NAFC
National Aerial Firefighting Centre

PR001 Categorisation of rotary wing aircraft used for firebombing operations

Standard

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1 Background

In order to streamline procurement processes and operational procedures it is useful to define the broad categories or "Types" of aircraft, according to their notional capability.

These categories offer a common interpretation for NAFC, its Members, Contractors, suppliers and others of the different types of aircraft.

2 STANDARD

2.1 Rotary wing aircraft capable of firebombing will be assigned a Type based on their internal payload and water carrying capacity, as specified:

Type	Internal payload	Water carrying capacity
1	**2,268 kg** or greater	**2,650 litres** or greater
2	Between **1,134 kg** and **2,267 kg** inclusive	Between **1,135 litres** and **2,649 litres** inclusive
3	Between **544 kg** and **1,133 kg** inclusive	Between **380 litres** and **1,134 litres** inclusive
4	Less than **544 kg**	Less than **380 litres**

2.2 To be categorised as a particular type an aircraft must meet both criteria applicable to the Type. Those aircraft which do not meet both criteria are instead classified according to the lower criteria that they do meet (e.g. an aircraft with an internal payload of 2,500 kg and a tank capacity of 1,800 litres would be classified as a Type 2 aircraft).

2.3 Specialised aircraft with configurations that offer no internal payload are classified solely based on their water carrying capacity.

2.4 Internal Payload means the difference between the specified Maximum Takeoff Weight for internal loads and the Calculated Basic Weight of the aircraft at Mean Sea Level under International Standard Atmosphere (ISA) conditions.

2.5 Maximum Takeoff Weight (MTOW) means the applicable MTOW is that prescribed by the aircraft's approved flight manual for carriage of internal loads under Day Visual Flight Rules Aerial Work provisions. Where the flight manual of an aircraft (e.g. some foreign registered aircraft) does not prescribe an applicable MTOW, then the lesser of any MTOW or Maximum Gross Weight for internal loads that may be prescribed in any Certificate of Airworthiness issued by the civil aviation regulatory authority in the country of manufacture or a Pilots Operating Handbook approved by the regulatory authority in the country of registration may to be used.

2.6 Calculated Basic Weight means the Basic Weight or Empty Weight prescribed by the aircraft's approved flight manual for the aircraft configuration that would be used for firebombing, adjusted if necessary to include:

a. oil and unusable fuel;

b. installed communication and navigation equipment required for fire operations;

c. on-board installed equipment to operate any firebombing equipment (e.g. cargo hook, controller/power supply, suppressant concentrate reservoir);

d.

e. external firebombing tank attached to the airframe or internal firebombing tank, including door or gate systems;

but may exclude:

f. flight crew;

g. mixed suppressant or retardant, suppressant concentrate or other additives;

h. portable equipment (e.g. survival gear);

i. any sling load, including cables, long-lines, firebombing bucket;

j. quick-change seating that would normally be removed for firebombing operations.

Where an aircraft has flight manuals or documents prescribing aircraft weights that have been approved by or issued by aviation authorities in more than one country, the weights applicable to operations in Australia are to be used.

2.7 Water carrying capacity means the maximum physical volume of water that can be carried in the aircraft's internal tank, bellytank or bucket. The aircraft must be reasonably capable of carrying the maximum volume in routine firebombing operations under conditions, as follows:

a. routine operations include hover-fill of the bucket or tank, plus cruise flight at Mean Sea Level under ISA plus 25˚C conditions; and

b. no other adverse weather conditions that may limit the volume or weight carried such as turbulence, wind, visibility; and

c. the aircraft carries equipment described in Calculated Basic Weight above, plus

d. one hour of fuel calculated at normal cruise power settings in firebombing configuration; and

i. normal operating crew (at a standard weight of 86kg per person); and

ii. there is no loss of water through vents or ports in the tank or the drop doors during normal manoeuvring.

2.8 Type 1 Rotary Wing aircraft may be further categorised as High Volume aircraft if they are capable of delivering a volume of 100,000 litres of water with added Class A foam concentrate in the first 90 minutes to a fire based on the following scenario (90 minutes commences on departure from base):

Criteria	Value
Distance from base to water dip/fill site	80 km
Distance from dip/fill site to fire	5 km
Water point suitable for hover filling or bucket dip	Yes
Weather conditions	ISA plus 25°C
Terrain	1,000 feet AMSL
Class A foam concentrate added at	0.3% of total load

Refuelling/foam concentrate reloading	NOT available in first 90 minutes Available at dip/fill site after 90 minutes

2.9 Each individual aircraft is assigned a Type. Type 1 aircraft may be further classified as High Volume.

2.10 Aircraft capable of operating in different configurations may have different Types specified for each configuration (e.g. an aircraft may be classed Type 2 when operating with a tank and Type 1 when operating with a bucket).