Template No.
CEMILAC_PGP_GTES_01

GAS TURBINE ENGINE SPECIFICATION

Issue/Rev No: 01/00
Date of Release: 8 Feb 2025

<DESIGN AGENCY LOGO>	**Document No.**			
	Issue No./ Rev No. :	<00X>/	**Issue Date :**	<DD/MM/YYYY>
	Copy No. :	01 of N	**No. of Pages :**	< total no .of pages >
	Document Classification :	☐ Secret ☐ Restricted		☐ Confidential ☐ Unrestricted

Title:	**Project/System :**
GAS TURBINE ENGINE SPECIFICATION	< Project/System Name>
	LRU/System Part No.
	<No.>
	Critical Level
	<A/B/C/D/E>

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Disclaimer:

This document is a guidance document. Applicable section / table rows may be considered. Any additional details may be added. Any not applicable section/ table rows may be deleted. The template is very general and vary with process to process followed by Development Agency. The document may be fine-tuned with the TAA for finalization.

TEMPLATE FOR GAS TURBINE ENGINE SPECIFICATION

The applicant should submit, where applicable, the following information, plus any additional information which, in the applicant's opinion, is essential to the certification and safe operation of the engine.

a. Engine Type.

b. Engine model, type, number of rotors, stages and their arrangement.

c. Performance ratings as defined in FAR Part 1 (See Table 1 of this appendix).

TABLE 1. PERFORMANCE RATINGS AT STANDARD DAY SEA LEVEL STATIC CONDITIONS

RATINGS	Shaft Power / Jet Thrust (min-rated)	Specific Fuel consumption	Rotor r.p.m. (max.)	Measured Gas Temperature (max)
Takeoff (wet)				
Takeoff (dry)				
Maximum Continuous				
30-Minute OEI power				
2-l/2 Min OEI power				
Continuous OEI power				
Reverse (Operating parameter)				
Flight Idle				
Ground Idle				

d. Performance charts consistent with the ratings.

e. Maximum structural loading envelope, Re-light Envelope including mounting attachments and allowable loads.

f. Maximum time the engine may be operated under negative and zero "g" conditions.

g- Maximum permissible temperature limits and cooling criteria for engine components and accessories.

- Type and location of thermocouple to use for cooling test, as applicable.
- Description of temperature sensing provisions, if incorporated.

h. Bleed air characteristic
including temperature, pressure, and flow limits, and the extent and nature of contaminants that
may be present and possibly harmful, if breathed.
1. Maximum permissible air inlet duct attachment loads.

- Shear loads.
- Loads normal to mounting surfaces.
- Overhang moment.

J. inlet air requirements distortion.

- Maximum limits of radial and circumferential
- Maximum limits of velocity distribution.
- Correction factors for inlet pressure losses.

k. Lubrication system.

- Oil grade, type, and specification.
- Oil consumption rate (normal and maximum).
- Oil inlet pressure limits.
- Oil system vent pressure limits.
- Oil inlet and scavenge temperature limits.
- Inlet oil flow rate.
- Usable oil capacity, if oil tank is part of engine.
- Maximum heat rejection to oil.
- and idle, if Oil pump tank outlet is not pressure part of limits for normal operation the engine.
- Oil filter provisions and requirements.

l. Fuel system.

- Fuel, grade, type, and specification.
- Fuel inlet pressure limits external
- Fuel connection. inlet temperature limits, where applicable, for
- Fuel return pressure limits.
- Inlet fuel flow rate.
- Method of preventing filter icing.
- Fuel filter provisions and requirements.

m. Maximum permissible exhaust flange attachment loads. -

- Shear loads.

- Loads normal to mounting surfaces.
- Overhang moment.

n. Bleed air duct/port attachment loads

- Shear loads.
- Loads normal to mounting points.
- Overhang moment.

o. Accessory attachments.

For each accessory drive, give the following information.

- Type of drive and mounting arrangement.
- Direction of rotation.
- Static torque (maximum limit).
- Continuous torque (limit).
- Drive shaft speed ratio with rotor or crankshaft.
- Maximum overhang moment.
- Vibration limits.

p. Output shaft (For turboprop or turboshaft engine.)

- Maximum steady state of the allowable torque or power limits of the output shaft.
- Maximum allowable transient power output torque.
- Maximum bending load limits on the output shaft.
- The type and dimensions of the output shaft, direction of rotation, and speed ratio, with main rotor and nominal drive shaft, speed.

q Instrumentation. Describe all instrumentation provisions, including required range, accuracy,
readability, and assumptions of precision in detail. Describe provisions for connecting permanent and optional instrumentation, including provisions fortrend or condition monitoring equipment.

r. External accessory units (Ref. NOTE 8 of TCDS, Paragraph 5(b)%). List the function, model designation, setting numbers, or any other pertinent identifying information relative to the
following categories of major engine accessories, controls, and special equipment that comprise externally located separate assemblies or units:

- Fuel control and subsystems.
- Ignition system and subsystems.
- Propeller, air bleed, or anti-icing control units.
- Safety devices.
- Other engine accessories or components to be
- furnished as part of, or with the engine.
- Optional aircraft or engine accessories available with the engine for mounting on, or for use with the engine.

s. Performance data.

Data should be presented in the form of suitable plots, charts, tables, or acceptable electronic media form, and should portray the relationship of the various parameters of a "minimum"

engine of the model. Data covering the effects of varying ram pressure ratio, ambient temperature, power extraction, air bleed, and altitude should be provided, and the data basis indicated (e.g., estimated, test, minimum, mean, maximum)

t. Installation drawing.
The applicant should provide an installation drawing of the engine showing all the dimensions and
details necessary for proper installation of the engine in an aircraft.

u. Radiated electromagnetic interference (EMI/HERF)
protection requirements of the engine.

v. Lightning protection requirements of the engine.

w. Induction icing protection system description, requirements, and limitations.

x. **Engine vibration** (include pickup locations and planes)
characteristics and limits (where applicable); acceleration;
velocity; and/or displacement; and frequency for installation and maintenance considerations.

y. Operating and installation limitations.
The applicant
should specify any additional information needed to adequately
describe the operational and installation limitations of the - engine, including the engine reference parameter used to set thrust, where applicable.

z. Electrical supply required.
The applicant should specify the engine requirements for any externally supplied electricity.

Aa. Weight data.

- Dry weight of complete engine, with all required equipment and no residual fuel or oil.
- Weights of optional external equipment and accessories.
- Estimated weight of residual fuel and lube oil.
- Centre of gravity location of engine (dry).

Ab. Mass moment of inertia of rotating system.

- Estimated effective mass moment of inertia of those

engine rotating components involved in starting, when using the designated engine starting system.

- Estimated mass moment of inertia of main engine rotating component assemblies.

- Estimated effective mass moment of inertia of only

the power turbine rotor (for a shaft power type engine).

Ac. Mounting Points

- Mounting Points of Core
- Mounting Points of Jet Nozzle