

7.4. National Rural Fire Association Standards

NRFA STANDARD 5-01

Weather Observations and Recording

Purpose: To monitor and record weather data for the Fire Weather Index (FWI) System and during fire incidents.

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Part A - User Requirement

A Remote Automated Weather Station (RAWS) monitors, records and transmits a range of weather observation data automatically and on demand.

Temperature, relative humidity, wind speed and direction and rainfall data are the observations which are collected to support the Fire Weather Index component of the New Zealand Fire Danger Rating System, a tool that allows Rural Fire Authorities to make accurate assessments of the fire danger.

A nation-wide network of RAWS exists to allow a Rural Fire Authority and the National Rural Fire Authority to monitor weather conditions in accordance with legislated responsibilities.

The RAWS sample and record data every hour, which can be used during an incident to get near-real time observations. At 12:00 NZST (1:00 NZDT) data is collected to provide daily Fire Weather Index figures.

The RAWS is located in an area where the microclimate covers an area a rural fire authority considers is at risk. The location of RAWS is to be approved by the regional Rural Fire Committee to ensure that there is both adequate coverage within a region and that multiple RAWS are not placed in the same microclimates.

The National Rural Fire Authority adds RAWS to the national network by (a) accepting voluntary offers of goodwill (b) through commercial contracts with organisations (such as the MetService), and (c) offering subsidies to Rural Fire Authorities for RAWS purchase and upgrade). The only stipulations on RAWS owners are that the National Rural Fire Authority is able to access the data at any time and that the station is sited and maintained sufficiently to deliver quality data. A RAWS that fails to deliver regular, accurate data will be removed from the network until it is deemed to be fully operational.

Part B – Manufacturing and Installation Requirements

The sensors for temperature, relative humidity, wind speed and direction and rainfall shall be durable to ensure continuity of service and accurate to World Meteorological Organisation (WMO) Guidelines No.8

Major components should have an expected life span of at least 5 years depending on the environment. Some sensors can be replaced annually. All sensors shall be calibrated annually.

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The RAWS shall have solar power, or another on site independent means of maintaining the battery condition to ensure continuity of power supply.

The RAWS shall be erected in a manner that allows for easy access to the sensors for maintenance and installed at a site that will allow service agents regular access.

The data logger installed must have good error detection, correction and a minimum of a 30 day data storage facility and be compatible with Campbell Scientific CR10 and Forest Technology Systems FWS11 protocols.

The RAWS must have access to a strong, stable data communications link to the owner, Rural Fire Authority and the National Rural Fire Authority

Part C – Inspection Record

Shall be inspected at least 3 monthly and in accordance with the manufacturers guidelines.

If required shall be serviced by competent, authorised personnel.

Reference NRFA publication: Remote Automatic Weather Stations - Guidelines for the Installation, Use and Maintenance for the NRFA Network

The fire authority must hold a record of the inspections carried out.

Part D – Performance / Annual Calibration Record

The RAWS owner and/or service agent should monitor the number of outages and the duration of outages to determine the reliability of a station and the performance of the service agent in responding to those outages. Such outages may include the failure of one or more sensors, the data logger, or the transmission equipment (modem and/or phone line).

Data should be monitored to detect failures. Total failures mean either an absence of entire records or an absence of one sensor's value and are easy to detect. Partial failures are harder to detect but may show values obviously out of acceptable ranges. The gradual decay of a sensor is the hardest to detect and may only be obvious when compared with data from nearby stations or stations in a similar climatic region.

The RAWS shall be performance tested and calibrated as necessary in accordance with the manufacturers guidelines:

(a) On acceptance of delivery (new product)

(b) After any repairs

(c) A minimum of annually, preferably during August and September to have the station operating as accurately as possible over the summer.

Reference NRFA publications:

Service Level Agreement for The Maintenance of Remote Automatic Weather Station/s and the NRFA Remote Automatic Weather Station Network Calibration and Upgrade Policy

The fire authority must hold a record of the RAWS performance / annual calibration.