Surrendered October 27, 2009

FEDERAL AVIATION AGENCY

7A6
Revision 8
SUD AVIATION
Caravelle SE 210
Model I
Model III
Model VIR

November 24, 2009

TYPE CERTIFICATE DATA SHEET NO. 7A6

This data sheet which is a part of type certificate No. 7A6 prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Civil Air Regulations.

Type Certificate Holder SUD AVIATION

(1) This TC was surrendered for cancellation on October 27, 2009. Only standard airworthiness certificates issued prior to October 27, 2009 are valid.

(2) Future unsafe conditions existing in the aircraft may result in the revocation of the airworthiness certificates of the aircraft if there is no entity to comply with 14 CFR § 21.99(a), "Required design changes."

(3) Replacement parts may not be available in the future.

I - SUD AVIATION Caravelle SE 210 Model I (Transport Category), approved April 8, 1959

Engines: 2 Rolls-Royce Avon 522 turbojets

Fuel:
French: TRO (AIR 3405)
British: Aviation Kerosene D.Eng. RD 2482 (AVTUR) or D.Eng. RD 2494 (AVTUR/50)
American: JP-1 (MIL-F-5616)
Canadian: 3-GP-23B

Oil:
British: D.Eng. RD 2487
American: ESSO Aviation Turbo oil 35

Engine limits

Static Sea Level Ratings

Rating	Minimum Thrust (lb.)	Maximum R.P.M.	Max. Turbine Gas Temp., °C
Maximum takeoff (5 min.)	10,500	8,050	625
Maximum continuous	9,125	7,650	575

Airspeed limits (CAS)

		Knots	
Vne	(Never exceed)	325	or Mach 0.81 whichever is the lesser
Vno	(Normal operation)	300	or Mach 0.77 whichever is the lesser
Va	(Maneuvering)	174	
Vfe	(Flaps down 0° to 10°)	258	
Vfe	(Flaps down 10° to 20°)	202	
Vfe	(Flaps down 20° to 35°)	190	
Vlo	(Landing gear operation)	180	
Vle	(Landing gear extended)	218	
Vllo	(Landing light extension	215	

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Air brake operation	306 or Mach 0.81
Air brake extended	306 or Mach 0.81
Vmc (Minimum control)	Less than the stalling speed

C.G. range (Landing gear extended)

Landing gear retraction moment -79,860 in.-lb. (moves the C.G. forward)

Weight (Pounds)	Forward		Aft	
	% S.M.C.	Aft of datum (in.)	% S.M.C.	Aft of datum (in.)
Up to 81,600	25	623.18	39.0	648.54
95,900	25	623.18	35.8	642.75

Straight line variation between weights.

Maximum weights

Taxi	96,500 lb.
Takeoff	95,900 lb.
Landing	91,335 lb.
Zero fuel	77,160 lb.

Minimum crew

3. Pilot and copilot at (77), flight engineer at (102).

Maximum passengers

90. (See approved weight and balance report for actual number and location)

Maximum luggage

	Volume (Cu.ft.)	Maximum floor loading (p.s.f.)	Capacity (lb.)	
Upper aft hold	212	82	2,120	(948)
Lower forward hold	194	62	1,940	(372)
Lower aft hold	88	62	880	(800)

Fuel capacity

(See NOTE 1(b) for data on system fuel and oil)

	Total (U.S. gal.)	Usable (U.S. gal.)	
2 inboard wing tanks	2,141.0 each	2,140 each	(621)
2 outboard wing tanks	372.5 each	370 each	(729)

Oil capacity

(See NOTE 1(b) for data on system fuel and oil)

1.05 U.S. gal. per engine Total oil 2.1 U.S. gal. (886)

II - SUD AVIATION Caravelle SE 210 Model III (Transport Category), approved July 12, 1960

Same as SE 210 Model I except for maximum weights, stabilizer setting 1° up, engine installation, engine silencer and wheels and brakes.

Engines

2 Rolls-Royce Avon 527 turbojets

Fuel

French:	TRO (AIR 3405)
British:	Aviation Kerosene D.Eng. RD 2482 (AVTUR) or D.Eng. RD 2494 (AVTUR) 50
American:	JP-1 (MIL-F-5616)
Canadian:	3-GP-23B or

For aircraft on which modification No. 227 has been applied:

French:	(AIR 3407)
British:	D.Eng. RD 2486
American:	JP-4 (MIL-F-5624/C)
Canadian:	3-GP-22B

Oil

British:	D.Eng. RD 2487
American:	ESSO Aviation Turbo oil 35

Engine limits

Static Sea Level Ratings

Rating	Minimum Thrust (lb.)	Maximum R.P.M.	Max. Turbine Gas Temp., °C
Maximum takeoff (5 min.)	11,400	8,050	675
Maximum continuous	9,500	7,750	580

Airspeed limits (CAS)

		Knots
Vne	(Never exceed)	325 or Mach 0.81 whichever is the lesser
Vno	(Normal operation)	300 or Mach 0.77 whichever is the lesser
Va	(Maneuvering)	174
Vfe	(Flaps down 0° to 10°)	258
Vfe	(Flaps down 10° to 20°)	202
Vfe	(Flaps down 20° to 35°)	190
Vlo	(Landing gear operation)	180
Vle	(Landing gear extended)	218
Vllo	(Landing light extension)	215
	Brake parachute	
	(Normal operation)	115
	(Never exceed)	130
	Air brake operation	325 or Mach 0.81
	Air brake extended	325 or Mach 0.81
Vmc	(Minimum control)	Less than the stalling speed

C.G. range (Landing gear extended)

Landing gear retraction moment -79,860 in.-lb. (moves the C.G. forward)

Weight	Forward		Aft	
(Pounds)	% S.M.C.	Aft of datum (in.)	% S.M.C.	Aft of datum (in.)
Up to 81,600	25	623.18	39	648.54
101,400	25	623.18	35	641.29

Straight line variation between weights.

Maximum weights

Taxi	102,500 lb.
Takeoff	101,400 lb.
Landing	96,570 lb.
Zero fuel	78,260 lb.

Minimum crew

3. Pilot and copilot at (77), flight engineer at (102).

Maximum passengers

90. (See approved weight and balance report for actual number and location)

Maximum luggage

	Volume (Cu.ft.)	Maximum floor loading (p.s.f.)	Capacity (lb.)	
Upper aft hold	212	82	2,120	(948)
Lower forward hold	194	62	1,940	(372)
Lower aft hold	88	62	880	(800)

Fuel capacity

(See NOTE 1(b) for data on system fuel and oil)

	Total (U.S. gal.)	Usable (U.S. gal.)	
2 inboard wing tanks	2,141.0 each	2,140 each	(621)
2 outboard wing tanks	372.5 each	370 each	(729)

Oil capacity

(See NOTE 1(b) for data on system fuel and oil)

1.05 U.S. gal. per engine Total oil 2.1 U.S. gal. (886)

III - SUD AVIATION Caravelle SE 210 Model VIR (Transport Category), approved June 5, 1961

Same as SE 210 Model III except for maximum weights, engine installation, reversers, spoilers, windshield and cockpit, artificial feel (elevator and rudder control systems). Vortex generators, and wheels and brakes.

Engines

2 Rolls-Royce Avon 532R or Avon 533R turbojets

Fuel

American:	JP-1 (MIL-F-5616)
	JP-4 (MIL-F-5624C)
Canadian:	3-CP-23B, 3-CP-22B
British:	D.Eng. RD 2482, 2494, 2486
French:	TRO AIR 3405, AIR 3407

Oil

ESSO Aviation Turbo Oil 35
ESSO Turbo Oil 35 (Also known as Penola Turbo Oil 35 or Humble Turbo Oil 35)
Castrol 98 Gas Turbine Oil
Texaco Synthetic Aircraft Turbo Oil 15

Engine limits

Static Sea Level Ratings

Rating	Minimum Thrust (lb.)		Maximum R.P.M.		Max. Turbine Gas Temp.,°C	
	532R	533R	532R	533R	532R	533R
Maximum takeoff (5 min.)	12,080	12,600	8,050	8,150	670	685
Maximum continuous	10,710	10,710	7,900	7,900	595	595

Airspeed limits (CAS)

		Knots	Mod. 1122 installed	EXCEPT WHEN: Mod. 1042 installed	
Vne	(Never exceed)	350	325	345	or Mach .81 whichever is the lesser
Vno	(Normal operation)	325	300	320	or Mach .77 whichever is the lesser
Va	(Maneuvering)	190			(Sea Level)
		213			(H = 39,300 ft.)
Vfe	(Flaps down 0° to 5°)	270			
	(Flaps down 5° to 10°)	258			
	(Flaps down 10° to 20°)	202			
	(Flaps down 20° to 35°)	190			
Vlo	(Landing gear operation)	180			
Vle	(Landing gear extended)	245			
Vllo	(Landing light extension	215			
	Airbrake operation	350	325	345	or Mach .81
	Airbrake extended	350	325	345	or Mach .81
Vmc	(Minimum control)	Less than the stalling speed			

C.G. range (Landing gear extended)

Landing gear retraction moment -85,930 in.-lb. (moves the C.G. forward)

Weight (Pounds)	Forward		Aft	
	% S.M.C.	Aft of datum (in.)	% S.M.C.	Aft of datum (in.)
Up to 110,200	25	623.18	39	648.54

Maximum weights

Taxi	111,300 lb.
Takeoff	110,200 lb.
Landing	105,000 lb.
Zero fuel	79,400 lb.
	81,570 lb. (Mod. 1042 installed)

Minimum crew

(See NOTE 4)

<u>All operations except training, test and ferry flights</u>

3. Pilot and copilot at (77), flight engineer at (102).

<u>Training, test and ferry flights</u>

2. Pilot and copilot at (77)

Maximum passengers

90. (See approved weight and balance report for actual number and location)

Maximum luggage

UAL Version
Mod. 712 installed

Maximum luggage

	Volume (Cu.ft.)	Maximum floor loading (p.s.f.)	Capacity (lb.)	
Left upper aft hold	120	122	1,200	(954)
Right upper aft hold	81	122	810	(950)
Lower forward hold	194	61	1,940	(372)
Lower aft hold	88	61	880	(800)
Mod. 998, 1188 Installed				
Lower forward hold	222.5	61	3,065	(374)
Lower aft hold	116.5	61	1,575	(798)

Fuel capacity

(See NOTE 1(b) for data on system fuel and oil)

	Total (U.S. gal.)	Usable (U.S. gal.)	
2 inboard wing tanks	2,141.0 each	2,140 each	(621)
2 outboard wing tanks	372.5 each	370 each	(729)

Oil capacity

(See NOTE 1(b) for data on system fuel and oil)
1.05 U.S. gal. per engine Total oil 2.1 U.S. gal. (886)

Data Pertinent to All Models

Datum

Zero moment datum is located on the center line of the aircraft at the vertical line tangent to the aircraft theoretical nose, i.e., 82.8 inches forward of frame No. 7. Horizontal arms to the rear of the datum are positive (+).

Standard Mean chord (S.M.C.)

181.42 inches The leading edge of the standard mean chord is at+577.8 in.

Leveling means

Leveling plates in forward lower hold at Frames 22 and 25.

Control surface movements

Elevator	Up	30°	Down	12°
Rudder	Right	25°	Left	25°
Aileron	Up	21°	Down	21°
Flaps		35°	Total angle of travel	
Upper airbrake	Up	70°		
Lower airbrake	Down	75°		
Spoilers	Up	60°	(for Model VIR only)	

Maximum operating altitude

39,300 ft.

Other operating limitations

Aircraft shall be operated in compliance with the operating limitations specified in the S.G.A.C. approved Airplane Flight Manual.

Serial Nos. eligible

The French Government Certificate of Airworthiness for export endorsed as noted under "Certification basis" must be submitted for each individual aircraft for which application for certification is made.

Certification basis

CAR 10. Type Certificate No. 7A6 dated April 18, 1959.
Date of application for Type Certificate September 30, 1955.

Each aircraft and any replacement part manufactured in France must be clearly identified as imported.

A U.S. Airworthiness Certificate may be issued on the basis of Certificate of Airworthiness for Export signed by a representative of the Secretariat General a l'Aviation Civile (S.G.A.C.) containing the following statement:

> "The aeroplane covered by this certificate has been examined and found to comply with U.S. Civil Air Regulation Part 4b, effective December 31, 1953, including amendments 4b1, 4b2, 4b4, 4b7, 4b9 and SR 422 A (Models I and III), SR 422 B (Model VIR) and with the Special Requirements notified by the U.S. Government to the French Government and conforms to T.C. 7A6."

Compliance with the ditching requirements has been demonstrated.

Compliance with the ice protection requirements of CAR 4b.640 has been demonstrated.

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification.

The following additional equipment is required:

		Weight	(lb.)
(a)	Stall warning, 1 horn SANOR Model TR 2	2	(59)
(b)	High speed warning according to SR 450A		
	1 horn SANOR Model J8 AV or 1 cling bell	2	(59)
	BONVOISIN 4003/AF/G - (Mod. 1132 installed)	1	(59)
(c)	Artificial feel device, Elevator Control System		
	SUD AVIATION drawing No. 27 06 003 (Models I and III)	51	(932)
	SUD AVIATION drawing No. 27 06 801 (Model VIR)	69	(932)
	Aileron Control System		
	SUD AVIATION drawing No. 17 50 425	17	(772)
	Rudder Control System		
	SUD AVIATION drawing No. 27 07 003 (Models I and III)	44	(932)
	SUD AVIATION drawing No. 27 07 295 (Model VIR)	60	(932)
(d)	Control surface positions		
	Elevator:		
	1 transmitter AIR EQUIPEMENT Model 11501	1	(1145)
	1 indicator AIR EQUIPEMENT Model 12504.01	1	(49)
	Aileron:		
	1 transmitter AIR EQUIPEMENT Model 11501	1	(739)
	1 indicator AIR EQUIPEMENT Model 12504.02	1	(49)
	Rudder:		
	1 transmitter AIR EQUIPEMENT Model 11501	1	(1160)
	1 indicator AIR EQUIPEMENT Model 12504.03	1	(49)

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

(b) "Unusable Fuel and System Oil" and all hydraulic fluid must be included in the certificated empty weight.

"Unusable Fuel is that quantity of fuel in the system and in the tanks which is unavailable to the engine under critical flight conditions as defined in CAR 4b.416. This unusable fuel includes "system fuel" which is defined as the quantity required to fill the system and tanks to the tank outlet level when the airplane is on the ground level attitude. The fuel gauges are calibrated with the unusable fuel as the zero datum.

The total amount of fuel is as follows:

Usable fuel	Unusable fuel
5020 U.S. gal.	7 U.S. gal.

System oil is that amount of oil required to fill the oil system and tanks and is completely contained within the engine.
System oil weight is 31 lb.
The oil tank capacity shown in the data sheet includes only the usable oil.
A sight glass allows to check the oil level.

NOTE 2. The following is a list of aircraft parts which are critical from the fatigue standpoint and must be replaced at the times specified:

2 Pressure regulators, LOCKHEED-ENGLAND Model AIR 43444 6,000 hours

NOTE 3. All aircraft must be maintained and repaired in accordance with the French Government approved Maintenance and Structural Repair Manuals.

NOTE 4. Aircraft incorporating SUD Mod. 1126 may be flown with a minimum crew as shown on page I.4.1 of S.G.A.C. approved Airplane Flight Manual SE 210 655.

NOTE 5. Sud/Lear Autoland Installation - SE 210 Model VI R.

If Sud Modifications Nos. 1186, 1357 and 1358 have been incorporated in accordance with Caravelle Service Bulletin No. 22.33, operation of the autopilot is authorized down to 50 feet. (The above equipment complies with FAA Advisory Circular A.C. 20-31).

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