Nuevo Aeropuerto Internacional de la Ciudad de México

*Key Airspace and Procedure Design-Related Activities*

The purpose of this document is to provide general information to Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM) on some of the key activities and milestones to be achieved during the March 2016 through spring 2017 timeframe pertaining to the redesign of the Mexico City Terminal Maneuvering Area (TMA) to support triple independent operations at Nuevo Aeropuerto Internacional de la Ciudad de México (NAICM).

The majority of the activities and milestones described in this document were discussed with officials from SENEAM during an intense planning and coordination visit by MITRE engineers to Mexico in late January 2016. The activities and milestones in this document also consider the outcome of the recent SENEAM-MITRE NAICM airspace design workshop that was conducted from 29 February 2016 through 4 March 2016. Additionally, the activities and milestones take into consideration Cancún dual independent test-bed operation work that is commencing simultaneously with NAICM-related airspace and procedure design work.

The roles and responsibilities of both MITRE and SENEAM were also discussed during MITRE’s visit to Mexico in late January 2016. For example, while MITRE can provide assistance and advice in many key areas, ultimately it is SENEAM that must manage, execute, and oversee the redesign of the Mexico City TMA, as well as the overall implementation process pertaining to the eventual operation of NAICM. MITRE will, of course, provide as much assistance to SENEAM as possible on items within MITRE’s area of expertise.

While this document attempts to cover as many of the key activities and milestones as possible, it is important to note that the redesign of the Mexico City TMA is a complex project that also involves investigative work. Therefore, it is difficult for SENEAM and MITRE to anticipate every single detail and activity that will need to be addressed. Thus, the plans described below are as specific as possible, but still general in nature. Actual activities and milestone dates will be coordinated closely between SENEAM and MITRE, and updated and/or modified to address and reflect changes as the project progresses. It is also important to mention that many of the activities and milestones depend on the timely receipt of data and feedback from SENEAM.

It is important to note that this document does not consider the activities and milestones that must be conducted by SENEAM and other aviation authorities that are outside the area of MITRE’s expertise and scope of work. For example, some important items that should be considered by SENEAM and other aviation authorities are:

- Assisting in the coordination of pre-runway construction flight inspections, which includes the acquisition of an appropriate Instrument Landing System (ILS)
• Workforce planning for staffing of controllers and other relevant essential support staff for NAICM. This includes establishing the current staffing situation and any constraints that may affect the transition of operations to NAICM.

• Assessing the current training capabilities and capacity to take account of the recruitment and training of controllers to support NAICM operations

• Acquiring Air Traffic Control (ATC) equipment, including the incorporation of the Final Monitor Aid (FMA), with appropriate lead-times in order to allow equipment to be ready for operation well in advance of NAICM’s opening-day. Facilities to accommodate the equipment (e.g., Operations Room, Air Traffic Control Tower, etc.) must also be ready in time to install and test the equipment.

• Establishing new regulations needed to operate NAICM. This involves close coordination with the Dirección General de Aeronáutica Civil (DGAC).

• Addressing any environmental or Safety Management System-related matters, as necessary

Next, coordination with other project stakeholders, such as the airlines and Fuerza Aérea Mexicana (FAM) is important. Regarding the airlines, please note that MITRE received a request directly from the Undersecretary of Transportation, Lic. Yuriria Mascott, for MITRE to meet with the airlines. Lic. Mascott also provided the contact information of top executives at the airlines so that MITRE can coordinate with them. Therefore, it is MITRE’s plan to coordinate such a meeting(s) in the near future.

Regarding the FAM, it is important to integrate officials from FAM into the NAICM airspace work. FAM-related matters need to be closely coordinated with MITRE before links are established. This is because other entities, including the Secretaría de Comunicaciones y Transportes (SCT), may need to be involved in establishing links and relationships with FAM.

Visits by SENEAM and MITRE to relevant United States airports to observe operations can also be conducted at a mutually agreed upon date.

The following list represents the key activities and milestones to be achieved during the March 2016 through spring 2017 timeframe pertaining to the redesign of the Mexico City TMA to support NAICM. The list is not in a specific order of priority, but it does consider a likely sequence in which activities may need to be conducted. As previously mentioned, actual activities and milestone dates will be coordinated closely between SENEAM and MITRE, and updated and/or modified to address and reflect changes as the project progresses.
NAICM Key Activities and Milestones:

March 2016:

- MITRE to provide NAICM and Toluca Airport preliminary Standard Terminal Arrival Routes (STARs) definitions (e.g., waypoint names and latitude/longitude coordinates) to SENEAM
- MITRE to start re-accomplishing approach and departure procedures for NAICM

April 2016 – June 2016:

- MITRE to provide NAICM and Toluca Airport preliminary departure procedure definitions (e.g., waypoint names and latitude/longitude coordinates) to SENEAM
- SENEAM to develop STARs for NAICM and Toluca
- SENEAM to determine modifications necessary to satellite airport procedures based on NAICM and Toluca routes, and develop conceptual routes to eliminate any conflicts. Preliminary STARs, approach, and departure procedures for the satellite airports should also be developed by SENEAM, if necessary.
- MITRE to complete re-accomplishing approach and departure procedures for NAICM
- SENEAM and MITRE to jointly review STARs, approach, and departure procedures for NAICM. Note that this may require SENEAM procedure designers to spend approximately four to five weeks at MITRE’s facility in order to appropriately conduct the review process.
- MITRE to begin enroute baseline airspace analysis (this is heavily dependent on SENEAM providing to MITRE the 2016 operational flight data that includes altitude and speed from the raw radar data)

July 2016 – September 2016:

- SENEAM to modify the Mexico City TMA and enroute airspace design, if necessary
- SENEAM to develop altitude restrictions along the STARs and departure procedures to ensure procedural separation within the Mexico City TMA
- SENEAM to develop Visual Flight Rule, overflight, and helicopter routes for the Mexico City TMA that will be deconflicted with the NAICM STARs, as well as the approach and departure procedures

- SENEAM and MITRE to conduct an airspace design workshop to advance on NAICM airspace design matters, including commencing sectorization

- MITRE to analyze the enroute airspace based on new routes with the baseline sectors, if necessary

- SENEAM to simulate the Mexico City TMA and enroute airspace routes and procedures in their simulator. The objective of this is to evaluate the routes and procedures that have been designed in order to obtain operational feedback. Modifications to the routes and procedures can then be made based on any issues that are uncovered during the evaluation.

October 2016 – December 2016:

- SENEAM to develop Mexico City TMA and enroute preliminary sectors to accommodate the newly designed routes and procedures. These preliminary sectors will be reviewed by MITRE and discussed in the next airspace design workshop.

- MITRE to begin review of SENEAM-developed Mexico City TMA and enroute preliminary sectors

- MITRE to begin enroute analysis of new routes and sectors

January 2017 – March 2017:

- MITRE to complete review of SENEAM-developed Mexico City TMA and enroute preliminary sectors

- MITRE to complete enroute analysis of new routes and sectors

- SENEAM to simulate the Mexico City TMA and enroute airspace routes, procedures, and sectors in their simulator. The objective of this is to evaluate the routes, procedures, and sectors that have been designed in order to obtain operational feedback. Any modifications can then be made based on issues that are uncovered during the evaluation.
- SENEAM and MITRE to conduct an airspace design workshop to complete the preliminary airspace design for the Mexico City TMA and the enroute airspace

April 2017 – June 2017:

- SENEAM to determine the number of Mexico City TMA and enroute positions that are necessary to support ATC equipment acquisition matters. MITRE can provide consultative support, as necessary.