**DRAFT**

MITRE

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# Implementation of Operations at NAICM
## *NAICM Airspace Design Next Steps for 2016*

The purpose of this document is to provide a general summary of key action items to be conducted by Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM) and MITRE regarding airspace design-related work during the 2016 timeframe to support the implementation of operations at Nuevo Aeropuerto Internacional de la Cuidad de México (NAICM). While this document attempts to cover as many key airspace design-related action items as possible, it is important to note that it is not an exhaustive list. Also, additional action items may need to be added to the list later on as the airspace design work progresses and issues are uncovered. Furthermore, many of the items listed in this document are outside the area of MITRE's expertise and scope of work. However, MITRE feels that this information will be helpful to SENEAM in the development of its own internal NAICM airspace design work planning efforts.

It should be noted that several key milestones must be met in order to support many of the action items listed in this document. See MITRE document F500-L16-011, Implementation of Operations at NAICM: Overview of Key Milestones for 2016, dated 22 December 2015 for additional information on other key milestones that must be achieved to support the overall implementation of operations at NAICM.

It is important to mention that these action items were developed in coordination with experts from SENEAM during two days of intense brainstorming sessions conducted with MITRE during a recent visit to Mexico City on 14 – 15 December 2015. During the visit, MITRE also discussed roles and responsibilities with SENEAM. Generally speaking, the roles of MITRE and SENEAM are as follows:

- MITRE: To provide guidance and assistance to SENEAM on many of the key actions and activities needed to transition to triple independent arrival and departure operations at NAICM, such as:
    - Assisting with identifying key elements to be considered in preparing for the transition, including Air Traffic Control (ATC) equipment needs. However, MITRE cannot provide information on the technical specifications of equipment or assist with installation matters.
    - Developing triple independent instrument approach and departure procedures (to be reviewed and validated by SENEAM)
    - Providing support regarding airspace design matters. SENEAM conducts the NAICM airspace design, and MITRE reviews it and provides feedback.

- SENEAM: To manage, take the actions, conduct the activities and make decisions necessary to implement operations at NAICM

Therefore, while MITRE can provide guidance and advice in many key areas, ultimately it is SENEAM that must manage, conduct, and oversee the overall implementation process and operate the airspace and ATC facilities that support operations at NAICM. MITRE will, of course, provide as much assistance to SENEAM as possible, so long as it is within MITRE's area of expertise.

The following list represents the key NAICM airspace design-related next steps that were agreed between SENEAM and MITRE for the 2016 timeframe. The list is not in a specific order of priority, but it does consider a possible sequence in which activities may need to be conducted. Furthermore, the activities and any associated dates assume that MITRE will not be requested to work on other activities. A recent example is when MITRE was asked by Mexican aviation authorities to examine the "Plan Alterno del NAICM" matter. MITRE understands that SENEAM may also ask MITRE to conduct other work that could affect the timing of activities shown below. Therefore, SENEAM and MITRE will need to plan activities in a closely coordinated manner.

1. SENEAM develops a Project Management Team
2. SENEAM sets up an NAICM Airspace and Procedures Design Team
3. SENEAM develops an initial project plan for designing the airspace and implementing independent operations at NAICM
    - SENEAM to develop and send a draft project plan for 2016 to MITRE for review by 25 January 2016
    - SENEAM to develop and send a draft high-level project plan for 2017 through 2020 to MITRE for review by mid-March 2016
4. SENEAM to coordinate with Dirección General de Aeronáutica Civil (DGAC) to set up a Regulatory and Performance-Based Navigation Team. (Note that regulatory matters pertaining to the implementation of dual independent operations at Cancún to support test-bed operations will also be the responsibility of this team, and needs to be addressed early-on.)
5. SENEAM to gather information as per MITRE's data request document that was hand-delivered to SENEAM on 14 December 2015 (see MITRE document F500-L16-007, Nuevo Aeropuerto Internacional de la Cuidad de México: Initial Airspace Design Data Request, dated 14 December 2015). Note that information was requested to be sent to MITRE by 22 January 2016. Please inform Ing. Robert W. Kleinhans no later than Tuesday 29 December 2015 if there are any issues or concerns with providing the requested data on time, as MITRE needs to allocate staff in a most efficient manner.

6. MITRE to review data provided by SENEAM (in response to the above-mentioned data request document)

7. MITRE to review SENEAM's NAICM airspace design concept provided to MITRE on 14 December 2015

8. SENEAM and MITRE to collaborate closely on key early-on decisions that need to be made to advance on NAICM airspace design matters

   Note that the items below need to be addressed as soon as possible so that decisions can be made that directly affect the airspace design. This may require intervention and support from other high-level officials (both inside and outside of SENEAM) as well. Nevertheless, it is critical that SENEAM and MITRE coordinate beforehand on these matters with other officials in order to avoid confusion and complications.

   - FAM Matters (e.g., Santa Lucía's runway closure, relocation of fixed-wing aircraft and to what airport, helicopter training areas, Special Use Airspace, etc.)
   - Master Plan Matters (Runway 6 usage and concept of operations for NAICM, runway exits, taxiway crossings, etc.)
   - Hills of Chiconautla and Chimalhuacán (grading of the hills and to what extent, runway threshold elevations, displaced thresholds, etc.)

9. SENEAM to establish links with DGAC to participate in airspace design, regulatory and other matters by mid-January 2016

10. SENEAM and MITRE to conduct first NAICM airspace design workshop

    - Tentatively planned for the late January 2016 timeframe
    - SENEAM and MITRE to hold teleconference(s) in January as necessary to plan and coordinate the first NAICM airspace design workshop
      i. First teleconference tentatively planned for early January 2016

11. SENEAM and MITRE to modify the NAICM airspace design based on feedback obtained during the first NAICM airspace design workshop

    - SENEAM and MITRE to conduct teleconferences once every two weeks following the first NAICM airspace design workshop, if possible, to discuss plans, issues, achievements, problems, etc.

12. SENEAM, in coordination with DGAC, to make a decision on whether or not to mandate one-hundred-percent Area Navigation (RNAV) in the Centro México enroute environment, and above what Flight Level this mandate would apply

- MITRE can provide support to SENEAM, if necessary. However, note that in principle, MITRE will suggest that a one-hundred-percent RNAV environment should be mandated in the Centro México airspace by the time NAICM opens. That means that all aircraft operating in the upper airspace would need to be suitably RNAV-equipped. If that does not occur, operations may not run optimally.

13. MITRE to advance on near-term enroute airspace designs based on feedback from the first NAICM airspace design workshop, as well as data received from SENEAM
    - Note that SENEAM may need to consider adding an additional enroute expert to the NAICM Airspace and Procedures Design Team, as necessary
14. SENEAM to review finalized MITRE-developed instrument approach and departure procedures in the May/June 2016 timeframe
    - Note that this involves the possibility of SENEAM acquiring the same procedure design tool used by MITRE. This matter will be coordinated further with SENEAM in the January/February 2016 timeframe.
15. SENEAM and MITRE to conduct second NAICM airspace design workshop in the June/July 2016 timeframe
16. SENEAM and MITRE to modify the NAICM airspace design based on feedback obtained during the second NAICM airspace design workshop
    - SENEAM and MITRE to conduct teleconferences once every two weeks following the second NAICM airspace design workshop, if possible, to discuss plans, issues, achievements, problems, etc.
    - SENEAM to deconflict routes with oversight from MITRE
    - SENEAM to modify/refine instrument approach and departure procedures, as well as examine Standard Terminal Arrival Routes (STARs), as necessary
17. SENEAM and MITRE to conduct third NAICM airspace design workshop in the September/October 2016 timeframe
    - During this workshop, the team should be in a position to finalize the Terminal Maneuvering Area (TMA) airspace design, start TMA sectorization, and continue advancing on the enroute airspace design, including enroute sectorization

18. SENEAM and MITRE to address any airspace adjustments resulting from the third NAICM airspace design workshop

    - SENEAM and MITRE to conduct teleconferences once every two weeks following the third NAICM airspace design workshop, if possible, to discuss plans, issues, achievements, problems, etc.

    - SENEAM to modify/refine instrument approach and departure procedures, as well as examine STARs, as necessary

19. SENEAM to plan and develop its NAICM Human-in-the-Loop (HITL) Simulation Team