

# **STANDARD OPERATING PROCEDURES**

## **Met One Meteorological Monitoring Station**

### **AMBIENT AIR MONITORING PROGRAM for the 130 LIBERTY STREET DECONSTRUCTION PROJECT**



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# Standard Operating Procedures

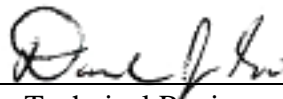
## Met One Meteorological Monitoring Station

Revision 0  
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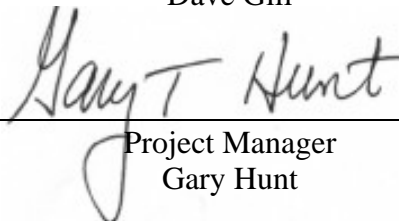
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## **1.0 PURPOSE OF SOP**

This SOP was designed to describe the procedures used for measurement of wind speed, wind direction, air temperature, relative humidity and barometric pressure.

## **2.0 EQUIPMENT DESCRIPTION**

The 466A AutoMet is a complete display data logger designed to accept a variety of standard Met One Sensors. Measurements include wind speed, wind direction, air temperature, relative humidity, rainfall and barometric pressure.

### **2.1 Parts of the Met Station**

- Wind speed sensor
- Wind direction sensor
- Cross arm assembly
- Humidity/Temperature sensor
- Automet Datalogger
- Tripod
- Ground stake
- Ground strap
- Barometer

## **3.0 EQUIPMENT OPERATION**

In order to operate the Met Station, it is necessary to assemble, calibrate and perform maintenance on each sensor individually.

### **3.1 Wind Speed Sensor**

The Met One Wind Speed Sensor uses a durable 3-cup anemometer assembly and simple magnet-reed switch assembly to produce a series of contact closures whose frequency is proportional to wind speed.

#### *3.1.1 Installation*

1. Check to see that the cup assembly rotates freely.
2. Install the sensor into the fitting on the end-mounting arm.
3. Apply a small amount of silicone grease to the set screws to prevent 'freezing up' in corrosive environments. Tighten the locking setscrews but do not over tighten.
4. Connect the Cable Assembly to the connector receptacle on base of sensor. Secure the cable to the mounting arm using cable ties or tape.

#### *3.1.2 Calibration*

1. Spinning the anemometer cup assembly will produce a series of pulses. To verify sensor output, monitor this signal with either a plug-in Translator Module,

- Datalogger or an Ohmmeter. Spin slowly and monitor output signal. A windspeed calibrator may be used to check operation at different RPM points.
2. Inspect the cup assembly for loose cup arms or other damage. The cup assembly cannot change calibration unless a mechanical part has come loose or has been broken.

### *3.1.3 Maintenance*

#### General Maintenance Schedule

6-12 month intervals:

1. Inspect sensor for operation.
2. Replace Wind Speed Sensor bearings in extremely adverse environments.

12-24 month intervals:

1. Replacement of sensor bearings.

24-36 month intervals:

1. Replacement of sensor bearings.

## **3.2 Wind Direction Sensor**

The Met One Wind Direction Sensor uses a lightweight, air-foil vane and a potentiometer to produce an output that varies proportional to wind direction.

### *3.2.1 Calibration*

1. Using a compass to read due North, rotate the vane until the vane is pointing North. Lock the vane in this position. Turn the sensor until the data logger also reads North.
2. To check the voltage, rotate the vane in a clockwise direction to increase the voltage output up to the 360° point. After it reaches the 360° point the voltage will start to drop until it reaches 0°. Once the voltage reads 0°, lock the vane to the sensor.

### *3.2.2 Maintenance*

#### General Maintenance Schedule

6-12 month intervals:

1. Inspect sensor for proper operation.

24-36 month intervals:

1. Replace potentiometer with a factory potentiometer.
2. Send sensor to Met One for a complete factory overhaul of sensor.

### **3.3 Relative Humidity/Temperature Sensor**

The Relative Humidity/Temperature Sensor is an extremely accurate and sensitive sensor which simultaneously measures relative humidity and temperature.

#### *3.3.1 Calibration*

1. The Relative Humidity Sensor has been calibrated at the factory and will not change unless damaged. To check for proper operation of the sensor it is advised that the output signal be checked against a local service facility. Exact correlation is not to be expected due to atmospheric and geographical variations.
2. The Temperature Sensor should be compared to a precision mercury thermometer for actual readings.

#### *3.3.2 Maintenance*

#### General Maintenance Schedule

6-12 month intervals:

1. Inspect sensors for proper operation.
2. Clean Relative Humidity sensor element according to owner's manual.

### **3.4 Barometric Pressure Sensor**

The Barometric Pressure Sensor uses an active solid-state device to sense barometric pressure. Self-contained electronics provide a regulated voltage to the solid state sensor and amplification for the signal output.

#### *3.4.1 Calibration/Maintenance*

1. Inspect pressure inlet port occasionally to insure it is free of obstruction. No other periodic maintenance or calibration is required.
2. Inspect sensor for proper operation.

## **4.0 ADDITIONAL INFORMATION**

A more detailed equipment manual is available from Met One and is located in the site office for any other questions about the Met Station.