MITRE

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F500-L14-037

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Director General
Aeropuertos y Servicios Auxiliares (ASA)
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Subject: Automated Weather Observing System (Revised Proposal Review)

Dear Capt. López Meyer:

The MITRE team reviewed the revised technical proposal (dated 23 June 2014) submitted to ASA by Rossbach de México S.A. de C.V. (hereafter referred to as Rossbach) describing Vaisala's Automated Weather Observing System (AWOS) being considered for installation at the three potential airport sites in the State of Hidalgo. In general, the revised proposal submitted by Rossbach addresses MITRE's previously submitted recommendations (see MITRE Letter F500-L14-026), with some exceptions listed below. While MITRE is glad to assist with this review, it is important to consider that commercial reviews are normally outside the scope of MITRE's work. Being this the case, MITRE's liability does not apply to this opinion.

MITRE recommends that the following comments be addressed by ASA with Rossbach before ASA makes a final decision:

1. The proposal does not include the provision of calibration kits, which are essential for trained ASA personnel to be able to ensure that the AWOS is operating properly. Therefore, MITRE recommends that the following sentence be added to item "p":

    - "Training will include application of on-site diagnostics, preventive maintenance, and equipment calibration to determine equipment performance. Calibration kits will be included with the AWOS purchase."

2. In the "Detailed Features and Specifications" section of the proposal, item "j) GPRS telemetry system", states that the AWOS has a data storage capacity of at least 30 days. However, item "a" under that same section states that the AWOS has a data storage capacity of 45 days. This inconsistency in the proposal needs to be addressed by Rossbach.

    Note that MITRE's specifications require that the AWOS be able to record observations at least every half-hour, 24 hours a day, and have the ability to

archive a minimum of 36 days' worth of observations (see Enclosure 5 of MITRE Technical Letter F500-L14-004).

3. The "General Information" section and item "k) Receiver System and Data Indicator and storage Module" of the "Detailed Features and Specifications" section of the proposal mention the location of sensors near the touchdown zone of the runway. As MITRE stated in its previous AWOS proposal review letter, the AWOS will be installed at a greenfield site where no runway exists. Therefore, reference to any runway should be removed from the proposal to avoid confusion.

4. Item "l) Data Storage in ASCII Format" of the "Detailed Features and Specifications" section should reference the figure titled "EXAMPLE FORMAT DATA FROM AWOS III PT VAISALA IN TEXCOCO"

5. In the "OUTPUT DATA FORMAT" section of the proposal, the first sentence should reference the figure titled "EXAMPLE FORMAT DATA FROM AWOS III PT VAISALA IN TEXCOCO"

6. In the "OUTPUT DATA FORMAT" section of the proposal, the second sentence states that the system allows up to "2.160" data records to be stored in the system memory, which does not seem correct. Should the correct number of data records be "2,160"? Please correct as necessary.

7. In the "OUTPUT DATA FORMAT" section of the proposal in the "AWOS Archive" table, the following field definitions should be modified as follows (see all changes in red):

    - Field b – Year, Month, Day, Hour and Minute (2 characters each) in Coordinated Universal Time (UTC)
    - Field c – Ceiling report in hundreds of feet Above Ground Level
    - Field d – Visibility in statute miles
    - Field g – True Wind Direction in ten-degree increments
    - Field l – True Variable Wind Direction, if present
    - Field o – Variable visibility in statute miles, if present, will appear on a second line

    Also note, that MITRE is not requesting "Runway Surface Condition report and sensor reading" information. Therefore, this item could be optionally deleted.

8. In the "DETAILS OF THE CIVIL WORKS ACTIVITIES OFFERED BY ROSSBACH DE MEXICO" section, the proposal states that the installation of the AWOS III PT system will be conducted "in agreement with ASA to select the site". However, it is important that Rossbach provides close support and guidance to ASA to ensure that the AWOS is sited according to United States Federal Aviation Administration standards. Therefore, MITRE recommends that this part of the support to be provided by Rossbach is more clearly stated in the proposal.

9. As MITRE mentioned previously, the proposal does not include the following important items:

    - A minimum amount of spare parts. It should be clear that the spare parts should be brand new and exactly the same as those being replaced. Furthermore, it should be clear that they are not "temporary" parts.
    - A maintenance contract stating that the system is to be repaired within seven calendar days of the initial reporting of failure

    Please let MITRE know how ASA intends to address these critical items.

Important Considerations and Responsibilities for ASA

MITRE would like to reiterate that ASA should make sure that the following important actions are addressed in the early stages of the AWOS acquisition and installation planning process:

- Once the three potential Hidalgo airport sites are determined (MITRE expects that this will happen by September/October), candidate locations for an AWOS at each of the three sites must be identified. ASA will have to make arrangements (i.e., legal and financial) for the acquisition or leasing of land for AWOS siting, as necessary. Also, construction and/or environmental permits (e.g., in the event that trees or brush may need to be removed) may be required for each AWOS site as well.

  This may be a complicated and time consuming process that should commence as soon as candidate locations for the AWOSs are identified, or even before. Note that the locations of potential sites have already been determined. All that remains is to confirm three out of four sites (basically following State of Hidalgo feedback and a visit by MITRE afterwards).

- Once the AWOS locations are identified, site preparation work needs to be conducted, which is not covered in the Rossbach proposal. Therefore, AWOS site preparation (e.g., construction of access roads to the site, clearing debris around the AWOS sensors, providing electrical power, and other construction/installation matters for each AWOS platform) is ASA's responsibility, for which ASA needs to prepare for early on.

- Rossbach's proposal still states that ASA is responsible for providing AC power to the AWOS, along with an Uninterruptible Power Supply (UPS) and/or backup diesel power plant. It is critical that ASA provides **both** backup power systems to avoid loss of data.

- Security of the site should be provided, including building a perimeter fence at an appropriate distance. Arrangements should be made by ASA to oversee security for the system as well. The hiring of onsite security personnel to guard the AWOS should be considered as necessary. Security personnel can also perform the very important task of checking that the basic systems of the AWOS are operating and

minor maintenance. Not doing so could lead to an AWOS not functioning for weeks. MITRE's experience in the State of Veracruz several years ago was good and all locations had this arrangement.

- Personnel should be identified (for example, State of Hidalgo employees, ASA personnel, etc.) to be trained on the operation and maintenance of the AWOS systems, including on-site diagnostics, preventive maintenance, system calibration, and especially **monthly** data downloading
- A preventive maintenance program at sufficient intervals should be established, including frequent hands-on visits to the system to ensure the AWOS is operating appropriately. This should include clearing of vegetation growth, minimal equipment maintenance, such as cleaning dust off the sensors and lenses, keeping orifices cleared of insects, and maintaining an adequate fuel level for the backup diesel power plant.
- The person who oversees the installation of the AWOS is very important. Therefore, the system installation process should be supervised by an individual with an appropriate amount of experience.

Please confirm receipt of this letter via e-mail and, optionally, provide a revised technical proposal from Rossbach for a final review by MITRE.

Do not hesitate to contact me if you need any clarification or any other assistance.

Sincerely,

Ing. Robert W. Kleinhans
Project Technical Coordinator

cc:

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