DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A60NM
Revision New
ALENIA AERONAUTICA
C-27J JCA
December 21, 2010

FAA TYPE CERTIFICATE DATA SHEET NO. A60NM

This data sheet which is part of Type Certificate No. A60NM prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the US Federal Aviation Regulations.

Type Certificate Holder

ALENIA AERONAUTICA S.p.A.
Viale dell'Aeronautica
80038 Pomigliano d'Arco, Naples
Italy

I. Model C-27J JCA (Transport Category Airplane) approved December 21, 2010

Engines

Two (2) Allison / Rolls Royce AE2100D2A (Engine Type Certificate TE1CH, dated September 24, 2008)

Fuel

Fuels conforming to:
ASTM D-1655 grades Jet-A and Jet A-1,
MIL-T-5624 grade JP-5, and
MIL-T-83133 grade JP-8 are acceptable.
(see also the C-27J JCA Airplane Flight Manual AFM-1C-27J-JCA-1)

Engine Limits

Engine data sheet	Power [SHP]	Torque m × daN [ft × lb]	MGT [°C]	Np(*) [%]	Ng(**) [%]
Take-off (5 min.)	4637	234.9 (1732)	852	101	101
Maximum continuous	4637	234.9 (1732)	833	101	101
Transient	-	262.1 (1933)	-	114	102

(*) 100% = 14267 revolutions per minute [r.p.m.]
(**) 100% = 15265 revolutions per minute [r.p.m.]

Other engine limitations: See the Engine Type Certificate Data Sheet TE1CH

Propeller

Number and type:	Two (2) - Dowty Propeller R391/6-132-F/10
Blades:	Six (6) - composite material
Diameter:	4115 mm (162 inches)
Minimum propeller pitch angle in flight range:	15° (software), 13° (mechanical)
Minimum propeller pitch angle in ground range:	-17°
Feathered propeller pitch angle:	89°

Propeller Limits

See the relevant Propeller Type Certificate Data Sheet P15BO

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Auxiliary Power Unit — Hamilton Sundstrand T-62T-46C16 APS 1000

Hydraulic Fluids

Hydraulic Fluid specification:	MIL-PRF-5606 or MIL-PRF-83282
Oil specification:	MIL-L-23699
Engine and APU specification:	MIL-L-7808

Airspeed Limits (I.A.S.)

V_{MO}	260 KIAS from sea level to 18,400 ft
M_{MO}	0.55 from 18,400 ft to 25,000 ft
V_A (Maneuvering)	199 KIAS from sea level to 25,000 ft at 67,241 lb (30,500 kg)
V_{FE} (Flaps Extended)	1 180 KIAS 2 170 KIAS FULL 155 KIAS
V_{LE}	200 KIAS
V_{LO}	155 KIAS
Tire Speed	210 MPH
Windshield wiper operating speed	203 KIAS

Center of Gravity Limits — Refer to the C-27J JCA Airplane Flight Manual (AFM-1C-27J-JCA-1)

Datum — Center line normal plane positioned 653 mm forward of the aircraft nose

Leveling Means — Mount points of airplane floor positioned at frame No. 20 on right side (10000 mm from datum)

Maximum Weights

Taxi and ramp:	30700 Kg(67681 lbs)
Take-off:	30500 Kg(67240 lbs)
Landing:	27500 Kg(60626 lbs)
Zero fuel:	26500 Kg(58422 lbs)

Minimum Crew — Two (2): Pilot and copilot

Number of Seats — Three (3): Pilot, copilot and flight deck observer

Maximum Compartment Weights — Loading limitations referred to datum distances and measured in millimetres are:

5355 – 9145	1500 Kg/m and 600 Kg/m^2
9145 – 10015	2500 Kg/m and 1000 Kg/m^2
10015 – 11175	2500 Kg/m and 1000 Kg/m^2
11175 – 12195	2500 Kg/m and 1000 Kg/m^2
12195 – 13945	1500 Kg/m and 600 Kg/m^2
13945 – 15905	1000 Kg/m and 400 Kg/m^2 (ramp)

Fuel Capacity

Tanks		Usable Fuel		Unusable Fuel	
		Liters (Kg)	Gallons (lb)	Liters (Kg)	Gallons (lb)
Wing	Left Main Tank	3360 (2654)	888 (5852)	40 (32)	11 (70)
	Right Main Tank	3360 (2654)	888 (5852)	40 (32)	11 (70)
	Left Aux Tank	2800 (2212)	740 (4877)	57 (45)	15 (99)
	Right Aux Tank	2800 (2212)	740 (4877)	57 (45)	15 (99)
Total		12320 (9732)	3256 (21458)	194 (154)	52 (338)

NOTE: Weights are calculated for a typical JP-8 with an average standard day density of 790 kg/m^3

Oil Capacity

Engine oil:	Two tanks with a capacity of 34 litres
APU oil:	One tank with a capacity of 4.73 litres

Maximum Operating Altitude: 25,000 ft (see Note 6)

Control Surface Movements

Wing Flaps (outer/inner)	11.25°/5.0°, 22.5°/10.0° and 45.0°/20.0°
Ailerons	26° up, 19° down (structural stop 27° up, 20° down)
Spoilers	77.5° roll control 90° lift dumper (structural stop 91°)
Elevator	25° up, 25° down (structural stop 27.5° up, 27.5° down
Stabilizer	fixed
Rudder *	35° right, 35° left

* NOTE: Rudder control system is equipped with a Rudder Travel Limiter Unit (RTLU)

Serial Numbers

No civil C-27J JCA customers are presently identified. Military configured C-27J JCA airplanes could be eligible for a U.S. civil standard certificate of airworthiness (See "Import Requirements") if exported from Italy to the U.S. with an Export Certificate of Airworthiness that references the FAA approved civil type design with identified deviations; these deviations must be rectified before such airplanes will be eligible for a U.S. civil standard certificate of airworthiness.

Import Requirements

The FAA can issue a U.S. airworthiness certificate based on an Export Certificate of Airworthiness (Export C of A) signed by a representative of the ENAC on behalf of the European Community. The Export C of A should contain the following statement: 'The aircraft covered by this certificate has been examined, tested, and found to conform with the Type Design approved under U.S. Type Certificate No**.** A60NM and to be in a condition for safe operation.'

Certification Basis

14 CFR Part 25, effective February 1, 1965, including Amendments 25-1 through 25-87 in entirety, plus Amendment 25-111, effective September 2, 2003, for 14 CFR 25.856(a), Amendment 25-122, effective September 5, 2007, for 14 CFR 25.1317 and Amendment 25-125, effective September 19, 2008, for 14 CFR 25.981(b) and the fuel tank flammability requirements of 25.981(d), as described in exemption No. 9847, and to prevent a potential unsafe design feature under 14 CFR 21.21(b)(2), the applicant is required to comply with EASA Certification Specification CS 25.1155 at Amendment 5.

Special Conditions

No. 25-390-SC	Interaction of Systems and Structures
No. 25-391-SC	Liquid Oxygen System
No. 25-392-SC	Unique Systems and Equipment within a Class E Cargo Compartment.

NOTE: The FAA Special Conditions referenced above may be accessed at internet location:
http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgSC.nsf/MainFrame?OpenFrameSet

Equivalent Safety Findings

14 CFR 25.791(b): Lavatory Passenger Information Signs (documented in TAD ELOS memo TC0371IB-T-C-5);

14 CFR 25.1093(b): Air Intake System Ice Protection (documented in TAD ELOS memo TC0371IB-T-P-1);

14 CFR 25.1549: APU Instruments, Markings, and Placards (documented in TAD ELOS memo TC0371IB-T-P-2);

14 CFR 25.1305(e)(1): Engine Torque Indications (documented in TAD ELOS memo TC0371IB-T-P-3);

14 CFR Part 25 Subparts E, F, & G: Adoption of draft harmonized rules for Auxiliary Power Unit (APU) Certification (documented in TAD ELOS memo TC0371IB-T-P-10);

14 CFR 25.671(c)(2): Flight Control System Failure Criteria (documented in TAD ELOS memo TC0371IB-T-S-5);

14 CFR 25.831(g): Acceptable High Temperature Physiological Environment During Failure Conditions (documented in TAD ELOS memo TC0371IB-T-S-17).

NOTE: The FAA Equivalent Level of Safety Memos referenced above may be accessed at internet location:
http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgELOS.nsf/MainFrame?OpenFrameSet

Exemptions

Exemption No. 9737 for 14 CFR Part 25 Section 25.562(b)(2), Amendment 25-64, "Emergency landing dynamic conditions";

Exemption No. 9847 for 14 CFR Part 26 Section 26.37 (b), Amendment 26-2, "Pending type certification projects: Fuel tank flammability".

NOTE: The FAA Exemptions referenced above may be accessed at internet location: http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgEX.nsf/MainFrame?OpenFrameSet

Optional Requirements complied with:

§25.1403 Wing icing detection lights;

§25.1419 Ice protection.

Continued Airworthiness and Safety Improvements

Special Federal Aviation Regulation (SFAR) Number 88, Amendment 21-78, became effective June 6, 2001. SFAR No. 88, "Fuel Tank System Fault Tolerance Evaluation Requirements", is applicable to the C-27J JCA. Alenia Aeronautica must satisfy the requirements of SFAR No. 88 within 18 months after issuance of the type certificate.

14 CFR Part 26, effective September 19, 2008, including Amendment 26-2.

Environmental Standards

14 CFR Part 36, effective December 1, 1969, including Amendments 36-1 through 36-28;

14 CFR Part 34, effective September 10, 1990, including Amendments 34-1 through 34-3.

Additional Design Requirements and Conditions

The following design details or information must be maintained to ensure that an unsafe design condition is not present:

Severe Icing Conditions: Airplanes with pneumatic deicing boots and non-powered lateral axis flight controls can be more susceptible to a potential loss of control following an exposure to supercooled large drop icing conditions. Specific visual cues for identifying severe icing conditions for the C-27J were determined, and the airplane was shown to be controllable after such an encounter and capable of safely exiting these conditions. The Airplane Flight Manual (AFM) Limitations (Section 2-5 "Systems" and Section 2-7 "Icing Conditions"), Normal Procedures (Section 3-17 "Flight Conditions") and Emergency Procedures (Section 4A-12 "Miscellaneous") contain instructions for identifying severe icing conditions and procedures for safely exiting such conditions.

Reverse Thrust and Propeller Pitch Settings below the Flight Regime: The C-27J includes a feature named "Beta Lock-Out System" to protect the intentional activation of the Reverse Thrust and Propeller Pitch Settings below the Flight Regime in flight. This Beta Lock-Out System is compliant with the requirements of EASA CS 25.1155 at Amendment 5. The Airplane Flight Manual (AFM) Limitations (Section 2-4 "Power Plant"), Emergency Procedures (Section 4A-2 "ACAWS" and Section 4A-3 "Engine") and Procedures Following Failures (Section 4B-2 "ACAWS" and Section 4B-20 "Avionics System") contain instructions for operation during beta lock-out system malfunctions.

Class E Cargo Compartment - Protection of essential systems: Cargo Compartment Lining panels are installed in the cargo compartment in order to assure protection against flame penetration for all essential systems and equipment. These panels meet the flame penetration resistance requirements of Appendix F Part III of JAR-25 (Change 14 Amendment 25/96/1). The Cargo Compartment Lining consists of:

- sidewall panels installed from frame 9 to frame 29;

- ceiling panels installed from frame 9 to frame 32.

Following a smoke event, the flight crew will apply the relevant Airplane Flight Manual (AFM) Emergency Procedures to shut-off cargo ventilation, depressurize the cabin to 24,000 feet and start emergency descent and landing as soon as possible (Section 4A-5 “Smoke”).

Fuel Tank Vent System Flame Arrestors: The fuel vent outlets of the Model C-27J include flame arrestors to prevent fuel tank explosions following an accident. Flame arrestors must be maintained that have flame holding capability for a minimum period of 2.5 minutes to allow passenger evacuation following an accident. The flame arrestor installation must also be designed such that either ice will not accumulate during icing conditions or the fuel tank pressures will be maintained within allowable limits by other means when the arrestor installation ices over.

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see the Certification Basis) must be installed in the aircraft. As referenced in the paragraph 2.2 of Doc. ref. G-CONF-110/090-0100-0002-AL Issue 14 “C-27J – Civil Certification – Type Design Definition”, the lists of all equipment as well as optional approved equipment are contained in the document:

Doc. ref. G-CONF-110/090-0100-0016-AL Issue 1 “Equipment Qualification List”.

Airplane Flight Manual

EASA approved C-27J JCA Airplane Flight Manual AFM-1C-27J-JCA-1

Service Information

Each of the documents listed below that contain a statement that it is approved by the European Aviation Safety Agency (EASA) are accepted by the FAA and are considered FAA approved. Additionally, approvals issued by Alenia Aeronautica under the authority of EASA Design Organization Approval EASA.21J.003 are considered FAA approved. These approvals pertain to the design data only.

- Alenia Aeronautica Service Bulletins, except as noted below,
- Structural repair manuals
- Vendor manuals referenced in Alenia Aeronautica Service Bulletins
- Airplane flight manuals
- Repair instructions.

Note: Design changes that are contained in Alenia Aeronautica Service Bulletins and that are classified as Level 1 Major in accordance with either the US/Italy or US/EASA Bilateral Aviation Safety Agreement - Implementation Procedures for Airworthiness, must be approved by the FAA.

NOTES

NOTE 1. A current weight and balance report, including a 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.

For further information see Weight and Balance Manual WBM-1C-27J-JCA-5.

NOTE 2. Airworthiness Limitations including structural inspections and retirement times for safe-life parts are listed in Doc. ref. G-CONF-110/090-0100-0017-AL Issue 1.

NOTE 3. Certification Maintenance Requirements are listed in Doc. ref. G-CONF-110/090-0100-0017-AL Issue 1 Section 4.

NOTE 4. Instructions for continued airworthiness (ICA) are incomplete. ICA must be complete and accepted by the FAA prior to delivery of the first airplane or issuance of a standard certificate of airworthiness, whichever occurs later. Contact the TC issuing office, ANM-116, for information.

NOTE 5. Other Operating Limitations:

- The FAA pilot type rating has not been determined. No U.S. C-27J JCA pilot certificates may be issued until this is accomplished.
- Operational suitability under 14 CFR Parts 91, 125, and 121 has not been evaluated. This aircraft may not be operated under those regulations until this evaluation has been accomplished.

NOTE 6. FAA ACO's should coordinate with the TC issuing office (ANM-116) any changes intended to increase the airplane maximum operating altitude above 25,000 feet (reference Issue Paper G-1).

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