MODEL AERONAUTICAL ASSOCIATION OF AUSTRALIA

MAAA GAS TURBINE RULES

MOP030

APPROVED: MAAA President Date: 13/02/2011

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Shading of text identifies changes to the previous version.

MAAA Gas Turbine Rules

1. PURPOSE

1.1 The purpose of this publication is to provide all affiliate members of the MAAA a ready reference to their obligations and regulations as required under MAAA rules and procedures for the safe operation of gas turbine model aircraft.

2. DEFINITIONS

Aircraft Inspector……In the context of this document, it is to mean a financial Affiliate Member of the MAAA appointed by the MAAA to inspect specific types of Model Aircraft. Refer to MOP015*: Heavy Model Aircraft Inspection and Operation Procedure* for obligations of a Model Aircraft Inspector.

Club……A Club properly affiliated with an MAAA Ordinary Member.

Fixed Wing Aircraft …… An aircraft having most of its lifting surfaces fixed in size and position.

Gas Turbine Endorsement … An endorsement, authorised by the MAAA, added to an existing MAAA Aircraft Inspector Status. This endorsement allows inspection and issue of the appropriate permits for gas turbine powered model aircraft to a maximum mass allowed by his/her aircraft permit.

Giant Model Aircraft ……..Any model aircraft with a dry mass, (excluding fuel, but including all batteries if electric powered) of more than 25Kgs but less than 50Kgs.

Large Model Aircraft ……..Any model aircraft with a dry mass (excluding fuel, but including all batteries if electric powered) of 7Kgs or more, to a maximum of 25Kgs.

MAAA……..Model Aeronautical Association of Australia Inc.

MOP……Manual of Procedures.

National Fire Rating System….A nationally agreed system, which will help decide what actions need to be taken depending on the predicted fire danger.

Rotary Wing Model Aircraft….Otherwise know as a helicopter.

Permit to Fly ……. A document valid for 3 years from date of issue, issued by an MAAA Aircraft Inspector holding Gas Turbine endorsement following inspection carried out in accordance with MAAA guidelines. See MOP015: *Heavy Model Aircraft Inspection and Operation Procedure.*

3. GENERAL

For the purpose of these rules, aircraft utilising Home Built Turbines are subject to the same operating conditions as those powered by commercially manufactured turbines however any application for a Permit to Fly that involves a Home Built Turbine must be referred to the MAAA's Gas Turbine Subcommittee via the Chairman for direction prior to any Aircraft Certification being carried out.

These rules are applicable for any model aircraft that is powered with a Gas Turbine engine. This includes GT Helicopters and GT Turbo Prop fixed wing aircraft in addition to conventional GT Jet aircraft.

(a) Multi-engine installations must be segregated in separate pods or be installed in such a way that cross ignition cannot be caused.

(b) Fuels are limited to those specified by the engine designer/manufacturer.

(c) A CO_2 or Powder fire extinguisher suitable for the task must be present with safety pin removed during engine(s) start up and shut down and during crash recovery.

(d) For organised events involving the public the event CD must ensure at a minimum, one CO_2 fire extinguisher is present at the starting location in addition to operators' personal fire extinguishers. A second CO_2 fire extinguisher is to be available for recovery deployment.

(e) No gas turbine powered aircraft are to be flown during times of total fire bans as enforced by State and Territory regulations. In exceptional circumstances an exemption may be applied for. Due to the potential financial, property and human cost in the event of a serious problem developing, such exemption will only be granted by the MAAA Executive. It is unlikely that an exemption would be granted without the presence of a rapidly deployable fire fighting vehicle at all times flying is taking place, which contains professional standard equipment manned by fully trained operators. All conditions imposed by the waiver shall be rigorously applied. The relevant fire fighting authority will also receive a copy of any fire ban waiver and conditions issued by MAAA. A fire ban waiver once issued will automatically be cancelled in fire ban conditions rated Catastrophic FDI 100+ in the National Fire Rating System and any lower level as determined by the relevant fire fighting authority which will be specified in the exemption. In addition, the relevant fire fighting authority may specify any additional restrictions to be imposed on the day of the event should conditions justify that action.
The organisers of any event where such an exemption might be required shall apply in writing to the MAAA at least one month before the date of the event. Applications shall be made on MAAA Form 025 and include a dimensioned plan/drawing of the flying site and surrounding area, providing as a minimum:
- Full details of the event
- Surrounding fire hazards
- Bush fire exit strategy (paths, roads & assembly point)
- Name and address of the area fire fighting authority.
- Details of the fire fighting capability that will be employed.

(f) For organised events all operators of GT power aircraft are required to have an assistant present during engine(s) start up, the flight and engine shut down.

(g) During start up, turbine operators are required to maintain a clear distance of 8 metres from any other personnel not associated with turbine start-ups and they are to advise others that no smoking is permitted within 8 metres of a turbine start up area.

(h) Multiple turbine start-ups are permissible in the designated start-up area provided that there is a 2 metre separation between aircraft and that the 8 metre separation is maintained from non associated parties.

(i) For organised events, the event CD must ensure that a designated starting area at least 8 metres from other personnel is maintained and that "No Smoking" signs are displayed.

(j) During start up and shut down the model must be suitably restrained.

(k) During start up and while the model is transported to and from the flight line, tailpipes must always be placed in a direction away from other personnel, public and property.

(l) In addition to the particular turbine manufacturer's specified means of shutting the turbine down it is a further requirement that the turbine can be shut down by an independent (independent of the Turbine ECU) means, which is to be operated remotely by means of the transmitter control. It is also a requirement that the installation include a manual (by hand) means of shutting the turbine down and that this method be accessible during the whole start up and shutdown phase of the turbine.

(m) The engine(s) and fuel system installation must prevent fuel from being forced or siphoned to the engine(s) during refuelling of the aircraft.

(n) Mechanical, electronic over-speed or over-temperature prevention must be provided for the engine(s)

(o) Operators must follow the manufacturer's installation and operating guidelines at all times: this is in addition to any further installation requirements as prescribed in these regulations.

(p) Where failsafe is a feature of the installed radio system then the failsafe for the turbine engine control must be set to either shut down the engine(s) or return the engine(s) to idle power in the event of a failsafe occurrence.

(q) All gas turbine powered aircraft are subject to an airframe and turbine installation inspection in accordance with MOP015 irrespective of the aircraft weight and must undergo an assessment.

(r) In the case that any turbine powered aircraft sustains damage to any flying surface, control surface, fuselage or structural mounting points, its Permit to Fly will be deemed to be suspended until such time that repairs are carried out and the model undergoes an airworthy examination and the Permit to Fly is revalidated by an appropriate Aircraft Inspector holding a Gas Turbine Endorsement. The model is not required to undergo a complete Permit to Fly Inspection.

4. INSPECTION FORMAT

There are four aspects to the inspection and issue of a Permit to Fly for gas turbine powered aircraft.

(a) The airframe is subject to an inspection to assess its suitability in terms of construction, hardware installation, radio equipment, suitability for the turbine(s) installed and airworthiness.

(b) The installation of the turbine(s) in the airframe is inspected to assess the suitability of the installation, heat insulation and to ensure that the remote and manual shut down features as required in Section 3 (l) are fitted and suitable for the purpose.

(c) The operator must demonstrate the safe operation of the turbine powered aircraft through a ground run demonstration including fuelling, start up and shut down procedures. This will be followed by a test flight of the aircraft by the operator to demonstrate the airworthiness of the aircraft and the operator's ability to manage the aircraft safely and within their limits.

(d) With respect to the flight inspection, this may be accomplished over a series of flights not necessarily on the same day: i.e. the operator may choose to have an experienced operator fly the aircraft (provided they have a current Permit To Fly for the aircraft) and start their inspection flight with circuits only, following up with take offs and landings in subsequent flights. These levels will be noted by the Inspector on the Permit to Fly. Once a full flight combining take off, circuits, aerobatic manoeuvres and landing has been achieved then the operator will have achieved a valid Permit to Fly.

5. CERTIFICATION

(a) Certification of turbine powered aircraft will be carried out using the Check List for Inspection of a Gas Turbine Powered Model, the Permit to Fly and if applicable the Giant Pre and During Construction/Assembly Inspection Assessment by a designated MAAA Aircraft Inspector for that type of aircraft who holds a Gas Turbine Endorsement. Refer to MOP015*: Heavy Model Aircraft Inspection and Operation Procedure.*
All Check Lists and the Permit to Fly form are obtained from the Forms Section of the MAAA Manual of Procedures on the MAAA web site (www.maaa.asn.au).

(b) The onus for organising inspection lies with the operator.

(c) No MAAA affiliated Club shall permit the flight of a gas turbine powered aircraft unless the operator is in possession of a current Permit to Fly or is in the process of obtaining certification from an MAAA Aircraft Inspector for that type of aircraft who holds a Gas Turbine Endorsement.

(d) The operator is required to sign the Permit to Fly as certifying their assurance that they understand and undertake to operate the aircraft in a safe and responsible manner and within the MAAA rules and regulations.

(e) Unless the aircraft sustains any damage (refer to Section 3 (r)) the Permit to Fly is valid for three years from date of issue.

(f) The safe operation of any turbine-powered aircraft remains the sole responsibility of the operator.

6. FORM

6.1 Application for Fire Ban Waiver – Form No MAAA025 See Appendix A.
Check List for Inspection of a Gas Turbine Model Aircraft – Form No MAAA039.
Permit to Fly – Form No MAAA038.

Forms are available from the Forms Section of the Manual of Procedures on the MAAA web site.

MODEL AERONAUTICAL ASSOCIATION OF AUSTRALIA

APPLICATION FOR FIRE BAN WAIVER

This form to be completed in conjuction with the Procedure MOP030 – Gas Turbine Rules

1. **Name of Club/Organiser** .....
2. **Address** .....

   Post Code ..... Phone ..... Email: .....
3. **Date of Event:** From ...../...../..... to ...../...../..... **Time of Event:** From ..... to .....
4. **Fire Fighting Authority:** Name .....

   Address ..... Post Code .....

   Phone: Business ..... Mobile..... Email: .....
5. **Location of Event** .....

   (Give Map Reference)
6. **Details of Event**.....
7. **Number of spectators expected** .....
8. **Surrounding Fire Hazards**.....
9. **Bush fire exit strategy (paths, roads & assembly)**.....

   .....
10. **Details of the fire fighting capability that will be employed**.....

    .....
11. **Show details of flying field including entry and exit roads, assembly points & fire hazards**

Club/Organiser Signature:..... Position: ..... Date:.....

Signature.....

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Appendix "A" Application for Fire Ban Waiver