

**DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION**

AS1GL  
Revision 3  
LOCKHEED MARTIN  
(LORAL)  
GZ-22  
October 1, 1997

**TYPE CERTIFICATE DATA SHEET NO. AS1GL**

This data sheet, which is part of Type Certificate No. AS1GL, prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder: Lockheed Martin Tactical Defense Systems  
1210 Massillon Road  
Akron, Ohio 44315-0001

**I - Model GZ-22 Airship, Approved August 31, 1989**

Envelope:                    Volume                    247,800 cu. ft.  
                                  Maximum Pressure        3.00 in. H<sub>2</sub>O  
                                  Minimum Pressure        1.00 in. H<sub>2</sub>O

Lifting Gas:                Helium gas. The airship is to be inflated with laboratory grade (99.9% purity) Helium gas only.

Engine:                     Two (2) Allison Gas Turbine Division of General Motors Corporation Model 250-B17C (Turbopropeller) (See NOTE 4).

Fuel:                        Jet A, Jet A-1, or Jet B conforming to ASTM D-1655; JP-4 or JP-5 conforming to MIL-T-5624L; JP-8 conforming to MIL-T-83133A (See NOTE 5 for other fuel information and limitations).

Oil:                         MIL-L-7808J or MIL-L-23699C

Engine Limits*:	Shaft H.P.	Torque** lb.ft.	Gas Generator Speed, N <sub>1</sub>	Power Turbine Speed, N <sub>2</sub>	Measured Gas Temperature (Deg C)
Takeoff (5 min.)	369	955	105%	105%	810
Max. Continuous	314	812	105%	105%	738

100% N<sub>1</sub> = 50,970 r.p.m.

100% N<sub>2</sub> = 33,290 r.p.m. (corresponds to 2,030 propeller r.p.m.)

100% Torque = 955 lb.ft.

\* See NOTE 6.

\*\* Maximum continuous torque is limited to 50% (478 lb.ft.) at propeller speeds below 96% N<sub>2</sub>, and to 85% (812 lb.ft.) at propeller speeds at or above 96% N<sub>2</sub>. During reversing, engine torque is limited to 30% (287 lb.ft.).

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Propeller and  
Propeller Limits: Two Hartzell three-bladed full-feathering, reversible propellers.  
Hub Model No. HC-D3F-7  
Blade Model No. D7023  
Diameter: 70 in., No reduction permitted.  
Pitch settings at 24.5 in. station:  
Takeoff 26.1°  
Maximum Power 30.8°  
Maximum Reverse -23.0°  
Flight Idle 8.0°  
Ground Idle 0.0°  
Feather 77.0°

Airspeed Limits: Design Maximum Level Flight Speed 62 m.p.h. CAS  
Maximum Operating Limit Speed 62 m.p.h. CAS  
Maximum Operating Limit Speed  
with camera extended 50 m.p.h. CAS  
Maximum Landing Gear Operating Speed 62 m.p.h. CAS

C.G. Range: Not Applicable.

Datum: Theoretical bow of the envelope. The theoretical bow is 2.19 ft. aft of the centerline of the mooring pendant cable. All station measurements are shown in feet.

Maximum Weight: Maximum airship weight 16,500 lb.  
Maximum car weight 10,000 lb.  
Maximum static heaviness at takeoff 2,000 lb.

Minimum Crew: 1 Pilot.

No. Seats: 10 (2 at +78.04, 2 at +82.93, 2 at +85.93, 2 at +88.93, 2 at +91.53)

Fuel Capacity: 450 gal. (432 gal. usable) (Two 225 gal. tanks)

Oil Capacity: 9 qt. per engine

Serial Nos.  
Eligible: 4120

Certification  
Basis FAR 21.17(b) effective March 13, 1987.

Compliance with FAR 21.17(b) has been shown utilizing the provisions of Advisory Circular 21.17-1 dated September 30, 1987, Section 5. The airworthiness requirements met under this provision are the Airship Design Criteria (ADC), FAA P-8110-2, dated November 2, 1987, as amended by FAA letter dated January 10, 1989.

Application for Type Certificate dated February 29, 1984.

Type Certificate No. AS1GL issued August 31, 1989.

Production  
Basis Production Certificate No. 114.

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

In addition to the above required equipment, the following equipment is also required: FAA Approved Airship Flight Manual, ER3325-15, No Revision, dated September 1, 1989, or later FAA approved revision.

Maintenance and  
Inspection

Maintenance and Inspection of this airship must be carried out according to Lockheed Martin TDS Report ER3325-16, No Revision, dated September 1, 1989, and ER3325-17, No Revision, dated September 1, 1989, or later FAA approved revisions (See NOTE 7).

- NOTE 1. Current weight and balance report together with list of equipment included in certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at time of original certification. The certificated empty weight and corresponding center of gravity location must include unusable fuel of 27.9 lb. at (+95.83).
- NOTE 2. All placards required in the approved airship flight manual must be installed in the appropriate locations.
- NOTE 3. Reserved
- NOTE 4. Allison Model 250-B17C engines installed on the GZ-22 airship are required to incorporate the following modifications (or later FAA approved equivalents):
- (a) Gear Box Assembly (P/N 23051115) - Contains modifications to allow engine to operate throughout an engine pitch range from 30° nose down to 75° nose up.
  - (b) Pneumatic Overspeed Governor - Provides additional overspeed protection by reducing fuel flow to minimum if an overspeed is sensed at the accessory gearbox (Allison Commercial Engine Bulletin (CEB) 1204).
  - (c) Energy Absorbing Ring - Provides protection in the case of a first stage turbine wheel failure (CEB's 1212, 1213, and 1214).
  - (d) Beta Control/Coordinator Kit (P/N 23036659) - Provides more accurate propeller control during "Beta" operation for engines with Hartzell HC-D3F-7 propeller installed (Allison TP Installation Bulletin 1701).
- NOTE 5. Emergency use of aviation gasoline MIL-G-5572, grades 115/145 and lower, is limited to amount of fuel required to operate the engine for not over 6 hours during an overhaul period except that a mixture consisting of 1/3 by volume of aviation gasoline MIL-G-5572 grade 80/87, and 2/3 by volume of MIL-T-5624, grade JP-5, or aviation turbine fuels ASTM-D1655 Jet A or A-1 or Allison Spec. EMS-64 may be used for unrestricted periods of time. Fuels containing Tri-Cresyl-Phosphate additives shall not be used. It is not necessary to purge the unused fuel from the system before refueling with different type fuels. No fuel control adjustment is required when switching these fuel types. Anti-icing additives conforming to MIL-I-27686 are approved for use in fuels in amounts not to exceed 0.15 percent by volume. Shell anti-static additive is approved for use at a concentration that will not exceed fuel conductivity of 300 picomhos per meter.
- NOTE 6. Engine Type Certificate Data Sheet E10CE provides information on the engine manufacturer's type approved performance ratings as well as engine oil temperature and oil pressure limitations.

NOTE 7. This airship is owned and operated by Goodyear Tire and Rubber. Airship maintenance, in accordance with Lockheed Martin Reports ER3325-16 and ER3325-17, must be conducted by Goodyear personnel who travel with the airship and who are trained specialists in all disciplines required to maintain airship operations. Also, additional maintenance and technical support is to be contracted from Lockheed Martin to reinforce the activities of Goodyear field personnel (Reference FAA letter to Loral (now Lockheed Martin) dated September 1, 1989).

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