



06 June 2023

**SUPPLEMENTAL BID BULLETIN**  
**ADDENDUM NO. 2023-004-02**

**Subject: Supply, Delivery, Installation, Testing, Training and Commissioning of the Automatic Weather Observing System (AWOS) at Mactan - Cebu International Airport and PAGASA Mactan Station**  
**(Reference: PR No. 2023-02-0090 / IB No. 2023-004)**

This Bid Bulletin is being issued to all prospective bidders to clarify, amend and/or modify certain provisions in the Bidding Documents and to answer written queries and clarificatory questions during the pre-bid conference by prospective bidders, to wit:

Queries from: **BP Integrated Technologies, Inc. (Part 1)**

Query	Reply
1. Rain Gauge – For the following sensor requirements are stated:  Diameter of Aperture: 200mm Area of Aperture/Orifice: 200 sq.cm.  Please confirm that a rain gauge with orifice Greater or equal to 200 sq.cm is acceptable.	The bidder/s is/are encouraged to offer a rain gauge with a diameter that is proximate to 200mm (8inches) in compliance with WMO Standards; while, the aperture area that is acceptable may vary, from 200 to 400 sq.cm.
2. There is no data logger required specification, may we ask for the specification.	The following are the technical specifications of the Data Logger:  <b><i>Data Logger Technical Specifications:</i></b> <ul style="list-style-type: none"><li>● 24 or 32 Bit analog/digital conversion</li><li>● DC power supply range: 6-30VDC</li><li>● Accept multiple sensor measurements</li><li>● With basic serial sensor integration and measurement, with RS-232; RS-485 and SDI-12</li><li>● With statistical calculations, data analysis and processing</li><li>● Data logging and built-in processing software</li><li>● Data transmission capability through radio link or wifi</li><li>● With battery backed-up clock for accurate time piece</li><li>● System architecture can support upgraded sensors</li><li>● With 2GB compact flash memory or microSD card drive for extended memory requirements</li><li>● Configurable parameters such as speed, start bits, data bits, stop bits, parity and others</li><li>● Connects directly to a laptop for easy configuration, testing and monitoring</li></ul>

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3. Humidity and Temperature The item required with operating temperature range –80 to +60 deg C.  Is it possible if the operating range is -30 to +60 deg C?	An operating range of -30°C to +60°C is acceptable.
4. What are the functions of the 3 workstations? Is there an existing Central Software that can view and download data from AWOS? If there is no Central Software, may we ask for the specification.	<p>The three (3) workstations are intended for use of PAGASA's forecasters, observers and the control tower personnel. The weather data coming from runway 04 and 22 will be collected by the server and is feed into the 3 workstations through LAN.</p> <p>The said workstations are likewise intended for monitoring, creating automatically METAR/SPECI reports and other Meteorological aviation products in accordance with the WMO standards.</p> <p>The workstations must have an operating system with Windows 10 (64bit) or better; and, AWOS software with perpetual license that is updatable.</p>
5. SLCC- Can you consider or if possible, using Water Quality Monitoring Equipment with Telemetry System.	For purposes of this instant Project to be bid, a Single Largest Completed Contract (SLCC) that is similar in nature and complexity therewith must be similar to contracts involving supply, delivery, installation, testing and commissioning of various weather-related instruments and equipment.
6. May we request to extend the completed contract to 5 years?	<p>The foregoing requirement is hereby amended:</p> <p>From: <b>3 years</b> To: <b>5 years</b></p>
7. Station communication is it via GSM/Wi Fi or IP Ratio or both?	Sending of weather data from the different sensors at Runway 04 and 22 to the PAGASA-Mactan Office is via IP radio modem or WiFi or combination of both depending on what is suitable for the purpose.

Queries from: **BP Integrated Technologies, Inc. (Part 2)**

	<b>Note: Numbers 1-4</b> are already included in the Part 1 of their Queries.
1. TOR, Item II. PAGASA Mactan Office Component, bullet #2, Two (2) Central Processing units/server for active and passive operation, what do you mean for active and passive operation?	Active and passive server process data at the same time or operating and processing in redundant manner such that when one of the servers break down, the other will function independently. However, there will be an assigned Active server while the other as Passive server to differentiate one from the other.
2. May we request the AWOS Software function and specifications	The workstations must have an operating system with Windows 10 (64bit) or better; and, AWOS software with perpetual license that is updatable.
3. May we request a network diagram for the data communication and transmission	<p>Please see attached "<b>Annex A</b>"</p> <p>The basic flow of data communication is from Runway 04 and 22 sites respectively and send directly to PAGASA Mactan Office for processing. The process data from PAGASA-Mactan office can be viewed by the Control Tower personnel for monitoring and guidance. Your foreign counterpart who are expert in AWOS may have already familiar with this methodology.</p>



<p>4. TOR Item I Mactan-Cebu International Airport Runway 04: (Scope of Work), letter F Lightning copper rod air terminal,</p> <p>Can we use different lightning arrester and ground module? For ground wire #38AWG (15meter), based on the conversion of 38AWG is 0.1007 mm or 0.008 mm<sup>2</sup>.</p>	<p>The corrected size of wire is 38sq.mm (15meters) insulated THHN and not #38AWG.</p> <p>The lightning design indicated in the TOR are merely minimum technical specifications. Bidders may offer better or higher specifications provided that the same will attain a ground resistance of 10ohms or lesser.</p>
<p>5. Section 7 Schedule of requirement item 9 and 10, 2 units UHF radio on the station and 2 units UHF in PAGASA office data transmission,</p> <p>May we ask for the distance? Is there any obstruction?</p>	<p>The minimum distance must be at least 10 kms. radius.</p> <p>Per our existing AWOS data communication, no problem was encountered. However, if there are any development within the airport vicinity, we will resolve this accordingly during the implementation of the project.</p>
<p>6. Section 7 Schedule of requirement item no. 11 for wifi point to point, may we request for specification?</p>	<p>The following are the technical specifications of the WiFi point to point:</p> <p><b>WiFi point to point technical specifications:</b></p> <ul style="list-style-type: none"> <li>• Speed – 300Mbps or higher</li> <li>• Frequency – 5Ghz</li> <li>• Range – 10kms or higher</li> <li>• Connection – external antenna</li> <li>• Usage – point to point link</li> <li>• With LAN port and other fittings/connectors/surge protection.</li> </ul>
<p>7. May we request to extend the completed contract from 3 years to 5 years?</p>	<p>The foregoing requirement is hereby amended:</p> <p>From: <b>3 years</b> To: <b>5 years</b></p>
<p>8. Do you accept aggregate SLCC?</p>	<p>Submission of "aggregate contracts" may be allowed for purposes of compliance with the SLCC requirements; provided, that, "prospective bidders should have completed at least two (2) similar contracts and the aggregate contract amounts should be equivalent to at least 50% of the ABC of the instant Project; and, the largest of these similar contracts must be equivalent to at least 25% of the ABC of the instant Project." (Section 23.4.1.3 (a &amp; b).</p>
<p>9. May we ask for the requirements for Foreign JV Partners?</p>	<p>For foreign joint partners, please refer to <b>Section 8.5.2, 23.2 &amp; 24.2 of the Revised IRR of RA 9184 and Clause 11 of the Instructions to Bidders.</b></p>
<p>10. Request for Site Inspection.</p>	<p>For site inspections, prospective bidder may contact <b>Engr. Romeo Aguirre, Weather Specialist II of PAGASA – Mactan Visayas Services Division</b></p> <p>Contact Details: <b>09771671270</b> (032) 8340-4143</p>

<p><b>1. Under 1 Runway 04 and Runway 22 (Scope of Works)</b></p> <ul style="list-style-type: none"><li>● <b>Pole Mast:</b> the bidder shall supply, assemble and install a new 10-meter AWOS tower, made of fiber glass composite and resin or carbon fiber composite material frangible lattice tower with alternating color bands of red and white in accordance with ICAO/FAA regulations.</li></ul> <p><b>DTC Comments:</b> Can we offer Vaisala DKE 100 frangible pole mast? The current existing Mactan-Cebu Avimet AWOS includes frangible lattice tower DKE200 Excel 11masts, but in the most recent Philippine Avimet AWOS projects (Bicol International Airport 2022 and Tacloban and General Santos Airport 2020) we have used DK3100 frangible mast. Please advise which type is actually required/wanted for this new Mactan-Cebu Avimet AWOS?</p>	<p>As described in Section VI, we used a 2.5 to 2.0meters frangible pole of taper length to hold the Runway Visual Range, Present Weather and Background Luminance. Maintenance can be done using ladder.</p> <p>But for the wind sensor, pressure, temperature and humidity we used frangible tower. For easy maintenance like replacement of wind sensor or obstruction light and for the safety and protection of field personnel, we discourage pole mast. Hence, we used a 10-meter frangible tower in accordance with our specifications. We have attached a sample design for the 10-meter frangible tower in our TOR, for reference only.</p>
<ul style="list-style-type: none"><li>● <b>Lightning copper road air terminal</b> - the bidder shall supply 1m x 15mm dia with thread on one end, threaded copper base, #38AWG (15m) insulated THHN stranded copper wire for down wire and solid copper grounding rod (15mm dia x 3M) system with clamp or solderless connector. Grounding resistance must be 10ohm or lesser.</li></ul> <p><b>DTC Comment:</b> Can we offer our DKL 200 lightning rod? in the most recent Philippine Avimet AWOS projects (Bicol International Airport 2022 and Tacloban and General Santos Airport 2020) we have used DKL200 lightning rod. This is ICAO standard.</p>	<p>The corrected size of wire is 38sq.mm (15meters) insulated THHN and not #38AWG.</p> <p>The lightning design indicated in the TOR are merely minimum technical specifications. Bidders may offer better or higher specifications provided that the same will attain a ground resistance of 10ohms or lesser.</p>
<ul style="list-style-type: none"><li>● <b>Aviation Obstruction Light</b> - the luminous flux: 32 candelas or 400 lumens and type B</li></ul> <p><b>DTC Comment:</b> Can we offer our standard QOL111 with 10 candelas and type A specification? The current existing Mactan-Cebu Avimet AWOS includes our standard QOL111 and the most recent Philippine AWOS projects includes our standard QOL111. This is ICAO standard.</p>	<p>Both Type A &amp; B aviation obstruction light are used for ground obstruction below 45 meters hence, our frangible tower is only 10 meters in height. Type A obstruction light is also acceptable provided it will comply with the equivalent specifications noted as a whole.</p>
<ul style="list-style-type: none"><li>● <b>Humidity and Temperature Sensor with radiation shield</b> - measurement range: 0-100%RH (Humidity sensor) Accuracy <math>\pm 1\%</math>RH.</li></ul> <p><b>DTC Comment:</b> Can we offer our Vaisala HMP155 the accuracy is specified <math>\pm 1\%</math>RH (0...90%RH) &amp; <math>\pm 1.7\%</math>RH (90...100%RH)? Please advise if this is ok</p>	<p>For humidity sensor the tolerance accuracy of 1%-1.7% of RH is acceptable.</p>



<ul style="list-style-type: none"> <li>● <b>Digital Pressure Sensor</b> - pressure range is 500-110hPa</li> </ul> <p><b>DTC Comment:</b> We assume this is just typographical error and 1100 hpa is wanted as upper range?</p>	<p>Digital Pressure Sensor – the corrected pressure range must be 500-1100hPa instead of 500-110hPa which is typographical error</p>
<ul style="list-style-type: none"> <li>● <b>Rain Gauge</b> - the diameter of aperture: 200mm and area of aperture/orifice: 200sq.cm is required</li> </ul> <p><b>DTC Comment:</b> Can we offer our Vaisala #RG13 the specifications are diameter aperture: 225mm and Area of aperture 400 sq.cm? This required diameter and area is also contradictory, because calculating from 200mm diameter leads to 314 sq.cm area</p>	<p>The bidder/s is/are encouraged to offer a rain gauge with a diameter that is proximate to 200mm (8inches) in compliance with WMO Standards; while, the aperture area that is acceptable may vary, from 200 to 400 sq.cm.</p>
<p>2. <b>Under PAGASA Mactan Office Components:</b></p> <ul style="list-style-type: none"> <li>● <b>4 units of 800 GB SSD storage or higher capacity</b></li> </ul> <p><b>DTC Comment:</b> Can we offer 2 units of 600GB SAS hard drives or 2 units of 1.2TB SAS hard drives?</p>	<p>Our present AWOS data server storage is quite small in capacity, hence, we recommend a minimum rating of 4 Units-800GB SSD storage or higher capacity (2.5" internal SAS). A 2 Units of 1.2TB SSD storage is acceptable provided an additional 1 Unit of 1.2TB SSD will be provided as spare for each server, as an equivalent offer for the 4 Units-800GB SSD storage.</p>
<ul style="list-style-type: none"> <li>● <b>Rack UPS - UPS rating: 5kVa</b></li> </ul> <p><b>DTC Comment:</b> Can we offer our standard 2KVA UPS rating?</p>	<p>For the AWOS 42U rack cabinet assembly, we recommend a minimum of 5KVA because more equipment/devices are connected and to accommodate other loads when the need arises as long as within its rating capacity.</p>
<ul style="list-style-type: none"> <li>● <b>Printer-PAGASA</b> specifications are all in one printer, ink tank type, copy speed and scan speed.</li> </ul> <p><b>DTC Comment:</b> Can we offer our standard laser ink printer not all in one?</p>	<p>The specifications set by the end-user unit of the Project represents the minimum technical specifications. Thus, the interested bidder/s may be allowed to alternative offer that is compliant with and responsive to the specific requirements of the Project.</p>
<ul style="list-style-type: none"> <li>● <b>Observer's Forecaster and ATC Workstation</b> - PAGASA specification with i7 or better processor and 32GB DDR4 RAM, 2TB PCIe NVMe M2 SSD.</li> </ul> <p><b>DTC Comment:</b> Can we offer our standard i5, 8GB RAM and 512GB SSD?</p>	<p>The specifications set by the end-user unit of the Project represents the minimum technical specifications. Thus, the interested bidder/s may be allowed to alternative offer that is compliant with and responsive to the specific requirements of the Project.</p>
<ul style="list-style-type: none"> <li>● <b>Computer Monitor Specification</b> - 27" UHD, Anti-glare Monitor, 60Hz, IPS LED Resolution: 3480x2160</li> </ul> <p><b>DTC Comment:</b> Can we offer our standard 24" and 1920x1080 resolution?</p>	<p>The specifications set by the end-user unit of the Project represents the minimum technical specifications. Thus, the interested bidder/s may be allowed to alternative offer that is compliant with and responsive to the specific requirements of the Project.</p>

<ul style="list-style-type: none"> <li>● <b>Maintenance Laptop</b></li> </ul> <p><b>DTC Comment:</b> Can we offer our standard specification?</p>	<p>The specifications set by the end-user unit of the Project represents the minimum technical specifications. Thus, the interested bidder/s may be allowed to alternative offer that is compliant with and responsive to the specific requirements of the Project.</p>
<p><b>3. Air Traffic Controller (ATC) Tower Components</b></p> <ul style="list-style-type: none"> <li>● <b>Wifi / Radio Communication Link</b> - from tower and PAGASA Office</li> </ul> <p><b>DTC Comments:</b> In our layout there is LAN connection drawn and quote doesn't include project item for Radwin radios. This is not any problem for us and we have included these also for previous AWOS projects, but the layout and quote just need to be adjusted accordingly.</p>	<p>WiFi/Radio communication link from PAGASA-Mactan office to ATC tower must be offered in the bid. Although there is an existing data cable, we will use it for redundancy application and serve as back-up in case of failure on one of the data links.</p>

Queries from: **Massive Integrated Tech Solutions Inc.**

<p><b>1. We would like to clarify if there is a difference in the subject of Terms of Reference and referred Technical Specifications and Scope of works.</b></p> <p>"The Subject in the terms of reference is <i>"Supply, Delivery, Installation, Testing, Training and Commissioning of Automated Weather Observing System (AWOS) at Mactan-Cebu International Airport and PAGASA Mactan Station"</i> while the Technical Specifications and Scope of Works to be done state <i>"Supply, Delivery, Installation, Testing, Training and Commissioning of Automated Weather Observing System (AWOS) and <b>Water Film Depth Estimation System</b> at Mactan-Cebu International Airport and PAGASA Mactan Station"</i></p>	<p>The Terms of Reference is the "Supply, delivery, installation, testing and training commissioning of Automated Weather Observing System (AWOS) at Mactan-Cebu International Airport and at PAGASA Mactan Station". The inclusion of the Water Film Depth Estimation System in the technical specifications and scope of work to the main TOR will be part of the monitoring sensors at the airport just like the other sensors enumerated in the technical specifications.</p>
<p><b>2. In reference to F. Technical Specification Section VIII. Water Film Depth Estimation for runway,</b></p> <p>We think that this part is unnecessary for AWOS because Water Film Depth, both hardware and software, is not a system that complies with <b>ICAO standards</b>. We would like to suggest for Mactan-Cebu International airport to use all products that comply with ICAO standards. Due to several typhoons that occur anytime in the Philippines throughout the year, we realize that we have to consider the use of the Thunderstorm (Lightning) Detector system at Mactan-Cebu International Airport. This said system complies with ICAO standard. We believe that it is more essential than Water Film Depth part from the Terms of Reference.</p>	<p>The water film depth technology is a form of measurement of precipitation at the runway, hence, it forms part of meteorological concerned. It is our way of improving the meteorological forecast for aviation safety to avert further accident like what happened to the Korean Airlines in the night of October 23, 2022 at Mactan-Cebu International airport. The proposal to install thunderstorm system in lieu of water film depth technology was already established by PAGASA with its network of lightning monitoring system that covers the country.</p>




Queries from: **Sunshine Multi Plus Corporation**

<p>1. AWOS is considered as Electronic Navigational Aids (NAVAIDS) wherein the primary function of NAVAIDS is to assist pilots in the safe and efficient movement of aircraft during landing, takeoff and taxiing maneuvers. The Runway Visual Range is also integrated to the Airfield Ground Lightings System remote control and monitoring system and the project requirements as per BDS also requires familiarity with International and Local Civil Aviation Standards and Procedures. In this regard, can we request that the Airfield Navigational Aids such as Airfield Lighting System, ILS and DVOR be considered as a similar contract for the project to widen the participation of prospective bidder? The Airfield Lighting System, ILS and DVOR are complex NAVAIDS system installed along the runway strip similar to the AWOS.</p>	<p><b>ILS and DVOR</b> facilities at the airport concerns with the main functions and areas of the Civil Aviation Authority of the Philippines, for the safe landing of aircrafts as well as protection of passengers and properties. However, PAGASA's mandate concerns with the meteorological sides which monitors different meteorological phenomenon within the aerodrome as mandated by law. Hence, ILS and DVOR facilities do not form part of the meteorological concerns of PAGASA, hence, it could not be considered as similar contract from the standpoint of meteorology</p>
<p>2. Having specific specifications may limit the number of bidders as each manufacturer has their own specifications and standards that comply with all the required standards including ICAO and WMO. Can the following technical specifications provided for the project be more general as long as it complies with all the required international standards?</p> <p>a) Can we offer external back-up battery for the Ceilometer instead of an internal back-up battery?</p> <p>b) Can we offer a forward scatter measurement of 42 degrees scattering angle for the Present Weather Sensor?</p> <p>c) Can we offer operating voltage of 5-24V DC for the Humidity and Temperature Sensor with Radiation Shield?</p> <p>d) Can the Rain Gauge have a bigger diameter of aperture of more than 200mm and a bigger area of aperture/orifice than 200 sq.cm?</p>	<p>a) The back-up battery is only one-piece installed inside the ceilometer unit; the connection is not an issue as long as the battery is inside the unit.</p> <p>b) The 45 degrees forward scatter measurement angle is only the center reference. If your offer has flexible scanning measurement of more than 42 degrees then you may comply along with the other specifications of the present weather sensor. We will evaluate your offer according to the totality of our technical specifications.</p> <p>c) Yes, a voltage of 5-24VDC is acceptable for the Humidity and Temperature sensor/probe.</p> <p>d) The bidder/s is/are encouraged to offer a rain gauge with a diameter that is proximate to 200mm (8inches) in compliance with WMO Standards; while, the aperture area that is acceptable may vary, from 200 to 400 sq.cm.</p>

This shall form an integral part of the Bid Documents.

For guidance and information of all participating bidders.

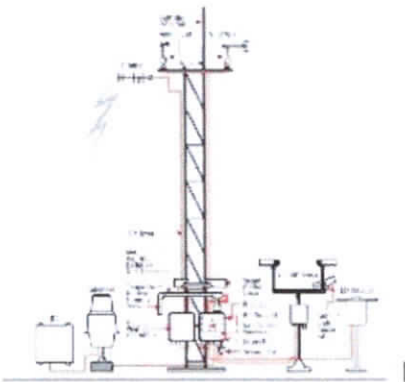
  
**BONIFACIO G. PAJUELAS, Ph.D.**  
Chairperson, PAGASA-BAC

ANNEX A



CAAP Control Tower

UHF Radio  
Link to  
PAGASA-  
Mactan  
Office

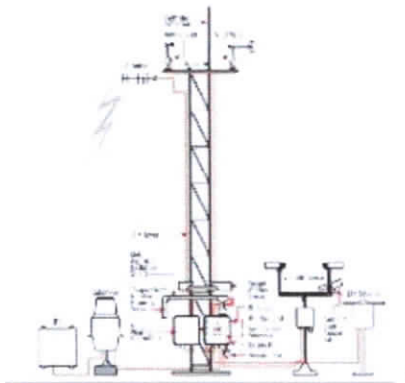


Runway 22

UHF Radio  
Link or  
Wifi from  
PAGASA  
Office to  
Control  
Tower



UHF Radio  
Link to  
PAGASA –  
Mactan  
Office



Runway 04



PAGASA-Mactan Office

**AWOS DATA COMMUNICATION FLOW FROM RUNWAY 04 AND 22 TO PAGASA-MACTAN OFFICE AND TO CAAP CONTROL TOWER**