 (3) & 664237 (1).) — 140 lbs. (487.0)
(1) Maximum servo output (measured at servo)
Elevator 80 (+0 -5) lbs.
Rudder 100 (+0 -5) lbs.
Aileron 160 (+0 -5) lbs.
(See BACo Service Bulletin No. 352, Revision A)
(2) Deleted 31 May 1957
(b) Pioneer PB-10 (Servo unit Part No. 15601-1A(3).) — 150 lbs. (487.0)
(1) Stalled servo drum forces (measured at the servo)
Elevator 110 (+0 -5) lbs.
Rudder 86 (+0 -10) lbs.
Aileron 141 (+0 -10) lbs.
(See BACo Service Bulletin No. 271, Revision A)
(2) Deleted 31 May 1957

403. Instruments (See Appendix I to the Manufacturer's Equipment List)

409. Windshield Wiper Installation
(a) Kearfott Engrg. Co. two-wiper system, BACo Dwg.No. 15-23130 — 6 lbs. (56.0)
(b) Kearfott Engrg. Co. three-wiper system, BACo Dwg.No. 15-23531 — 6 lbs. (56.0)
410. Escape rope (Control Cab) (2), BACo 9-14385 — 2 lbs. (81.1)
447. Escape rope (Main Cabin) (8), BACo 15-25306 — 6 lbs. (596.0)

Anti-Icing and De-Icing Equipment

501.		6 Wing heaters Model 944A (Stewart Warner)	244 lbs. (525.0)
502.		2 Empennage heaters No. G477025 (Stewart Warner)	65 lbs. (1122.0)
512.	(a)	Curtiss Prop. Elec. anti-icing equipment, less equipment on propeller (Boeing Dwg. 12-25476 & 15-22127)	32 lbs. (505.0)
	(b)	Ham. Std. Prop. Elec. anti-icing equipment less equipment on propeller (Boeing Dwg. 12-25476 & 15-22127)	21 lbs. (492.0)

NOTE 1. A. Current weight and balance report including list of equipment included in certificated empty weight, and loading instructions when necessary must be provided for each aircraft at the time of original certification.

After original certification, the effects on weight and balance due to changes in equipment and/or alterations must be suitably accounted for.

B. Unusable fuel, which must be included in the airplane empty weight, is that quantity of fuel in system and in the tanks which is unavailable to the engines under critical flight conditions as defined in CAR 04b.4221. This unusable fuel includes "system fuel", which is defined as that amount required to fill the system and tanks up to the tank outlets to the engine where the airplane is in the level attitude. The fuel gages are calibrated using the unusable fuel level as the zero datum. The distribution of the total amount of unusable fuel (Item 103(a).) is as follows:

	Total Unusable Fuel	"System" Fuel	Additional Unusable Fuel
Tanks No. 1 & 4	52 lbs. ea.	33 lbs. ea.	19 lbs. ea.
Tanks No. 2 & 3	84 lbs. ea.	22 lbs. ea.	62 lbs. ea.
Center Tank	108 lbs.	15 lbs.	93 lbs.
Lines (Total)	64 lbs.	64 lbs.	0

C. "System oil", which must also be included in the airplane empty weight, is that amount of oil required to fill the oil systems and tanks up to the tank outlets to the engines. The propeller feathering oil is not considered usable oil and, when applicable, is included in "system oil." The oil tank capacities shown in this specification include only the usable oil for which the tanks are to be placarded. Dipstick readings indicate the amount of usable oil.

D. The airplane must always be loaded within the C.G. limits specified in this specification, accounting for crew and passenger movement and use of fuel, water injection fluid and oil. Retraction of the landing gear changes the balance moment by 89844 inch pounds and moves the C.G. forward.

E. For the interior arrangement of a particular airplane, see Section IV of the Airplane Flight Manual. This gives the location of all passenger and crew member seats, location and capacity of lounges and lavatories for each of the different sleeper and day plane arrangements covered by the above report. Cargo compartments must be placarded for the capacities specified in the approved report. Passenger seats and safety belt installations other than originally provided by the manufacturer must be of an approved type or shown to meet the strength requirements of CAR 4b.

NOTE 2. The following placards shall be placed on the instrument panel in full view of the pilot:

(a) "This airplane shall be operated in compliance with the operating limitations specified in CAA Approved Airplane Flight Manual."

(b) On aircraft with Curtiss C644S-B302/1052-20C4-30 propellers installed:
"Above 312 MPH (TIAS) do not operate between 1500 and 2000 RPM."

(c) On aircraft with Hamilton Standard 24260/2J17B3-8W propellers or with interchangeable blade models as listed in Propeller Specification No. P-870, NOTE 6, installed:
"Avoid continuous ground operation between 1500 and 2000 RPM."
"Avoid continuous operation in flight below 1750 RPM except 1400 RPM may be used for level cruise but not for descent."

NOTE 3. A. Fuel dump valves (Item 102) must be installed for operation of the airplane at weights in excess of maximum landing weight. Refer to CAA Approved Airplane Flight Manual for limitations and cautionary procedures to be observed during the dumping of fuel.

B. When dump valves are installed (Item 102), the amount of usable fuel remaining in the fuel tanks after dumping is as follows:

Outer Wing	(#1 and #4 Main)	220 gals. each
Inner Wing	(#2 and #3 Main)	270 gals. each
Alternate	(#5)	Not dumpable

NOTE 4. The limits for the TSB3-G, B-6 and B-7 engines are based on 100°F, carburetor air inlet temperature and 31 inches Hg. (absolute) exhaust back pressure. To maintain "Maximum Continuous" power under conditions with higher inlet air temperatures and/or power exhaust back pressure, the manifold pressure may be increased up to a maximum of 56 inches Hg. to compensate for the loss of power, provided neither 43 inches Hg. (absolute) back pressure nor 130°F. carburetor air inlet temperature is exceeded.

NOTE 5. Structural Limitations on Fuel Loading and Usage:
For Model 377

A. The maximum airplane gross weight with dry wing, i.e., with zero nacelle oil, zero anti-detonant fluid, and zero fuel in tanks No. 1, 2, 3, and 4, must never exceed 113,900 lbs. Dry wing gross weight must include the weight of any fuel carried in the center section tank.

B. For pay loads, bringing the airplane up to, but not exceeding, a dry wing gross weight of 109,300 lbs., fuel in tanks No. 1 and 4 must be loaded to equal or exceed fuel in tanks No. 2 and 3, respectively, at any take-off weight up to and including maximum. In flight, fuel quantities in tanks No. 1 and 4 must not be reduced to less than those in tanks No. 2 and 3, respectively.

C. For pay loads, bringing the airplane to a dry wing gross weight in the range between 109,300 lbs. and 113,900 lbs. (maximum), fuel may be loaded and used equally from all tanks as outlined in (B) above, provided the take-off weight does not exceed 138,500 lbs. For take-off weights from 138,500 lbs. to maximum, fuel in tanks 2 and 3 must not be loaded to exceed 5,150 lbs. (858 gallons) per tank unless tanks No. 1 and 4 are full. In flight, fuel quantities in tanks No. 1 and 4 must not be reduced to less than those in tanks No. 2 and 3, respectively. If there is a differential distribution of fuel at the start of the flight, fuel may be used equally from all four tanks, or the fuel may be used first from the outboard tanks No. 1 and 4 until their quantity is reduced to be equal to the inboard tanks No. 2 and 3, at which time the airplane gross weight will have been reduced below 139,500 lbs.

NOTE 6. The ADI mixture shall conform to British Specification D-Eng. R.D. 2470, consisting of 40 parts water, 1 part Shell Dramus B oil (or other oil conforming to British Stores, Reference 34A/193) and 60 parts methyl alcohol. Mixtures of 50% water, 50% methyl alcohol; 40% water, 60% methyl alcohol; or 50% water, 25% methyl alcohol and 25% ethyl alcohol may be used provided they conform to Pratt & Whitney Specification 509.

NOTE 7. Tire inflation pressures shown under item 202 and Item 206 are those listed by the Tire & Rim Association for the static load rating (main gear) and dynamic load rating (nose gear). Main gear tire pressures may be varied with gross weight in accordance with the following:

$$\text{Pressure, Inboard Tires} = \frac{\text{Gross weight}}{1348} - 7\ (\pm 2)\ \text{psi}$$

$$\text{Pressure, Outboard Tires} = \frac{\text{Gross weight}}{1348} + 8\ (\pm 3)\ \text{psi}$$

For all gross weights outboard tire pressure must exceed inboard tire pressure by 15 ($\pm$5) psi in order to insure adequate airplane braking performance.

NOTE 8. For Model 377, the engine limits, center of gravity limits and maximum weights shown under Section I, as well as the performance limitations shown in the Airplane Flight Manual are applicable when the fuel grade associated with a particular limit or set of limits is used exclusively in all tanks. For the B-7 engines only, those limitations specified for grade 100/130 fuel apply. When fuel grades are mixed or interchanged the following shall apply to aircraft with the TSB3-G or B-6 engines:

(a) Fuel grades 108/135 and/or 115/145 may be used interchangeably or mixed in the same tank. NOTE 8

(b) When fuel of grade 100/130 is mixed with grades 115/145 and/or 108/135 in any tank, the engine and performance limitations applicable to the airplane for 100/130 grade fuel shall apply.

(c) If the center section tank is filled with any proportion of 100/130 grade fuel, and the wing tanks contain 115/145 and/or 108/135 grade fuel, the engine and performance limitations applicable to the airplane for 100/130 grade fuel shall apply when fuel is used from the center tank. This will permit take-off and climb on the higher grade fuel and enroute operation on the 100/130 grade fuel.

NOTE 9. Ferry permits may be issued for the operation of a Model 377 airplane on which one engine is inoperative with its propeller removed or feathered provided the operation of the aircraft is conducted in accordance with all the pertinent limits contained in the applicable portions of the CAA Approved Airplane Flight Manual, including gross weight and C.G. limits, and pertinent appendices and existing instructions governing 3-engine ferrying operations.

NOTE 10. The Model 377 may be dispatched with the automatic propeller feathering system partially or totally inoperative subject to the weight and C.G. limitations contained in Section I, and the performance information given in Section III C of the appropriate Airplane Flight manual.

NOTE 11. The aircraft may be dispatched with the propeller reversing system inoperative subject to the performance information given in Section III D of the appropriate Airplane Flight Manual.

NOTE 12. For Model 377, in accordance with the agreement between the Department of Defense and the Civil Aeronautics Board, all air carrier operators utilizing aircraft which have been modified under the Civil Reserve Air Fleet Program, Part I, Phase II, may deduct the added weight of the military modification up to a maximum of 50 pounds for each aircraft so modified.

NOTE 13. For Model 377, the fuel capacity of the main tanks No. 1 and No. 4 may be increased to 1950 gallons each by adding 6 additional fuel cells to each outboard wing section in accordance with PAWA Engineering Authorizations 45-212, 45-215 and 19-6070 and the referenced drawings therein. (Weight, left and right installations +343 lbs. (566.0)). When these auxiliary cells are installed PAWA Airplane Flight manual Revision No. 30 dated 12-24-54 should be provided in the airplane. Proper fuel management procedure is outlined therein. Additional oil must be provided in accordance with the requirements outlined in PAWA Maintenance Manual MS 31-1-7 revision dated 9-30-54. The total unusable fuel tanks No. 1 and No. 4 due to the additional fuel cells is 55 lbs. The structural limitations as stated in NOTE 5, Items A, B, and C apply to airplanes with the additional outboard fuel cells. In addition to the above structural limitations, it is required that the added fuel cells by empty during landing.

DUE TO MAJOR DIFFERENCES BETWEEN THE TYPE MODEL AIRCRAFT SPECIFIED ABOVE AND THE MODEL 377SGT, A SEPARATE DESCRIPTION OF THIS MODEL AIRCRAFT IS LISTED BELOW AS A PART OF AIRCRAFT SPECIFICATION A-812, INCLUDING EQUIPMENT ITEMS AND NOTES PERTINENT TO THIS MODEL.

III - MODEL 377SGT (Transport Category) Approved 26 August 1971

Engines	4 Allison 501-D22C (used with Ham. Std. prop) Turboprop with 13.54:1 reduction gear ratio
Fuel	Kerosene (Allison Spec EMS 64) Equivalent Spec. ASTM D-1655, Jet A or A-1. Alternate Fuel: MIL-T-5624, Grade JP-4 or JP-5; Equiv. Spec. ASTM D-1655, Jet B.

Lubricating oil	Allison Spec EMS-35, EMS-53, MIL-L-7808
Engine limits	Takeoff (5 minutes) at Sea Level. Equivalent Shaft hp. 4680, Shaft hp. 4368, Jet thrust 781 lbs., R.P.M. 13,820 Maximum continuous at Sea Level, Equivalent shaft hp. 4364, Shaft hp. 4061, Jet thrust 760 lbs., R.P.M. 13,820 The above ratings are based on static Sea Level conditions, compressor inlet air (dry) 59°F, 29.92 in. hg., no external accessory loads and no air bleed. Maximum permissible temperatures: Turbine Inlet Gas Temperature, Takeoff 1077°C Max. Cont. 1010°C` Maximum Transient (not to exceed 5 sec.) 1155°C Oil Inlet Temperature, minus 25°F (-32°C) minimum 185°F (85°C) maximum except for 212°F (100°C) maximum at Flight Idle and below and for 5 minutes above Flight Idle. The maximum allowable power as measured by the torquemeter for below standard inlet air temperature and/or ram conditions is 4600 hp for takeoff and 4300 hp for maximum continuous.
Propeller and propeller limits	1. 4 Hamilton Standard, Propeller Assemblies 54H60-123, blades B7111B-2 Diameter: 13 ft. 6 inches Single rotation four blade assembly with gov. speed setting of 1020 RPM (13820 ERPM) Propeller assembly is complete with spinner, feathering and reversing provisions, selective pitch control and negative torque control, decoupler, synchronizer and blade phase control, and electrical ice control. Blade station at which angles are measured is 42"R.
Propeller hydraulic oil	1. Hamilton Standard, Propeller - MIL-H-5606
Airspeed limits	Vmo (maximum operating) 208 KCAS Vp (maneuvering) 210 KCAS Vf (flaps down 25°) 208 KCAS Vf (flaps down 30°) 193 KCAS Vf (flaps down 45°) 184 KCAS Vlo (landing gear operation) 200 KCAS Vle (landing gear extension) 200 KCAS Mmo (maximum operating) 0.413 Mc 0.52 *Vc - cruising 240 KCAS *Vd - dive 260 KCAS *to 15,000 feet and constant Mach line to 25,000 feet
C.G. range	Fwd. 20.5% STA 587.6 (gear down) Gear Retraction moves C.G. .6% forward. Aft 30% MAC STA 603.5 (gear down)
Maximum weight	Landing - 160,000 lbs. Take-off - 170,000 lbs. Max. Zero Fuel - 154,000 lbs.
Minimum crew	Pilot and Co-pilot (76.5), Flight Engineer (116)
Maximum passengers	None. Approved for cargo only. Authorized Crew Only. Maximum occupancy of pressurized cabin is 9 persons.

Oil capacity	See Note 1c 17.5 U.S. Gal inboard (463) Total usable oil @ 17.5 U.S. Gal outboard (481) 7.7 lbs/gal is 270 lbs. (472)
Maximum operating altitude	25,000 feet
Fuel capacity	See Note 1b regarding unusable fuel #1 and #4 outboard tanks 1705 U.S. Gal each (617.5) #2 and #3 inboard tanks 1482 U.S. Gal each (606) Center Tank 1208 U.S. Gal. (604.5) Total 7582 U.S. Gal. (51,140 lbs @ 6.745 lbs/gal)
Water methanol	60 U.S. Gal. Total Usable, @ 7.8 lbs/gal. (633)
Serial Numbers eligible	0001, 2 and subsequent . . (See NOTE 8 for data applicable to serial numbers 2 and subsequent)
MAC	159.2 inches
L.E. MAC	555.8 in. aft of datum
Leveling points	Laterally: Marked points on Fwd. face of front spar, left and right of airplane centerline. Longitudinally: Marked points STA. 412 and 444, RH fuselage frame.
Datum	18 inches fwd. of nose

Control surface movements

	UP	DOWN	LEFT	RIGHT	DROOP
Rudder			16° ± 1°	16 ± 1°	
			16° ± 1°	16 ± 1°	
Trim travel					
Rudder tab			20° ± 1°	20° ± 1°	Fair .06L/R Max Ref. 5.3.1
Aileron	25° ± 1°	25° ± 1°	Tab Balance opposite 27°30' (3.7 in.) (Ref. Figure 11)		Neutral 30' ± 15'
Aileron tab	.12" ± .12" below aileron	1.62" ± .12"			.87" ± .12"
Elevator	20° ± 1°	15° ± 1°			
Elevator tab (right)	12° ± 2°	12° ± 2°			
Elevator tab Servo Action	.25" ± .062"	1.75" ± .12"			

For flap adjustments and neutral points of control surfaces refer to ASI process specification PS-18.

Certification basis	CAR 04, effective 9 November 1945 and amendments 04b-1 through 04b- 10, dated 1 October 1945. FAR 21, Part 21.101c (1), (2), (3), (4)

	FAR 25 specified in FAR 21.101c (1), (2), and (3). The appropriate issue of FAR includes change 17, effective 17 March 1968.
Production basis	"None. Prior to original certification f each aircraft, an FAA representative must perform a detailed inspection for workmanship, materials, and conformity with the approved technical data, and a check of the flight characteristics."
Export eligibility	Eligible for export to all countries subject to the provisions of Advisory Circular AC No.: 21-2B.
Required equipment	In addition to the pertinent required equipment specified in CAR 04b, the equipment specified in Aero Spacelines, Inc. Weight and Balance Handbook RS-0-91-1 must be installed and operative.

EQUIPMENT

Propellers and Propeller Accessories

1.	(a)	4 Hamilton Standard propellers: Hubs 54H60-123; Blades B7111B-2	(3480.4)	lbs.	(402.3) & (420.3)
	(b)	Spinner Assembly, Hamilton Standard 549427, 4 each	(174)	lbs.	(396.5) & (414.5)
	(c)	Spinner Afterbody, Hamilton Standard	(145.2)	lbs.	(414.5) & (432.5)
	(d)	Timer - Sequential, Hamilton Standard 560655	(2.0)	lbs.	(432)
	(e)	Propeller Control, Hamilton Standard	(470.8)	lbs.	(411.7) & (429.7)
	(f)	Synchrophaser, Elect. Unit, Hamilton	(29)	lbs.	(104)
	(g)	Mount - Hamilton Standard 526005	(3)	lbs.	(104)
	(h)	Control Assembly, Manual Prop Phase - Hamilton Standard 597416	(1.4)	lbs.	(96)

ENGINE, ENGINE ACCESSORIES, FUEL AND OIL SYSTEMS

Engines

116.	(a)	Power Section - Allison Prop Jet Model 501 - D22C (Dry), 4 each	(7564)	lbs.	(474.7) & (492.7)
	(b)	Tailpipe Assembly, Lockheed 905235 4 each	(402)	lbs.	(622.1) & (640.1)
	(c)	Tachometer - Generator Installation Lockheed 670764-101, 4 each	(6.8)	lbs.	(434.1) & (452.1)
	(d)	Starter, UN6063-1, 4 each	(96.8)	lbs.	(439.9) & (457.9)
	(e)	Temperature Datum Amplifier, Allison	(78.0)	lbs.	(510.4) & (528.4)

Engine Oil System

117.	(a)	Oil Cooler Instl, Lockheed 803613-1, 4 each	(62.4)	lbs.	(465) & (483.0)
	(b)	Actuator Assembly, Airborne R596M-5, 4 each	(28.4)	lbs.	(507.8) & (525.8)
	(c)	System Oil (See Note 1C) 4 each	(135.6)	lbs.	(456.3) & (474.3)
	(d)	Propeller System Oil, 4 each (See Note 1C)	(180.0)	lbs.	(411.7) & (429.7)

Engine Fuel System

118.	(a)	Fuel Heater Assembly, United Aircraft U519975-11, 4 each, or interchangeable with U519975-7, 4 each	(62)	lbs.	(468.1) & (486.1)
	(b)	Usable Fuel (See Note 1B)			
		Drainable	(1667)	lbs.	(612.5)
		Trapped	(273)	lbs.	(568.6)

Water Alcohol Injection System

119.	(a)	Unusable Water Methanol	(10)	lbs.	(633)
	(b)	Water Methanol Tank, ASI UN9381, 2 each	(33.6)	lbs.	(633)
	(c)	Pump, J. C. Carter 6333-3, 2 each	(25.2)	lbs.	(586.2)
	(d)	Flow Regulator Valve, Hydro-Aire 90-193B, 4 each	(13)	lbs.	(512.7) & (530.7)

Anti-Icing and DeIcing Equipment

513.	(a) Heater fuel control, Janitrol B54COO, 6 each	(45) lbs.	(616)	
	(b) Wing Heater, Control Unit, Barber Coleman CYLZ 2505, 2 each	(9.8) lbs.	(426)	
	(c) Heater Unit, ASI UN 9326-123 & -125, 6 each	(338) lbs.	(595)	
	(d) Heater Ignition Unit, Janitrol 11C30, 6 each	(27) lbs.	(576)	
	(e) Pressure Switch, Aerotec (2 each) P904-1	(3.5) lbs.	(576)	

Landing Gear

209.	4 Main wheel-brake assemblies, 56", Type VII			
	(a) Goodrich Wheel Assembly No. 3-960, 3-956, 3-1136, 3-1137 (weight includes brake drums)	(1926) lbs.	(628)	
	(b) Goodrich Brake Assembly No. H-2-567-1 (2 per wheel)	(610) lbs.	(628)	
210.	4 main whell 32 PR tires 56", Type VII tubeless (Rating: 60,000 lbs.) See NOTE 7 re tire inflation pressure.	(1268) lbs.	(628)	
211.	2 Nose wheels 36", Type I			
	(a) Goodrich Assembly No. 3-017, 3-917-1	(87) lbs.	(127)	
212.	2 Nose tires 36" 14PR, Type VII tubeless (Rating: 22,500 lbs.) See NOTE 7 re inflation pressure.	(124) lbs.	(127)	
213.	Antiskid system ASI Dwg. No. UN 7100 Hytrol Mk II (hydro Aire, Inc.)	(50) lbs.	(668)	

Electrical Equipment

309.	Alternators, 4 (General Electric 2CM210 BIG or	(20.3) lb.	(441.8)	(2 ea.)
	2CM210 C-G)	(20.3) lb.	(459.4)	(2 ea.)
310.	Inverter, 1 (Leland MGE-23-400)	(44) lb.	(221)	
311.	Inverter, (Instrument, emergency) 1, (Pioneer 12143-1A)	(12.5) lb.	(221)	
312.	Generators, 4 (Bendix 30E02-9G)	(64) (ea)	(440.3)	(2 ea.)
		(64) (ea)	(458.3)	(2 ea.)
313.	Battery, 1 (AN 3150-2)	(75) lb.	(99)	
314.	Landing Lights, 2 (Grimes 3800 A6)	(13) lb. (ea)	(665)	
315.	Anti-Collision Lights, 2 (Grimes 6965-7)	(4.1) lb.	(340)	
		(4.1) lb.	(482)	
316.	Position Lights, 1 ea. (Grimes B			
	1943-3Y-W, B 1943-3Y-W	(0.3) lb.(ea)	(1744)	
	A 1285 G-24R, A 1285 G-24G)	(0.3) lb.(ea)	(633)	

400. FAA Approved Airplane Flight Manual:

Aero Spacelines Inc. No. AFM G-201 dated 26 August 1971 and Revision 1 to same dated 2 September 1971.

404. Instruments and Avionics (See 377 SGT Weight and Balance Handbook RSG-0-91-1)

411.	Windshield wiper installation (same as 377MG)	6 lbs.	(24)
412.	Escape rope, (Control Cab) (2) BACo 9-14385	2 lbs.	(49)
	(Control Cab) (1) ASI Dwg. No. UN0074	1 lb.	(190)
413.	Escape rope, (Overwing) (2) ASI Dwg. No. UN0074	2 lbs.	(597)

NOTE 1. A. Current weight and balance report including list of equipment included in certificated empty weight, and loading instructions when necessary must be provided for each aircraft at the time of original certification.

After original certification, the effects on weight and balance due to changes in equipment and/or alterations must be suitably accounted for.

B. Unusable fuel, which must be included in the airplane empty weight, is that quantity of fuel in system and in the tanks which is unavailable to the engines under critical flight conditions as defined in FAR 25.959. This unusable fuel includes "system fuel", which is defined as that amount required to fill the system and tanks up to the tank outlets to the engine where the airplane is in the level attitude. The fuel gages are calibrated using the unusable fuel level as the zero datum. The distribution of the total amount of unusable fuel (Item 118(b).) is as follows:

	Total Unusable Fuel	"System" Fuel	Additional Unusable Fuel
Tanks No. 1 & 4	992 lbs.	75 lbs.	917 lbs.
Tanks No. 2 & 3	697 lbs.	49 lbs.	648 lbs.
Center Tank	73 lbs.	17 lbs.	56 lbs.
Lines (Total incl. QEC)	178 lbs.	132 lbs.	46 lbs.

C. "System oil", which must also be included in the airplane empty weight, is that amount of oil required to fill the oil systems and tanks up to the tank outlets to the engines. The propeller feathering oil is not considered usable oil and, when applicable, is included in "system oil." The oil tank capacities shown in this specification include only the usable oil for which the tanks are to be placarded. Dipstick readings indicate the amount of usable oil.

D. The airplane must always be loaded within the C.G. limits specified in this specification, accounting for crew and passenger movement and use of fuel, water injection fluid and oil. Retraction of the landing gear moves the C.G. forward .6% MAC.

NOTE 2. Placards - See Airplane Flight Manual.

NOTE 3. Structural Limitations on Fuel loading and Useage - Refer to ASI reports RGS-0-91-1, RGS- 0-91-2 and the airplane flight manual.

NOTE 4. The WMI mixture shall consist of one part by volume of methanol in accordance with Allison Spec EMS 125D and two parts by volume of purified water conforming to Allison Spec EMS 120A. Mixing shall conform to the procedures of SAE SPEC AMS-3006B, paragraph 3.1, NOTE 1 and paragraph 3.13, NOTE 4.

NOTE 5. Tire deflection and pressure charts are shown in ASI 377 SGT Maintenance Manual.

NOTE 6. Authorized fuel grades may be mixed in any quantities provided the mixture conforms to Allison Spec EMS-64 (Kerosene) or equivalent.

NOTE 7. Ferry permits may be issued for the operation of a Model 377 airplane on which one engine is inoperative with its propeller removed or feathered provided the operation of the aircraft is conducted in accordance with all the pertinent limits contained in the applicable portions of the FAA Approved Airplane Flight Manual, including gross weight and C.G. limits, and pertinent appendices, FAA regulations, and existing instructions governing 3-engine ferrying operations.

NOTE 8. Section III of this Data Sheet is applicable to serial numbers 2 and subsequent except as noted below:
Fuel Capacity
See Note 1b regarding unusable fuel
#1 and #4 outboard tanks
1770 U.S. Gal each (617.5)
#2 and #3 inboard tanks
1521 U.S. Gal each (606)
Center Tank
1209 U.S. Gal. (604.5)
Total 7790 U.S. Gal. (52,544 lbs @ 6.745 lbs/gal)

Water Methanol
224 U.S. Gal. Total Usable, @ 7.8 lbs/gal. (528)

Water Alcohol Injection System

119. (a)	Unusable Water Methanol	(23.4) lbs.	(528)
(b)	Water Methanol Tank, ASI UN9549-33, 4 each	(92) lbs.	(528)
(c)	Pump, J. C. Carter 6333-3, 4 each	(50.4) lbs.	(532.6)
(d)	Flow Regulator Valve, Hydro-Aire 90-193B, 4 each	(13) lbs.	(527.9) & (545.9)

Unusable fuel, which must be included in the airplane empty weight, is that quantity of fuel in system and in the tanks which is unavailable to the engines under critical flight conditions as defined in FAR 25.959. This unusable fuel includes "system fuel", which is defined as that amount required to fill the system and tanks up to the tank outlets to the engine where the airplane is in the level attitude. The fuel gages are calibrated using the unusable fuel level as the zero datum. The distribution of the total amount of unusable fuel (Item 118(b).) is as follows:

	Total Unusable Fuel	"System" Fuel	Additional Unusable Fuel
Tanks No. 1 & 4	114 lbs.	75 lbs.	39 lbs.
Tanks No. 2 & 3	170 lbs.	49 lbs.	121 lbs.
Center Tank	73 lbs.	17 lbs.	56 lbs.
Lines (Total incl. QEC)	178 lbs.	132 lbs.	46 lbs.

.....END.....