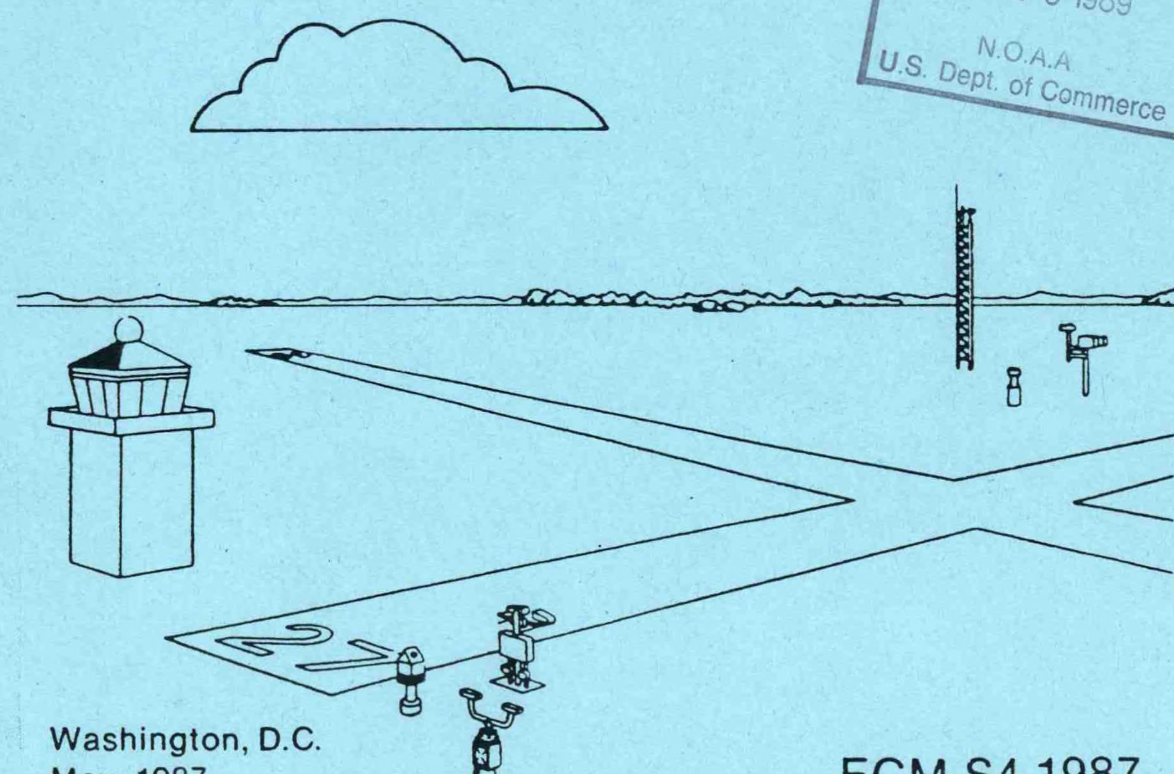
DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration

OFCM

OFFICE OF THE FEDERAL COORDINATOR FOR
METEOROLOGICAL SERVICES AND SUPPORTING RESEARCH

Federal Standard for Siting Meteorological Sensors at Airports



Washington, D.C.
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FEDERAL COORDINATOR
FOR
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FEDERAL STANDARD FOR SITING METEOROLOGICAL SENSORS AT AIRPORTS

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CHANGE AND REVIEW LOG

Use this page to record changes and notices of reviews.

Change Number	Page Numbers	Date Posted	Initial
1			
2			
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Review Date	Comments	Initial

FOREWORD

The coordination of weather observing activities in the United States is complex, involving three federal agencies and the commercial aviation sector. The Departments of Commerce (DOC), Defense (DOD), and Transportation (DOT) all have programs to develop and field automated weather observing systems. The automation programs of these three agencies are closely coordinated in order to manage the changes brought about by automation.

Because of the critical need to assure commonality and interchangeability of weather information among agencies that provide weather observations and among various users, the OFCM Working Group for Surface Observations' Task Group for Surface Instrumentation Standards has developed standards for siting automated weather observing systems used at airports and heliports. This document addresses siting characteristics for exposure and placement of sensors. It is essential for the establishment of a standardized meteorological data network and necessary for aviation operations as well as for aviation and other weather forecasting purposes.

To provide for an orderly transition to metric units, this document includes both English and metric dimensions. The metric dimensions may not be exact, and until there is an official changeover to the metric system, the English dimensions will prevail.

R. L. Carnahan

Robert L. Carnahan
Federal Coordinator for
Meteorological Services
and Supporting Research

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1. INTRODUCTION

1.1 PURPOSE

This document establishes the Federal standard for siting meteorological sensors of automated weather observing systems at airports/heliports to collect meteorological data to support aircraft operations as well as aviation and other weather forecasting. It will be used by Federal agencies as a basis for developing and implementing specific regulatory or technical documents. The standard applies to all Federally-owned and Federally-funded systems, as well as non-Federal systems that are to be approved by the Federal Aviation Administration (FAA) of the DOT or the National Weather Service (NWS) of the DOC. Multiple users of meteorological data exist, and to the greatest practical extent they have been considered in the development of this standard. The standard provides criteria for proper and representative exposure of sensors to assure that data are meteorologically sound (Section 2). It also provides criteria for selecting locations for sensors at both small and large airports (Sections 3 and 4 respectively) as well as at heliport installations (Section 5).

1.2 SCOPE

This standard is intended to serve as the most fundamental reference for sensor siting. While this document is not of itself regulatory in nature, it is to be implemented through appropriate agency orders. Likewise, this standard may be modified or enhanced by agency directives. This document does not require agencies to change existing sensor installations solely to comply with this standard. It will be applied as new stations are established. Inclusion of sensors in this document does not imply that such sensors will be used in all system applications.

In applying this document to the planning of an automated weather observing system site at an airport with a control tower, no site shall be finalized without obtaining the approval of the control tower manager.

Sensor siting in accordance with this standard meets the requirements of Section 77.15(c) of the Federal Aviation Regulations (FAR) and is exempt from further Part 77 study. Any exceptions to the standard or special situations will require an FAA obstruction evaluation/airport airspace analysis (OE/AAA) aeronautical study in accordance with Part 77 of the FAR to determine if a substantial adverse effect would be created for aircraft operations.

The standard covers the following weather elements:

- Surface wind speed and direction
- Ambient temperature
- Dew point temperature

- Atmospheric pressure
- Visibility
- Sky condition
- Precipitation type discrimination (Rain, snow, drizzle, etc.)
- Precipitation occurrence (Yes/No)
- Freezing precipitation detection
- Precipitation accumulation
- Snowfall-snow depth, and
- Lightning detection

The standard does not address:

- Details of installation for individual manufacturers' sensors,
- Shielding and/or venting of sensors, except in general terms,
- Special application systems such as those designed to detect low-level wind shear,
- Details of lightning protection.

2. SENSOR EXPOSURE

2.1 GENERAL

Sensor siting shall not violate runway or taxiway safety areas, obstacle free zones or instrument flight procedures surfaces as defined in FAA Advisory Circular (AC) 150/5300-4 (Utility Airport--Air Access to National Transportation), FAA AC 150/5300-12 (Airport Design Standards--Transport Airports), or FAA Handbook 8260.3 (TERPS). Notwithstanding these constraints, the sensor exposure will strive to minimize or eliminate the effects of man-made or geographical obstructions. The tower used to mount the wind sensor is not considered an obstruction to the sensor collection system, but it will (with the exception of the temperature, dewpoint and pressure sensors) be at least 10 feet (3 meters) away from the other sensors. Sensors should be located as far as practicable from cultivated land to reduce contamination by dust and dirt. It may be necessary to increase the heights of some sensors based on the average maximum snow depth for the location, which will be determined by averaging the maximum annual snow depths over the period of record.

2.2 PRESSURE SENSOR

The pressure sensor will be installed on the airfield, usually in a weatherproof facility (building, shelter, enclosure, etc.). When the pressure sensor is vented to the outside, a vent header will be used. In most cases, internal venting of the pressure sensors may be satisfactory. However, if it is determined that internal venting will affect the altimeter setting value by ± 0.02 inches of mercury or more, outside venting will be used. A portable transfer standard will be used to resolve any questions regarding the need for external venting. Siting that will cause pressure variations due to air flow over the venting interface should be avoided. The venting interface will be designed to avoid and dampen pressure variations and oscillations due to "pumping" or "breathing" of the pressure sensor venting and porting equipment. Each sensor will have an independent venting interface from separate outside vents (if outside venting is required) through dedicated piping to the sensors. The sensors should also be located in an area free of jarring, vibration, and rapid temperature fluctuations (i.e., avoid locations exposed to direct sunlight, drafts from open windows, and air currents from heating or cooling systems). The field and sensor elevations above Mean Sea Level (MSL) elevation will be determined to the nearest whole foot by a qualified surveyor. The distance between the elevation of the pressure sensors and the field elevation will not exceed 100 feet (30 meters). In moderate/temperate climates, this elevational differential is less critical and can be increased.

2.3 CLOUD HEIGHT SENSOR

This sensor will be mounted on a platform/pedestal with sensor optics 6 ± 1 feet (2 ± 0.3 meters) above ground level or 4 feet (1.2 meters) above average maximum snow depth, whichever is higher. Six feet (2 meters) above the ground is the preferred height. The sensor should be located as far as practicable from strobe lights and other modulated light sources.

2.4 VISIBILITY SENSOR

This sensor will be mounted on a platform/pedestal as free as possible from jarring vibration. Unless otherwise specified by the manufacturer, the receiver will be pointed in a northerly direction. The sensor should be located as far as practicable from strobe lights and other modulated light sources. It should not be located in an area that is subject to localized obstructions to vision (e.g., smoke, fog, etc.) nor in an area that is usually free of obstructions to vision when they are present in the surrounding area. It will be mounted so the optics are 10 ± 2 feet (3 ± 0.6 meters) above ground or 6 feet (2 meters) above the average maximum snow depth, whichever is higher. Ten feet (3 meters) above the ground is the preferred height. Keep the area within 6 feet (2 meters) of the sensor free of all vegetation and well drained and any grass or vegetation within 100 feet (30 meters) of the sensor clipped to a height of about 10 inches (25 centimeters). These precautions are necessary to reduce the probability of carbon-based aerosols (e.g., terpenes) and insects from interfering with sensor performance. In addition, backscatter-type sensors must have a clear area for 300 feet (90 meters) in the forward (north) octant. Some sensors may require additional clear areas. The clear line of sight requirement for the sensor optics will be as specified by the sensor manufacturer.

2.5 WIND SENSOR

This sensor (wind speed and wind direction) will be oriented with respect to true north. The system software will be used to make required adjustments to magnetic north. The site should be relatively level, but small gradual slopes are acceptable. It will be mounted 30 to 33 feet (9 to 10 meters) above the average ground height within a radius of 500 feet (150 meters). The sensor height shall not exceed 33 feet except as necessary to: (a) be at least 15 feet (5 meters) above the height of any obstruction (e.g., vegetation, buildings, etc.) within a 500 foot (150 meter) radius, and (b) if practical be at least 10 feet (3 meters) higher than the height of any obstruction outside the 500 foot (150 meter) radius, but within a 1000 foot (300 meter) radius of the wind sensor. An object is considered to be an obstruction if the included lateral angle from the sensor to the ends of the object is 10 degrees or more.

Exception: The height of a wind sensor installed on the Instrument Landing System (ILS) glide slope antenna tower or on a separate tower in Area "A", Figure 2, will be reduced, as necessary, such that the height of the complete wind sensor installation (i.e., to include any required air terminal(s) and obstruction lights) does not exceed the height of the glide slope antenna installation). If side mounting (i.e., perpendicular to a tower) is necessary, a boom will be used to permit installation of the sensor a minimum of 3 feet (1 meter) laterally from the tower. Side mounting is to be utilized only if top mounting is not practicable and the tower is of open design to allow for free air flow.

2.6 TEMPERATURE AND DEWPOINT SENSORS

These sensors will be mounted so that the aspirator intake is 5 ± 1 feet (1.5 ± 0.3 meters) above ground level or 2 feet (0.6 meters) above the average maximum snow depth, whichever is higher. Five feet (1.5 meters) above ground is the preferred height. The sensors will be protected from radiation from the sun, sky, earth and any other surrounding objects but at the same time be adequately ventilated. The sensors will be installed in such a position as to ensure that measurements are representative of the free air circulating in the locality and not influenced by artificial conditions such as large buildings, cooling towers, and expanses of concrete and tarmac. Keep any grass and vegetation within 100 feet (30 meters) of the sensor clipped to a height of about 10 inches (25 centimeters) or less.

2.7 LIGHTNING DETECTION (THUNDERSTORM) SENSOR

This sensor will be sited and mounted in accordance with the manufacturer's recommendations/specifications. For a single station sensor, metal obstructions will be no closer than two times their height above the sensor.

2.8 PRECIPITATION TYPE DISCRIMINATION SENSOR

This sensor detects precipitation and discriminates type (e.g., rain, snow, drizzle). It will be mounted so that the optics are 10 ± 2 feet (3 ± 0.6 meters) above ground or 6 feet (2 meters) above the average maximum snow depth, whichever is higher. Ten feet (3 meters) above ground is the preferred height. If the system is double ended, the optical axis will be oriented generally north-south with the receiver facing north. The terrain between the receiver and transmitter should be relatively flat.

2.9 PRECIPITATION OCCURRENCE (YES/NO) SENSOR

The precipitation occurrence sensor will be mounted in accordance with the manufacturer's specifications at a convenient height but not less than 6 feet (2 meters) above ground level or 4 feet (1.2 meters) above the average maximum snow depth, whichever is higher. Care must be taken to avoid shielding of the sensor by structures, buildings and obstacles.

2.10 FREEZING RAIN DETECTION SENSOR

The siting requirements for the freezing rain sensor are the same as for the precipitation occurrence sensor.

2.11 PRECIPITATION ACCUMULATION (LIQUID OR LIQUID EQUIVALENT) SENSOR

This sensor will be mounted so that the orifice is horizontal and in an area where the terrain is relatively flat. The orifice is defined as the upper rim edge of the collector mouth. The height of the orifice will be as close to ground level as practicable. In determining the height of the orifice, consideration will be given to keeping the orifice above accumulated/drifting snow and minimizing the potential for splashing into the orifice. Surrounding objects will be no closer to the sensor than a distance equal to two times their height above the gage orifice. An object is considered an obstruction if the included lateral angle from the sensor to the ends of the object is 10 degrees or more. In order to reduce losses due to wind, an alter-type wind shield is recommended to be installed on gages in areas where 20 percent or more of the annual average precipitation falls as snow. The surrounding ground can be covered with short grass or be of gravel, but a hard flat surface such as concrete gives rise to splashing and should be avoided. Separate sensors may be used to measure liquid and frozen precipitation accumulation (e.g., rain and snow) in which case the above criteria will be followed for each installation.

2.12 SNOWFALL-SNOW DEPTH SENSOR

This sensor will be mounted at least 15 feet (4.5 meters) away from the wind tower over an area which would be expected to have snow cover which is representative of the area of interest. It will be mounted in accordance with manufacturer specifications and recommendations.

2.13 COMBINATION VISIBILITY, PRECIPITATION OCCURRENCE, AND PRECIPITATION ACCUMULATION SENSOR

The siting requirements for the visibility sensor apply to this combination sensor or any other combinations of the precipitation parameters and visibility.

3. SITING CRITERIA FOR SENSOR PLACEMENT AT SMALL AIRPORTS

3.1 GENERAL

This section provides guidelines for placement of sensors at airports with visual, non-precision, and Category I instrument runways, with 95 percent or more of their forecast traffic in Airplane Design Groups I, II, or III as defined in AC 150/5300-4 (Utility Airports -- Air Access to National Transportation). These are typically small airports where maximum runway length is 6,000 feet or less. Special care is necessary in selecting appropriate locations for installation of sensors to assure that the resultant observations are representative of the airfield. Users of these criteria should consider future plans for the airport that could impact placement of sensors, e.g., installation of an instrument landing system (ILS), microwave landing system (MLS), runway construction, etc.

3.2 CLOUD HEIGHT, VISIBILITY, WIND, TEMPERATURE, DEWPOINT, AND PRECIPITATION SENSORS

3.2.1 General. No sensor siting shall violate runway safety areas, obstacle free zone or instrument flight procedure surfaces as defined in AC 150/5300-4 (Utility Airports--Air Access to National Transportation), AC 150/5300-12 (Airport Design Standards--Transport Airports), or FAA Handbook 8260.3 (TERPS). These sensors (cloud height, visibility, wind, temperature, dewpoint and precipitation) should be located together near available power and communications. However, the temperature, dewpoint, and precipitation sensors can be placed at any convenient location on the airport that meets the sensor exposure criteria outlined in Section 2.0. FAA sector manager approval is required for the use of any FAA facilities such as power, communications, shelters, towers, etc. Figure 1 shows a typical configuration at a small airport with an ILS.

3.2.2 Airports with Precision Instrument Runways. The cloud height and visibility sensors and associated data collection package (DCP) will be located behind the glide slope shelter/MLS elevation station used for the primary precision instrument runway (Area "B", Figure 2).

The wind sensor will be located either on the glide slope antenna tower or on a separate tower. The preferred location is on the glide slope antenna tower as this eliminates the potential safety concerns caused by a separate wind sensor tower. This option will be implemented at airports that currently have FAA Airway Facility technicians available, and who will not be relocated as a result of remote maintenance monitoring. Under no condition will anyone have access to an FAA glide slope antenna tower without an FAA technician being present. When mounted on the glide slope antenna tower, the wind sensor will: (1) not extend

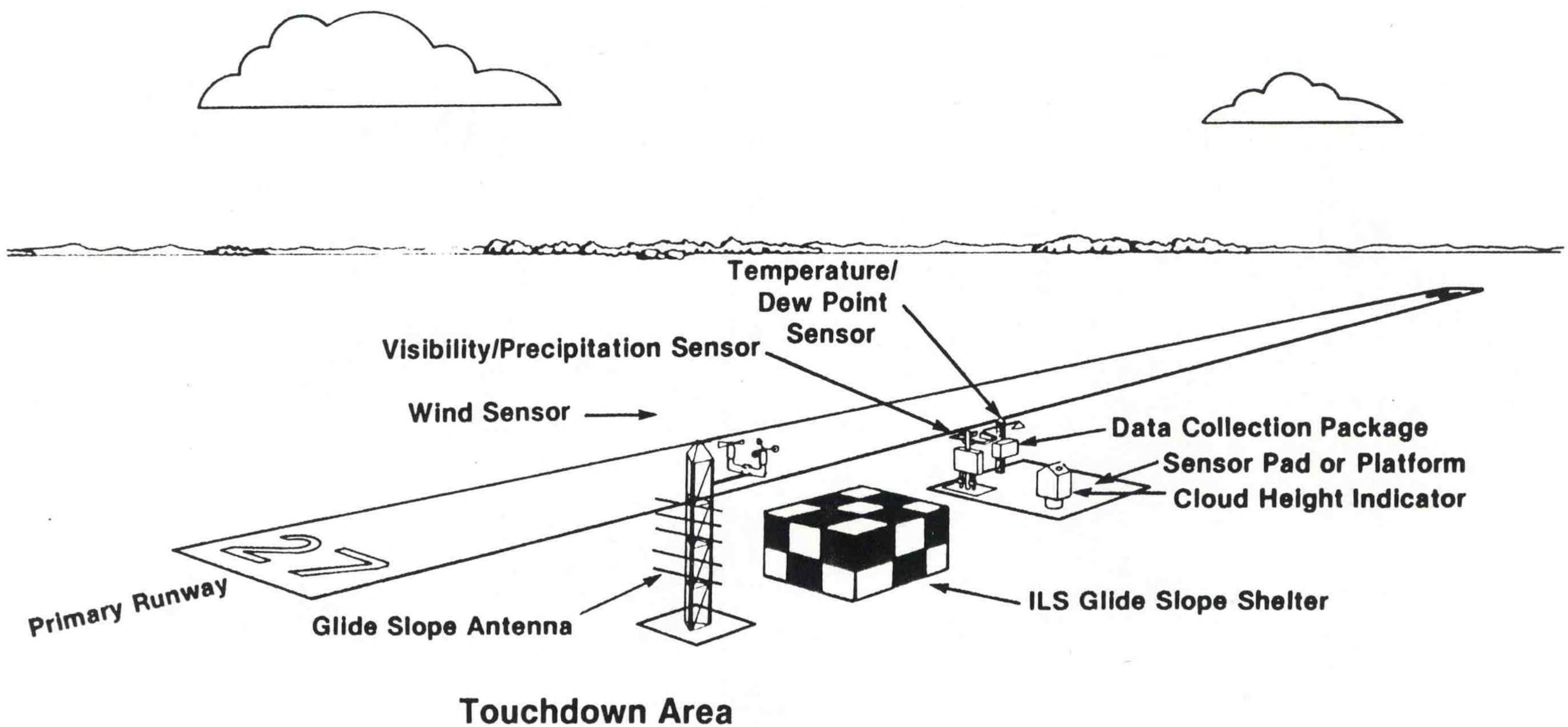

Figure 1
Typical Sensor Configuration
(Small Airport with an ILS)

above the top of the tower, (2) be mounted on a boom a minimum of 3 feet (1 meter) laterally from the tower, (3) be a minimum of 3 feet vertically from any antenna, and (4) be mounted on the side of the tower opposite from the glide slope antenna face.

If joint use of the glide slope antenna tower is not practical, a separate wind sensor tower will be installed immediately behind the glide slope antenna tower (Area "A", Figure 2). The height of the complete installation (i.e., tower plus air terminal(s) and obstruction lights) will not exceed the height of the glide slope antenna tower when installed in this area.

Exception: The wind sensor shall not be installed on a separate tower in Area "A" if the glide slope installation is in violation of a runway or taxiway safety area, obstacle free zone, or instrument flight procedure surfaces as defined in AC 150/5300-4 (Utility Airports--Air Access to National Transportation), AC 150/5300-12 (Airport Design Standards--Transport Airports), or FAA Handbook 8260.3 (TERPS) (i.e., the glide slope installation is operating under a waiver). In this situation, or where an alternate representative location is requested, an OE/AAA study in accordance with Part 77 of the FAR shall be performed. An OE/AAA study shall also be performed if the glide slope installation is decommissioned or relocated.

3.2.3 Airports with Only Non-precision and/or Visual Runways. The cloud height, visibility, and wind sensor and associated DCP shall be located adjacent to the primary runway 1000 feet (300 meters) to 3000 feet (900 meters) down runway from the threshold. The minimum distance from runway centerline shall be 500 feet (150 meters); the maximum distance shall be 700 feet (215 meters). An OE/AA study in accordance with Part 77 of the FAR shall be performed if this siting would result in an off-airport location, require the installation of an additional DCP, or likely result in poor-quality weather observations.

3.3 PRESSURE, LIGHTNING DETECTION SENSORS

3.3.1 Pressure. The pressure sensors are not functionally constrained to be at any specific location and may be located anywhere on the airport that does not interfere with representative atmospheric pressure measurement.

3.3.2 Lightning Detection (Thunderstorm). The single station detection sensor will be installed at any convenient location on the airfield.

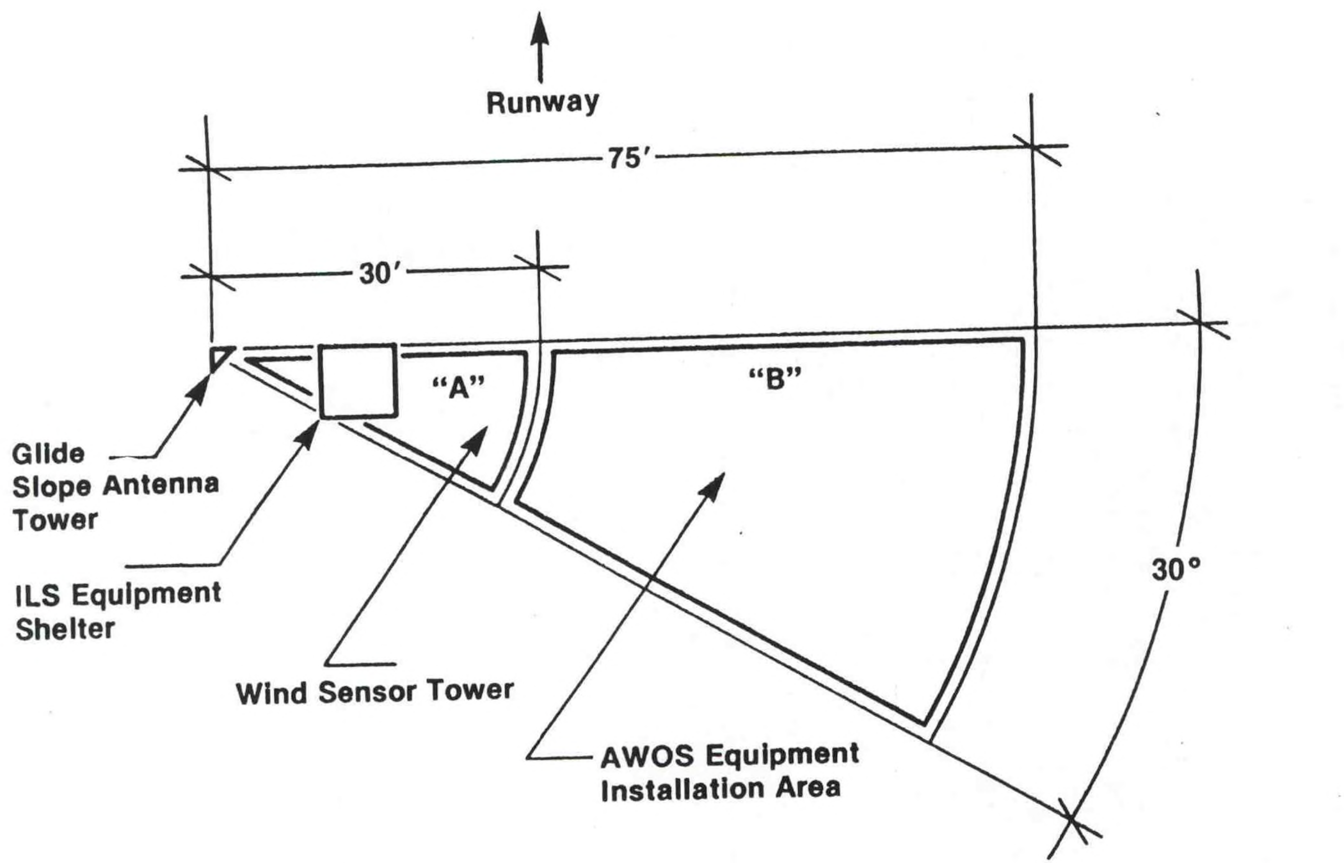

Figure 2
Precision Instrument Runway Siting
(Plan View)

4. SITING CRITERIA FOR SENSOR PLACEMENT AT LARGE AIRPORTS

4.1 GENERAL

This section provides guidelines for placement of sensors at airports with Category II or III instrument runways, or whose forecast traffic includes more than 5 percent in Airplane Design Groups IV, V, or VI as defined in AC 150/5300-4 (Utility Airports -- Air Access to National Transportation). These are typically large, major airports with one or more runways greater than 6,000 feet. These airports generally have an existing Federal weather observing program.

Special consideration is necessary in selecting appropriate sites for the installation of instruments at large airports to ensure that the resultant observations are representative of the runway complex, and suitable for all intended purposes. For example, for long runways or large airports with several runways, where approach, touchdown, and take-off areas may be several miles apart, the observations of visibility or wind measured at one end of a runway may not always be representative of the conditions prevailing elsewhere on that runway or over other areas of the runway complex of interest to aircraft operations. At large airports with low landing minima, siting will be such that the measured values of the various weather elements are representative of the appropriate area of a particular runway or runway complex. Therefore, if an airport has more than one frequently used instrument runway, or has a large runway complex, a specific site survey is necessary to determine all sensor locations and the need for multiple sensors. In selecting locations for sensors at airfields, it is particularly important that, while the siting and exposure of the sensors meet operational requirements, the sensors or their operation do not offer hazards to aircraft operations, and that the presence or movement of aircraft on the airport (taxiing, take-off runs, landing, parking, etc.) does not unduly influence the measured parameters. No sensor siting shall violate runway safety areas, obstacle free zones, or instrument flight procedure surfaces as defined in AC 150/5300-4 (Utility Airports--Air Access to National Transportation), AC 150/5300-12 (Airport Design Standards--Transport Airports) or FAA Handbook 8360.3 (TERPS). FAA sector manager approval is required for the use of any FAA facilities such as power, communications, shelters, towers, etc.

4.2 VISIBILITY, CLOUD HEIGHT AND PRECIPITATION TYPE DISCRIMINATION SENSORS.

Only the visibility sensor is required to be located near the touchdown area of the primary instrument runway. However, the cloud height sensor and precipitation type discrimination sensor are normally collocated with the visibility sensor. A site survey will determine the need for additional visibility and cloud height sensors near other touchdown zones or other locations as appropriate.

4.3 WIND SENSOR

The wind sensor will be located as close as possible to a centerfield location so that wind parameters are representative of conditions elsewhere on that runway or over other areas of the runway complex. It is recommended, where possible, that the wind site be located as follows:

- Not less than 700 feet (215 meters) from the centerline of all instrument runways, or runways which may be intended for instrument operation.

- Not less than 700 feet (215 meters) from the centerline of all non-instrument runways which may normally be used on a routine basis for heavy jet aircraft operations.

- Not less than 500 feet (150 meters) from the centerline of all other non-instrument runways which normally may not be used for larger jet aircraft operations.

- No closer than 500 feet (150 meters) to the centerline of taxiways.

- At least 1,000 feet (300 meters) (preferably 1,500 feet/460 meters in the case of heavy jet aircraft) from the aircraft warmup ramps, loading areas, runway intersections, and end-of-runways where aircraft may sit with their tails pointed toward the wind site.

- Transitory local turbulence from aircraft operations should be further minimized by selecting a wind site on the upwind side of the primary runway with respect to the predominant wind direction.

Due to the complexities associated with multiple instrumented runways, the above recommendations are subject to results of specific site surveys.

4.4 TYPICAL CONFIGURATIONS

Figure 3 illustrates a typical configuration, utilizing two sensor clusters (touchdown area and centerfield). Figure 4 shows a typical configuration using multiple visibility and cloud height sensors.

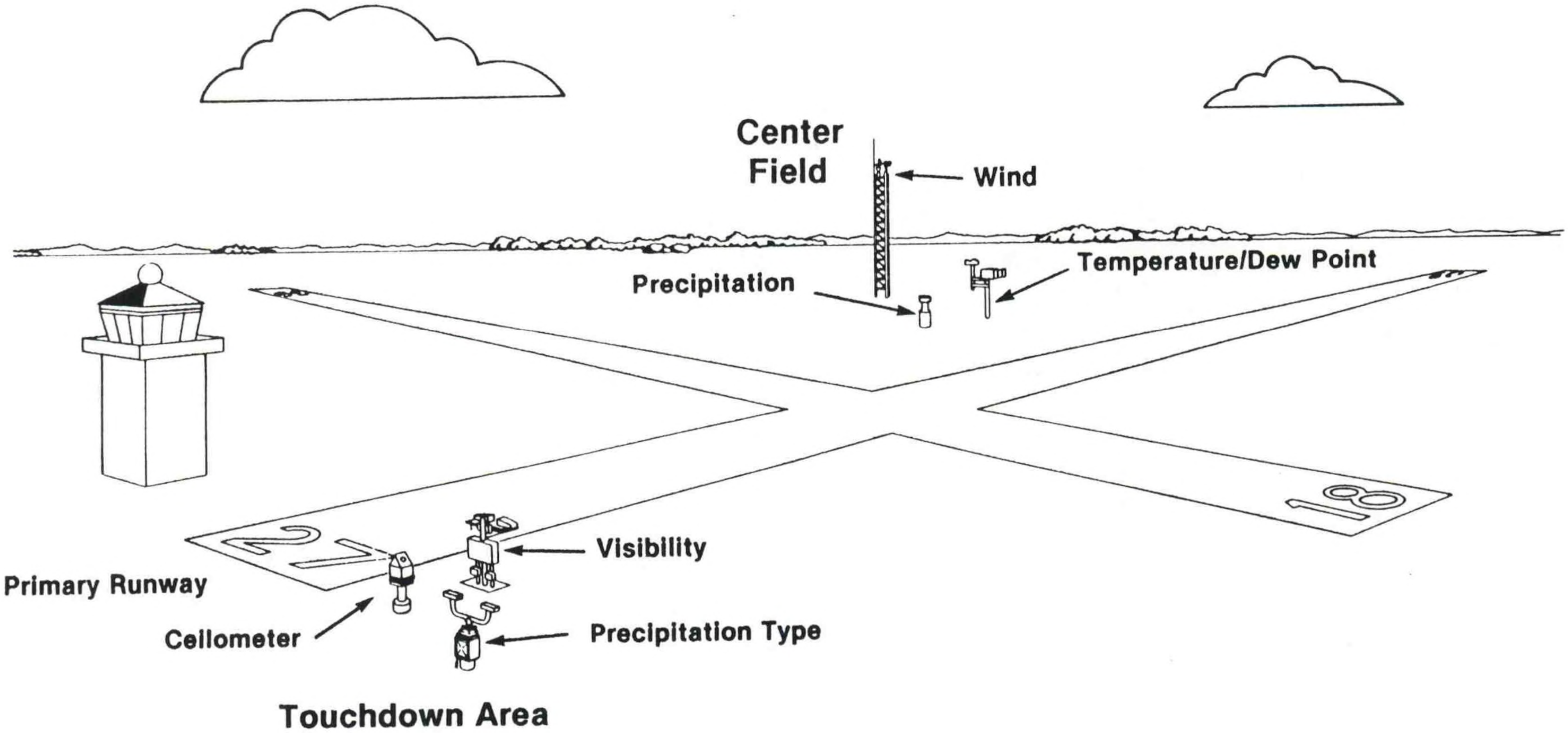

Figure 3
Typical Large Airport Sensor Configuration

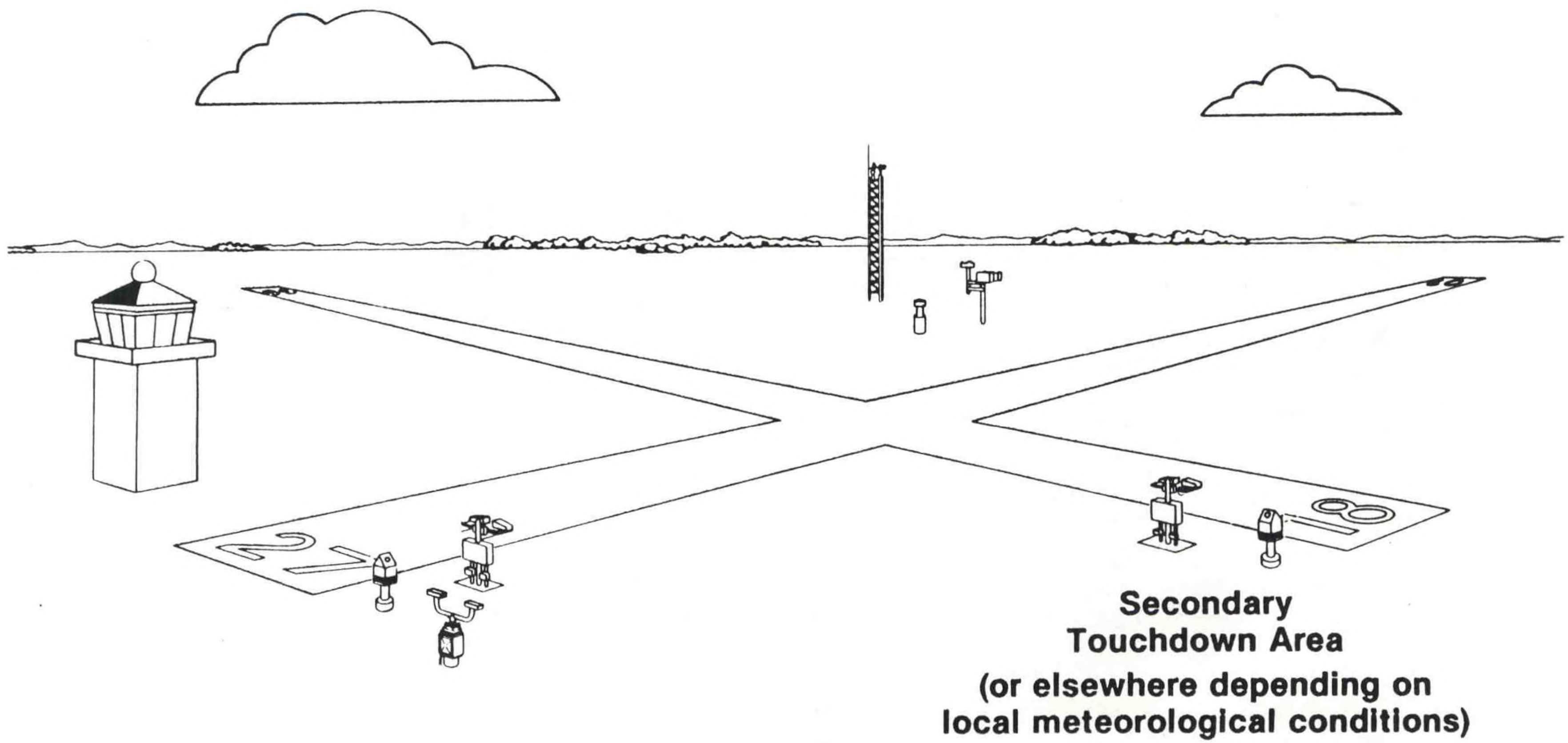

Figure 4
Typical Large Airport Sensor Configuration
(Multiple Visibility and Cloud Height Sensors)

5. HELIPORT SITING CRITERIA

5.1 NON-AIRPORT HELIPORT SITING CRITERIA

Automated weather observing system installations at non-airport heliport locations shall place the sensors in the vicinity of the takeoff and landing area, and where helicopter operations will not influence the environment by causing transient sensor performance (e.g., rotor downwash and blowing dust causing spurious wind and visibility observations). However, no installation shall penetrate the approach and departure surfaces defined in FAA Handbook 8360.3 (TERPS) or the surfaces defined in the Heliport Design Guide, AC 150/5390. In choosing a location, consideration will be given to both VFR and IFR approach and departure paths and hover/taxi operations. Testing has shown no significant effect on sensors located as close as 100 feet (30 meters) from a medium weight helicopter. Another prime concern is the need to locate the sensors so as to avoid, to the maximum extent possible, conditions (sheltering and other local influences) which may result in unrepresentative weather observations. This may be a particular problem for heliports located in urban areas and on rooftops. The sensors, except the pressure sensors, should be located no more than 700 feet (215 meters) from the edge of the takeoff and landing area. The pressure sensor is not constrained to be at any specific location on the heliport, except to be free of rotor-induced or other pressure variations. The other sensors should be clustered for ease of installation and maintenance, but problems with unrepresentative sensor data or other factors may necessitate a separated location of a sensor(s). Specific criteria for the siting of individual sensors follows, with siting at airports referring to Section 2.0.

5.2 PRESSURE SENSORS.

Same as for airports, except the height above or below mean sea level shall be determined for the heliport takeoff and landing area.

5.3 SENSORS IN VICINITY OF TAKEOFF AND LANDING AREA

These sensors for cloud height, visibility, wind, temperature/dewpoint, precipitation, lightning detection thunderstorm shall be sited as indicated below.

5.3.1 Cloud Height Sensor. The sensor location is the same as for airports, except the height is with respect to takeoff and landing area.

5.3.2 Visibility Sensor. The sensor location is the same as for airports, except the height is with respect to the takeoff and landing area. To reduce the influence of dust due to rotorwash on the reported visibility, the visibility sensor should not be sited in a location which is downwind (considering the prevailing wind direction) from the takeoff and landing area.

5.3.3 Wind Sensor. This sensor will be oriented with respect to true north. The system software will be used to make required adjustments to magnetic north. The sensor will be mounted 20-33 feet (6 to 10 meters) above the heliport takeoff and landing area. If side mounting on a tower is necessary, a boom will be used to permit installation of the sensor a minimum of 3 feet (1 meter) laterally from the tower. Side mounting is to be utilized only if top mounting is not practicable and the tower is of open design to allow for free air flow.

5.3.3.1 Wind sensor at ground level heliports. The wind sensor should be located to the side of the preferred approach and departure track. The sensor should be removed from the sheltering influence of buildings or large trees.

5.3.3.2 Wind sensor at rooftop heliports. The wind sensor on a building or other elevated landing structure should be located at least 20 feet (6 meters) above the highest structure to minimize the Bernoulli effect. Rooftop size may require siting of the wind sensor elsewhere to preclude penetration of an obstacle identification surface(s). In these situations, siting on an adjacent building may be a viable or even preferred option. It should be noted that many buildings are constructed to the maximum height that would not constitute a hazard to air navigation. Therefore, the above described siting may not be acceptable from an obstruction evaluation standpoint. In these cases, alternatives such as siting on an adjacent building may be necessary.

5.3.4 Temperature and Dewpoint Sensors. The sensor location is the same as for airports, except the height is with respect to the takeoff and landing area.

5.3.5 Precipitation Sensor(s). The sensor location is the same as for airports, except the height is with respect to the takeoff and landing area.

5.3.6 Lightning Detection (Thunderstorm). The sensor location is the same as for airports.

5.4 AIRPORT HELIPORT SITING CRITERIA

When an automated weather observing system is to be sited at an airport which has, or is planned to have a heliport, a site should be chosen which will provide service to both runway and heliport users. The following options, in priority order, will be considered under such circumstances.

5.4.1 Option 1. If siting in accordance with the applicable airport siting criteria (Sections 3.0 and 4.0) would also comply with the criteria of paragraph 5.1, the system will be sited in accordance with the applicable airport siting criteria.

5.4.2 Option 2. If siting complying with Option 1 is not appropriate, consideration will be given to an alternate location if such a location would enhance the representativeness of the data at the heliport without degrading the representativeness of the data at the primary airport runway. If such an alternate site is selected, a deviation will be processed in accordance with the directives of the responsible agency.

5.4.3 Option 3. If siting in compliance with Option 1 or 2 is not possible, the system will be sited in accordance with either Section 3.0, Section 4.0 or paragraph 5.1, taking into consideration such factors as volume of fixed-wing/helicopter traffic. If siting according to paragraph 5.1 is more appropriate, a deviation to use the non-airport siting will be processed in accordance with the responsible agency's directives.

APPENDIX A

ACRONYMS

AC	Advisory Circular
DCP	Data collection package
DOC	Department of Commerce
DOD	Department of Defense
DOT	Department of Transportation
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
ILS	Instrument landing system
MLS	Microwave landing system
NWS	National Weather Service
OE/AAA	Obstruction evaluation/airport airspace analysis (U.S. standard for)
TERPS	Terminal instrument approved procedures

APPENDIX B

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