MINISTÉRIO DA AERONÁUTICA
DEPARTAMENTO DE PESQUISA E DESENVOLVIMENTO
CENTRO TÉCNICO AEROESPACIAL

CERTIFICATE DATA SHEET Nº EA-8901

TYPE CERTIFICATE HOLDER :

LEARJET INC.
Mid Continent Airport
P.O. Box 7707
Wichita, Kansas 67277
U.S.A.

EA-8901
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LEARJET INC.
MODEL 31 MODEL 31A
MAR 1993

I - MODEL 31 (Transport Aircraft), Approved on March 10, 1989.
MODEL 31A (Transport Aircraft). Approved on March 5, 1993.

ENGINES	Two "Garrett Turbine Engine Company of Arizona" Standard - Model TFE 731-2-3B, P/N 3073610-1 (W/O Fuel Heaters) Optional - Model TFE 731-2-3B, P/N 3073610-3 (With Fuel Heaters)
FUEL	Jet A, Jet A-I, MIL-I-27686 - anti-icing additive See Approved Airplane Flight Manual for alternate fuel and fuelling procedures
FUEL CONTROL COMPUTERS	Two Garrett fuel computers P/N 2118002-201 or two P/N 2118002-202 installed in pairs only

ENGINE LIMITS

Thrust ratings 1,587 kg (3,500 lb)
Takeoff (standard day), static
Sea level (5 min.)

Maximum continuous climb 1,587 kg (3,500 lb)
Static, sea level

Maximum permissible engine rotor operating speeds

Low pressure (r.p.m.)	20,688 (100% N_1)
High pressure (r.p.m.)	29,692 (100% N_2)

100% to 103% N_1 and N_2 r.p.m. limited to 1 minute

Maximum permissible interstage turbine gas temperatures:

Takeoff (5 min.)	1580^0 F. (860^0 C.)
Maximum continuous	1530^0 F. (832^0 C.)
Maximum climb	1530^0 F. (832^0 C.)
Maximum cruise	1463^0 F. (795^0 C.)

Oil temperature limits

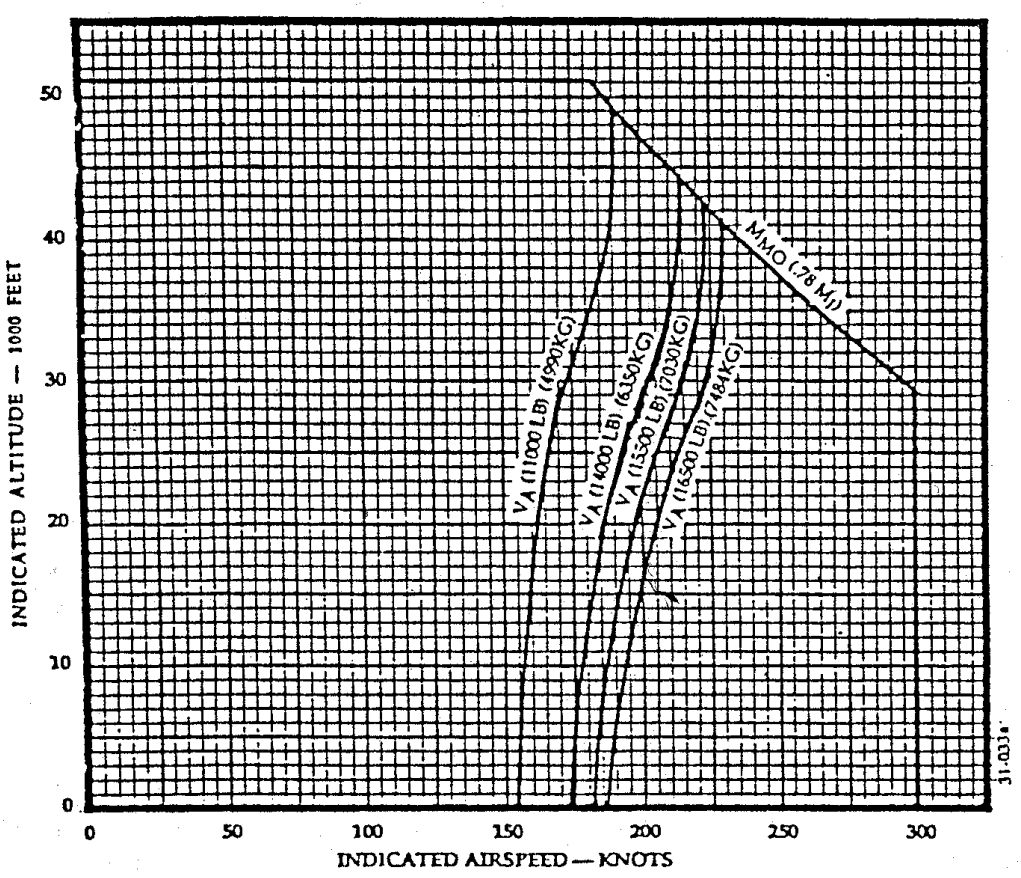
-Maximum (sea level,up to 30.000 ft)	127^0 C
-Maximum (above 30.000 ft)	140^0 C
-Maximum (2 minutes)	149^0 C
-Operational minimum	30^0 C
-Minimum	-40^0 C

Oil pressure

-Minimum	25 psi
-Idle Range	25 to 46 psi
-Normal Operating Range	38 to 46 psi
-Maximum (3 minutes)	55 psi

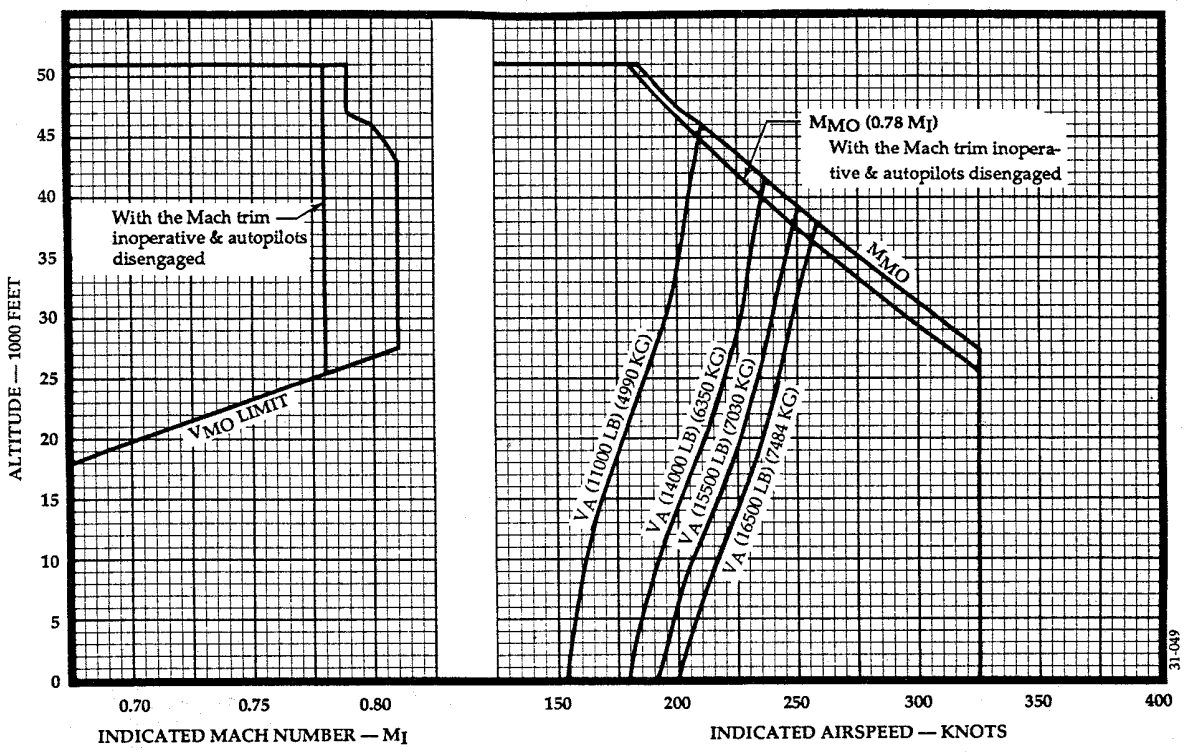
MODEL 31

AIRSPEED/MACH LIMITS



MODEL 31A

AIRSPEED/MACH LIMITS



AIRSPEED LIMITS / MACH LIMITS

V_{MO} (Maximum Operational) 300 KIAS
(up to 29.500 ft)-M31

M_{MO} (Maximum Operational)-M31 0,78 MI

(any missing boundary layer energizers) 0,77 MI
(above 29.500 ft)-M31

V_A (Maneuvering Speed)
See graphs above

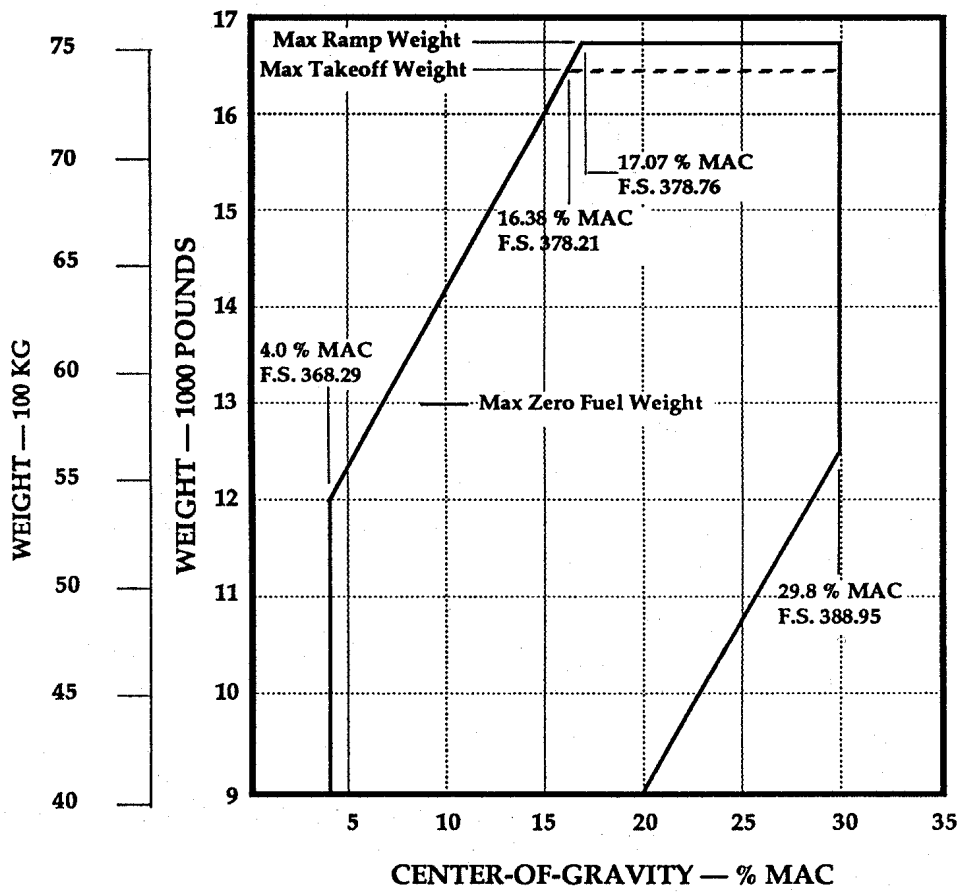
		Model 31	Model 31 with ECR 2679 (see NOTE 8) and Model 31A
V_{FE} Flaps 8^0		250 KIAS	250 KIAS
Flaps 20^0		200 KIAS	250 KIAS
Flaps 40^0		150 KIAS	150 KIAS
V_{MC} (Minimum control)			
Air-sea Level,	20^oC.	93 KIAS(8^o flap)	93 KIAS(8^o flap)
		87 KIAS(20^o flap)	87 KIAS(20^o flap)
Ground-sea Level,	20^oC.	*109 KIAS(16,500 lb.)	*100KIAS(16,500 lb. w/rudder bost on)
			*109KIAS(16,500 lb. w/rudder boost off)

*Function of weight, altitude, and temperature. See AFM V_1 chart.

V_{LO}(Landing gear operating)	200 KIAS	200 KIAS
V_{LE}(Landing gear extended)	260 KIAS	260 KIAS
V_{SB}(Spoilers extended)	Any speed below V_{MO} or M_{MO}, except extension is prohibited in flight with flaps extend.	Any speed below V_{MO} or M_{MO}, except extension is prohibited in flight with flaps extend.

CENTER-OF-GRAVITY ENVELOPE

Optional 16,500 Lb (7484 Kg) Takeoff Weight

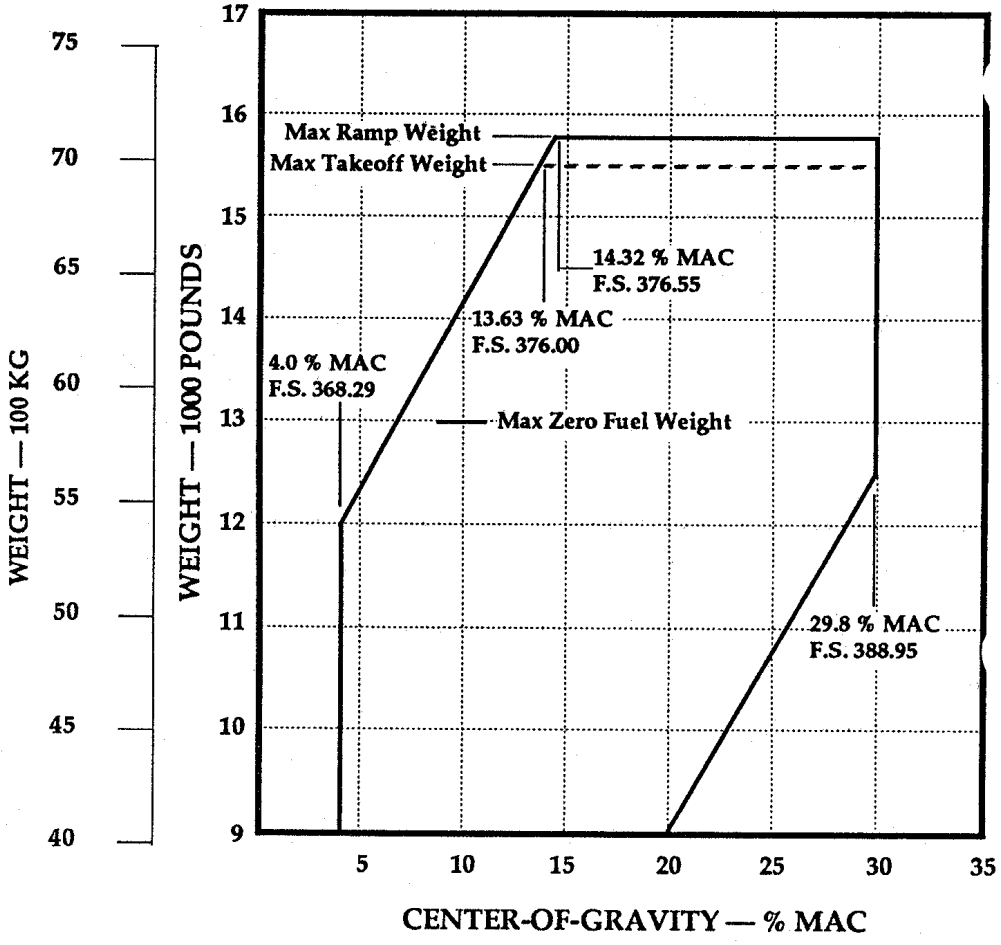


Forward Flight Limit — F.S. 368.29 (4.0% MAC) for all weights up to and including 12,000 pounds (5443 kg) and tapers through F.S. 378.21 (16.38% MAC) at 16,500 pounds (7484 kg) to F.S. 378.76 (17.07% MAC) at 16,750 pounds (7598 kg).

Aft Flight Limit — F.S. 381.11 (20.0 % MAC) for all weights up to and including 9000 pounds (4082 kg), tapers to F.S. 388.95 (29.8% MAC) at 12,500 pounds (5670 kg), and remains at F.S. 388.95 (29.8% MAC) up to and including 16,750 pounds (7598 kg).

CENTER-OF-GRAVITY ENVELOPE

Standard 15,500 Lb (7031 Kg) Takeoff Weight



Forward Flight Limit — F.S. 368.29 (4.0% MAC) for all weights up to and including 12,000 pounds (5443 kg) and tapers through F.S. 376.00 (13.63% MAC) at 15,500 pounds (7031 kg) to F.S. 376.55 (14.32% MAC) at 15,750 pounds (7144 kg).

Aft Flight Limit — F.S. 381.11 (20.0 % MAC) for all weights up to and including 9000 pounds (4082 kg), tapers to F.S. 388.95 (29.8% MAC) at 12,500 pounds (5670 kg), and remains at F.S. 388.95 (29.8% MAC) up to and including 15,750 pounds (7144 kg).

C. G. RANGE (Landing gear extended)

DATUM 2.203m (86,75 in) forward of nose.
Wing jack points are at sta. 414.85.
Fuselage jack points are at sta. 170.53.

M.A.C. 2.034m (80.09 in)(L.E. of MAC at sta. 365.085).

LEVELING MEANS See Airplane Service Manual or LES 1061 for leveling instructions.

MAXIMUM WEIGHTS

standard

Ramp	7.144,0	(15.750 lb)
Takeoff	7.030,6 kg	(15.500 lb)
Landing	6.939.9 kg	(15.300 lb)
Zero Fuel	5.896,6 kg	(13.000 lb)

optional

Ramp	7.597,6 kg	(16.750 lb)
Takeoff	7.484,2 kg	(16.500 lb)
Landing	6.939,9 kg	(15.300 lb)
Zero fuel	5.896,6 kg	(13.000 lb)

MINIMUM CREW All flights, 2 persons (pilot and copilot)

Nº OF SEATS 10 (2 crew and 8 passengers)

MAXIMUM BAGGAGE 227.8 kg (500 lb) at sta. 391 (Cabin)

FUEL CAPACITY

Gravity Refuel
Usable

	Litres	Kg	Lb	Arm In
Two wing tank, standard	1,590	1,272	2,804	392.1
Two wing tank, ext.range	1,602	1,282	2,826	392.3
Fuselage tank, standard	748	599	1,320	440.4
Fuselage tank, ext.range	1,036	829	1,827	432.4

	Single Point Pressure Usable			
	Litres	Kg	Lb	Arm In
Two wing tank, standard	1,534	1,227	2,706	392.1
Two wing tank, ext.range	1,548	1,238	2,728	392.3
Fuselage tank, standard	745	596	1,313	440.4
Fuselage tank, ext.range	991	793	1,749	432.4

Unusable fuel - based on 0,8 kg per liter 50,35 kg (111,0 lb) at sta. 382.2

OIL CAPACITY

One engine-mounted tank each engine

Total	Usable	Arm
8,5 1 ea.	1,89 1 ea.	437.8

12,84 kg (28,3 lb)at sta. 437.8 unusable oil

MAXIMUM OPERATING ALTITUDE

51,000 ft. pressure altitude

OTHER OPERATING LIMITATIONS

See appropriate CTA/FAA Approved Airplane Flight Manual

CONTROL SURFACE MOVEMENTS

Horizontal Stabilizer	L.E. Down 2.0^0 to 11.5^0	
Elevator	Up 12.5^0	Down 15.5^0 (Stab. at -6.5^0)
Aileron	Up 18^0	Down 18^0
Aileron trim tab	Up 8^0	Down 8^0
Aileron geared tabs	$\pm 15^0$ at 18^0 aileron deflection	
Rudder	Right 30^0	Left 30^0

Rudder trim tab Right 15^0 Left 15^0

Wing flap Down 0^0 to 40^0

Spoilers Up 0^0 to 40^0

See Airplane Service Manual or LES-FT-1007 and LES-FT-1008 for rigging tolerances or instructions

SERIAL N^{0}S ELIGIBLE

31-001 Through 034 - Model 31
31-035 and on - Model 31A

REQUIREMENTS

A Brazilian Airworthiness Certificate may be issued in the basis of the Airworthiness Certificate for Exportation issued by the FAA, including the following statement: "The / aircraft covered by this certificate has been inspected, tested and found to comply with the Brazilian approved type design as defined by the CTA Type Certificate N^0 8901 and is in condition for safe operation".
See Note 7.

CERTIFICATION BASIS

Brazilian Type Certificate n^0 8901, issued on March 10, 1989, based on the following requirements:

- RBHA 21 - paragraph 21.29
- RBHA 25, corresponding to the FAR 25, effective february 1, 1965 acording to the following amendments and special conditions:

Amendments 25-3, 25-7, 25-10, 25-12, 25-18, 25-21, and 25-30, plus Section 25.955(b)(2) of Amendment 25-11, Section 25.954 of Amendment 25-14, Sections 25.803(e), 25.811(f), 25.853(a), 25.853(b), and 25.855(a) of Amendment 25-15, Section 25.1359 of Amendment 25-17, Section 25.785(c) of Amendment 25-20, Sections 25.25, 25.113, 25.145, 25.251, 25.303, 25.305(b), 25.307(d), 25.331(a)(3), 25.335(b), 25.335(f), 25.337(b), 25.349(b), 25.351(a), 25.363, 25.395(a), 25.395(b), 25.471(a)(1),

25.471(a)(2), 25.473, 25.493(b), 25.499(b), 25.499(c), 25.499(d), 25.509(a)(3), 25.561(b)(3), 25.581, 25.607, 25.615, 25.619, 25.625, 25.629, 25.677, 25.697, 25.699, 25.701, 25.721, 25.723, 25.725, 25.727, 25.729, 25.733, 25.735, 25.865, 25.867, 25.871, 25.903(d), 25.934, 25.994, 25.1103(d), 25.1143(e), 25.1303(a)(1), 25.1303(a)(3), 25.1303(b), 25.1303(c), 25.1307, 25.1331, and 25.1585(c) of Amendment 25-23, Sections 25.1013(e), 25.1305(c)(4), and 25.1305(c)(6) of Amendment 25-36, Sections 25.45 through 25.75 deleted, 25.101, 25.161, 25.815, 25.1303(a)(2), 25.1322, 25.1403, and 25.1439 of Amendment 25-38, Sections 25.903(e), 25.939, and 25.943 of Amendment 25-40, Section 25.1335 of Amendment 25-41 (Model 31A) Sections 25.29, 25.143(b), 25.147, 25.177, 25.181, 25.201, 25.207, 25.233, 25.237, 25.255, and 25.703 of Amendment 25-42, Section 25.1326 of Amendment 25-43, Section 25.1329 of Amendment 25-46 (Model 31A) Section 25.253 of Amendment 25-54, Sections 25-33 and 25.961 of Amendment 25-57:

Model 31 - FAR Part 36 effective December 1, 1969, as amended through Amendment 36-15; SFAR 27 effective February 1, 1974, as amended through Amendment SFAR 27-6; Special Conditions N^{0} 25-99-CE-14 and N^{0} 25-ANM-19.

Model 31A - FAR Part 34 effective September 10,1990; FAR Part 36 effective December 1, 1969, as amended through Amendment 36-15; Special Conditions N^{0} 25-99-CE-14 dated March 8, 1981, for operation to 51.000 feet; N^{0} 25-ANM-46 for lightning strike protection and HIRF.

NOTE: Attitude Heading Reference System (AHRS), Electronic Flight Instrument System, Auto-Pilot/Flight Director and Air Data Computer are in compliance with Sections 25.1309, 25.1331 and 25.1333 of Amendment 25-41 on model 31A.

Equivalent Level of Safety

Paragraph	25.773(b)(2)
Paragraph	25.807(a)(4)
Paragraph	25.1305(r)

Any additional Brazilian requirements for Learjet Model 31 Certification listed in the Reports H.10-1020-03 - "Brazilian Requirements for Acceptance of the Learjet Corporation Model 31 Aircraft" and H.10.1021-01 - "Brazilian Requirements for acceptance of the Learjet Inc. Model 31A Aicraft".

EQUIPMENT

The basic equipment required by the Airworthiness Requirements must be installed in the aircraft and, in addition, those equipments established in the Report N^{0} H.10.1020-03, for Model 31 and H.10-1021-01, for Model 31A.

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. The empty weight and corresponding center of gravity location must include :

Unusable fuel (based on 0,8 kg per liter)	50,35 kg	(111.0 lb) at 382.2
Unusable oil	12,87 kg	(28.3 lb) at 437.8
Hydraulic fluid	6,35 kg	(14.0 lb) at 485.0

(b) The airplane must be so loaded that the C.G. is within the specified limits at all times.

NOTE 2. The placards specified in the appropriate CTA/FAA Approved Flight Manual or Maintenance Manual must be displayed. Additional placards and those to be presented in portuguese are listed in the Paragraph 8 of the Report N^{0} H.10-1020-03, for model 31 and in the paragraph 8 of the Report N^{0} H.10-1021-01, for model 31A.

NOTE 3. All replacement seats (crew and passenger), althought they may comply with TSO C39 must also be demonstrated to comply with FAR 25.785.

NOTE 4. Approved Seating Configurations :

Model 31

Internal configuration as defined in floor plans #1A and #1C of page A.9 and floor plans #1B and #1D of page A.10 of the Report N^{o} ER-193, dated December 23, 1988.

Model 31A

Internal configuration as defined by ECR No. 3547 - "31A Floor Plan BZ-2, Brazilian Certification".

NOTE 5. Equipment installed in non-pressurized areas shall be approved for the appropriate environmental conditions resulting from operation at the maximum approved altitude.

NOTE 6. The Brazilian approved Learjet Model 31 must comply with ECR 2655 (A) - Brazilian Certification (CTA), Model 31. The Brazilian Learjet Model 31A must comply with ECR. 3544. - Brazilian Certification (CTA), Model 31A.

NOTE 7. Brazilian Requirements for Acceptance
For Model 31 - Report N^{0} H.10-1020-03
For Model 31A - Report N^{0} H.10-1021-01

NOTE 8. Model 31 aircraft with ECR 2679 is eligible for improved Balanced Field Lenght and reduced V_{mcg}.

Brig do Ar - NELSON DE SOUZA TAVEIRA
Diretor do CTA

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