

Lic. Federico Patiño
Director General
Grupo Aeroportuario de la Ciudad de México (GACM)
Insurgentes Sur 2453, Piso 2
Col. Tizapán, Del. Álvaro Obregón
C.P. 01090, México, D.F.,
México

Subject: Technical Letter: Summary of Work Completed or Ongoing during the Period 1 April through 30 April 2018

Dear Lic. Patiño:

This letter respectfully submits to your attention a summary of the most significant MITRE project activities conducted or being conducted during the period 1 April 2018 through 30 April 2018.

Reports

Along with this Technical Letter, one MITRE document is enclosed. The document is described in a very summary manner below:

- **New Terminal Maneuvering Area and Area Control Center Preliminary Airspace Redesign - Informal Working Notes: Routes and Sectorization.** This document, along with its associated appendices, is intended to provide a record of the procedure, route, and sectors from a design workshop that took place in Mexico City in January 2018. The workshop was attended by Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM) and MITRE and its focus was a new airspace design for the Nuevo Aeropuerto Internacional de la Ciudad de México (NAICM). See MITRE document H560-L18-038, dated 11 April 2018.

Activities

The following list describes the activities conducted by MITRE during this reporting period:

- In late March 2018, after submittal of MITRE's previous Technical Letter, Dr. Bernardo Lisker and I traveled to Mexico City from 20 through 23 March 2018 to conduct a high-level executive meeting to discuss important matters pertaining to the NAICM project, and to attend the inauguration of the Mexico Controller Trainer device at SENEAM's facilities. While the Trainer is not formally a part of

the GACM-MITRE project, SENEAM is going to use it in activities related to the NAICM project. Therefore, this inauguration is mentioned here. MITRE appreciates that you attended the ceremony.

Just before the inauguration, Dr. Lisker and I participated in a high-level meeting with Lic. Yuriria Mascott, Undersecretary of Transportation, and other GACM officials, including yourself, as well as Ing. Roberto Kobeh, Director General of SENEAM, and other SENEAM officials. During the meeting, important matters such as the Chiconautla hill were discussed.

Following the inauguration, Dr. Lisker and I joined you and other officials, including Lic. Gerardo Ruiz Esparza, Secretary of Communications and Transportation (SCT), at SENEAM's facilities, and Dr. Lisker provided a presentation on various project-related matters and replied to a great variety of questions from the press.

Finally, the next day, Dr. Lisker and I participated in an expert panel discussion regarding the NAICM project at the Palacio de Minería. The panel discussion was very successful and interesting.

- As mentioned in MITRE's previous quarterly Technical Letter, a large team (ten MITRE engineers) visited Mexico City from 15 through 19 January 2018 to conduct an intense airspace design workshop to assist SENEAM with its redesign of the Mexico City Terminal Maneuvering (Control) Area (TMA) and Mexico Area Control Center (ACC) to support operations at NAICM and Toluca. Afterwards, within this reporting period, the MITRE team prepared a detailed document that described the key activities that occurred during the above-mentioned workshop. The document is also intended to allow the SENEAM team to review the routes, procedures, and airspace sectorization in anticipation of upcoming Human-in-the-Loop (HITL)-1 dry run simulations scheduled to be conducted in MITRE's Air Traffic Management (ATM) Laboratory from 21 through 25 May 2018. The document was sent to SENEAM on 11 April 2018 and is being sent along with this Technical Letter as a reference. See MITRE document H560-L18-038, dated 11 April 2018.
- The MITRE HITL simulation team worked on a variety of efforts in preparation for the above-mentioned HITL-1 dry run simulations. For example, development of the HITL-1 dry run simulation traffic scenarios continued to advance, including the incorporation and programming of aircraft on the appropriate routes. Additionally, the MITRE team worked on preparing material to be used by SENEAM to better understand the airspace design to support the HITL-1 dry run simulations.

Furthermore, the MITRE team conducted the first of two intense, one-week internal simulation traffic scenario review and testing sessions at MITRE's ATM Laboratory. The internal review and testing sessions are essential to ensure that the simulation traffic scenarios are appropriately developed and programmed into

MITRE's ATM Laboratory software and that the controller position hardware is working properly prior to conducting the HITL-1 dry run simulations. This has required a *major* MITRE effort.

- MITRE is not an expert in bird hazard and/or mitigation matters. However, MITRE has been in discussions with GACM, Comisión Nacional del Agua (CONAGUA) and others, including Lic. Mascott, regarding ideas to deal with birds in the Texcoco area. As a result, MITRE contracted the services of Environmental Resource Solutions (ERS), Inc. The objective of MITRE is to carefully survey birds on a monthly basis, while other entities in Mexico work on mitigation measures.

As mentioned in MITRE's previous quarterly Technical Letter, MITRE, with the support of SCT officials, and through ERS, Inc., will conduct additional monthly avian surveys of the four lakes in the Texcoco area (listed below), starting in early April 2018 and continuing through early November 2018. This will allow authorities to have an independent understanding of the bird population throughout an entire year (the bird surveys started in early November 2017, initially including additional lakes in the periphery of Mexico City). Therefore, the ERS, Inc. team conducted another survey of birds from 2 through 6 April 2018 at the following bodies of water in the Texcoco area:

- Lago Nabor Carrillo
 - Laguna Facultativa
 - Laguna Recreativa
 - Lago Churubusco
- MITRE will assist the Mexican aviation authorities in the examination of problems relating to airport expandability in Mexico so that, in the process, Mexican engineers and other analysts practice and learn how to reexamine modifications concerning NAICM airside and aeronautical matters in the future. The Mexican aviation authorities selected Guadalajara Airport for MITRE to study. Therefore, MITRE will work on a runway-related solution regarding the expandability of Guadalajara Airport.

In order to support the above-mentioned runway expandability analysis work, MITRE is responsible for the procurement of a satellite-based photogrammetric survey of Guadalajara Airport and its surrounding areas. During this reporting period, the MITRE team continued to coordinate technical and contractual preparatory activities and discussions with MDA Geospatial Services Inc. (MDA), the company that will perform the survey work. More specifically, the MITRE team advanced on the preparation of detailed technical survey specifications. Additionally, it is important to mention that satellite imagery attempts are being

made and some imagery at and around Guadalajara Airport has already been obtained and it is being reviewed by MITRE.

- As mentioned in previous quarterly Technical Letters, Aeropuertos y Servicios Auxiliares (ASA) issued a stop-work order on all of MITRE's work in the state of Hidalgo based on Fuerza Aérea Mexicana's (FAM's) preference to relocate Santa Lucía's fixed-wing, non-transport aircraft operations to Querétaro Airport. FAM's operations at Querétaro Airport, along with the establishment of Special Use Airspace (SUA) to support those operations, must be thoroughly examined to ensure that the airport is feasible and, more importantly, that FAM's operations do not interfere with future operations at NAICM. Such investigation must be conducted in close coordination with FAM and SENEAM officials.

In order to support the above-mentioned work, MITRE is responsible for the procurement of a satellite-based photogrammetric survey of Querétaro Airport and its surrounding areas. During this reporting period, the MITRE team continued to coordinate technical and contractual preparatory activities and discussions with MDA, the company that will perform the survey work. More specifically, the MITRE team advanced on the preparation of detailed technical survey specifications.

- MITRE would like to mention again its recommendation (this has been suggested in writing many times before, for several years) that a written document be prepared where the matter of clear and permanent closure of the runway at Santa Lucía is established and agreed-upon. While FAM considers that closure is the official position, there is still reluctance in some quarters about the major safety matter that would result from not closing that runway. Such matter was validated by an independent International Civil Aviation Organization (ICAO) study. Surely, the current Mexican government should desire to close on this matter with FAM. As for MITRE, this is a matter of enormous concern.
- Acquisition of a new procedure design software tool by SENEAM: MITRE was recently informed that SENEAM has decided to acquire a new procedure design tool (also used by MITRE) based on United States (U.S.) Federal Aviation Administration (FAA) Standard for Terminal Instrument Procedures (TERPS) criteria. This is excellent news as, once that tool is acquired, SENEAM and MITRE will be able to work efficiently together on important procedure design matters. This is good news because the evaluation license version of the software that SENEAM currently has (negotiated by MITRE) expires on 16 May 2018, only a few weeks away.
- In August 2017, during a visit to Mexico City, Dr. Lisker hand-delivered and presented to officials a MITRE-prepared document that provides a list of key pending items that should be addressed (see MITRE document F500-L17-094, dated 11 August 2017). Several copies of that document were provided to GACM, SENEAM, and DGAC. Many pending items have been fulfilled, but some important ones are still pending. For example, while MITRE is not an expert in

the field of Flight Inspection and Flight Validation, it would like to be made aware of the schedule, plan, and process being considered by the aviation authorities of Mexico for conducting these urgent activities since they relate to MITRE's instrument procedure design work.

In order to stay organized, MITRE urgently requested that GACM prepare a document with feedback regarding the status of each pending item for review by MITRE by the end of April 2018.

Please do not hesitate to contact me if you need any clarification or assistance.

Sincerely,



Ing. Robert W. Kleinhans
Project Technical Coordinator

Included with this letter:

One Enclosure

cc: Ing. Enrique Lavín, GACM
Ing. Ricardo Tapia, GACM
Dr. Bernardo Lisker, MITRE

This one-page return receipt (*acuse de recibo*) is to be scanned and e-mailed to Ing. R. Kleinhans as soon as possible

1 May 2018 TECHNICAL LETTER DISTRIBUTION

MITRE requests that the document enclosed with this Technical Letter be distributed as follows:

1. New Terminal Maneuvering Area and Area Control Center Preliminary Airspace Redesign - Informal Working Notes: Routes and Sectorization. See MITRE document H560-L18-038, dated 11 April 2018.
 - GACM: 6 copies
 - SENEAM: 6 copies
 - DGAC: 6 copies

Distribution of the above-mentioned document was completed,

Signature of GACM Point of Contact for MITRE

Date

Name of GACM Point of Contact for MITRE