



OPS-014

Tracking, Event Reporting, and Messaging



Standard
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1 Background

Firefighting and emergency service aircraft are required to provide accurate and timely position and event reporting.

Requirements of any contract take precedence over requirements of this standard. Any exceptions to this standard will be made at the absolute discretion of NAFC or a Member.

2 Criteria

Firefighting and emergency service aircraft and ground support vehicles must be fitted with position reporting, event reporting, and messaging equipment that meets the requirements of this Standard.

Tracking, event reporting, and messaging may use a single or a combination of devices. A regular testing and checking programme must operate to ensure reliability. It is advisable to consider potential future requirements when selecting hardware.

Operators must:

- participate in the Australian Fire Aircraft Monitoring System (AFAMS) through which tracking data is forwarded to NAFC. This is managed by TracPlus Global Ltd.
<https://www.tracplus.com>
- maintain accurate records of which tracking device is installed in which aircraft at any point in time
- update tracking provider, data integrator (AFAMS) and NAFC systems (ARENA) with any changes to aircraft or tracker IMEI / serial number, at the time of the change.

Where this Standard requires data to be in particular units (e.g., metres) it is acceptable for equipment to collect data in other units (e.g., feet) when converted.

All position and event reports must be transmitted within 60 seconds of collection and passed to the NAFC designated data integrator (AFAMS) within two minutes of collection.

Refer to *NAFC Standard OPS-020 Avionics and Communications* for ADS-B requirements.

2.1 Position (Tracking) Reports

All aircraft:

- must be equipped with equipment that transmits position reports at a minimum of 120 second intervals when aircraft electrical busses are powered. A system that includes satellite and terrestrial modes is required.
- tracking equipment should be powered on as early as possible in the aircraft start sequence.

Vehicles:

- must be equipped with equipment that transmits position reports at a minimum of 600 second intervals when electrical systems are powered.

NAFC strongly encourages the use of tracking equipment that transmits more frequent position reports for aircraft and vehicles.



All position (tracking) reports must include at least the following data derived from GPS:

Element	Units	Precision	Reference
Time	Date / time	1 second, or better	UTC time
Latitude	Degrees	0.0001 degrees, or better	WGS84
Longitude	Degrees	0.0001 degrees, or better	WGS84
Altitude	Metres	1 metre, or better	WGS84
Speed	Kilometres per hour	1 km/h, or better	
Track	Degrees	1 degree, or better	Grid north

Where possible GPS receivers should utilise an external antenna. Where not practical, the GPS receiver must have a clear view of the sky.

2.2 Engine and Flight Reports

Where required by NAFC or a Member, aircraft must transmit engine and flight reports when the following events occur:

Category	Event	Aircraft	Notes
Engine	Engine on	Fixed wing and Rotary wing	Or equivalent e.g. rotors in motion
	Engine off	Fixed wing and Rotary wing	
Flight	Take-off	Fixed wing and Rotary wing	
	Landing	Fixed wing and Rotary wing	
	Entry to hover	Rotary wing	
	Exit from hover	Rotary wing	

Engine and flight reports must include:

- all data required for a position report
- accurate time
- type of the event that triggered the report.

Engine and flight reports may be used to determine chargeable periods. They must accurately reflect aircraft state. For example, if 'rotors in motion' is chargeable time, a gearbox oil pressure sensor may be a suitable trigger for engine on / off event reporting.



2.2 Firebombing Event Reports

Dedicated firebombing aircraft, and other aircraft required by NAFC or Member, must be equipped with an electronic event reporting system that transmits an additional report when the following events occur:

Category	Event type	Aircraft	Notes
Firebombing	Load	Fixed wing and Rotary wing	Amount loaded
	Start of drop	Fixed wing and Rotary wing	Start of substantive flow
	End of drop	Fixed wing and Rotary wing	End of substantive flow

Firebombing event reports must include:

- all data required for a position report
- accurate time
- type of event that triggered the report
- all information specified in the table below.

Event type	Attribute	Units	Precision
Load	Volume on board	Litres	100 litres or better
	Product class	Water / Foam / Gel / Retardant	
	Product type	Text	Name of product
Start of drop	Coverage level	USG/100sqft	1 USG/100sqft
	Drop type	Full / Split	
	Height AGL*	Metres	10 metres or better
End of drop	Volume dropped	Litres	100 litres or better
	Height AGL*	Metres	10 metres or better

Start and end of drop refers to the substantive flow from the delivery system. Where this does not coincide with doors or valves operating, the substantive flow must trigger the reports. For example, if the delivery system held doors open after the tank was empty ensure it is clear, door operation is not an acceptable trigger for 'end of drop'.

2.3 Messaging

Where required by NAFC or Member, an aircraft or vehicle must be equipped with a device that provides for the two-way transmission of text messages regardless of location.

Text messages must be sent and received via an a readily accessible visual display / interface in the aircraft or vehicle.

All message reports must include:

- all data for a position report
- the message text.