MITRE

28 March 2014
F500-L14-022

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Aeropuertos y Servicios Auxiliares (ASA)
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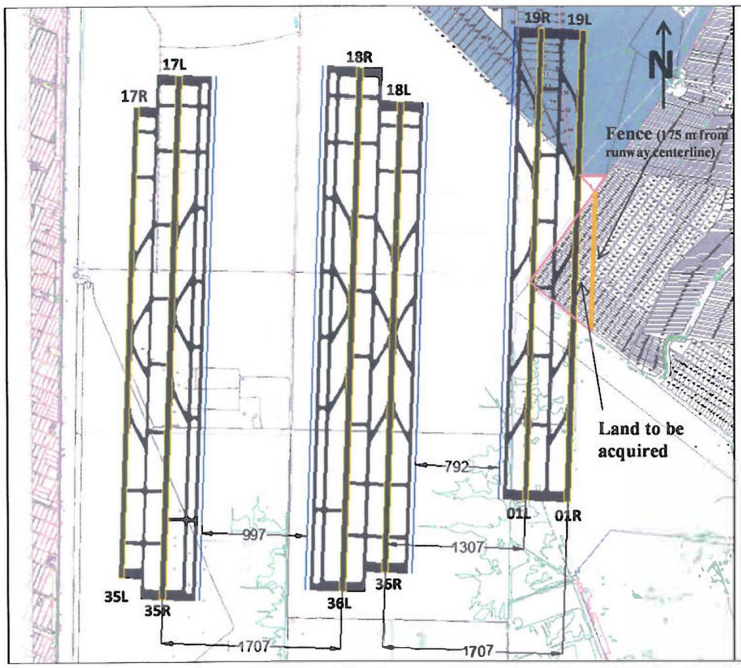
México

Subject: Technical Letter: Summary of Work During the Period 1 February 2014 through 31 March 2014

Dear Capt. López Meyer:

This letter respectfully submits to your attention a summary of the most significant project activities conducted by MITRE during the two-month period 1 February 2014 through 31 March 2014.

MITRE is pleased to know that ASA and the other relevant authorities involved in this project have made the final decision to proceed with the *MITRE-Recommended Runway Configuration (July 2012)*, which was proven as feasible during a previous project (see the enclosure to MITRE letter F500-L14-006) for the Nuevo Aeropuerto Internacional de la Ciudad de México (NAICM). Figure 1 shows the *MITRE-Recommended Runway Configuration (July 2012),* and Table 1 gives the coordinates of each of the runway ends.



Runway	Length (m)
35L/17R	4500
35R/17L	5000
36L/18R	5000
36R/18L	4500
01L/19R	4500
01R/19L	4500

Source of survey data: © MDA Geospatial Services Inc (2010) – All Rights Reserved
Note: the runway lengths are notional. See note under Table 1.

Figure 1. MITRE-Recommended Runway Configuration (July 2012)

Table 1. MITRE-Recommended Runway Configuration (July 2012): Coordinates

Runway	Runway End and Displaced Threshold	World Geodetic System 1984 Coordinates on Runway Centerline
17R/35L	17R Runway End	19 32 29.9N/99 00 27.8W
	35L Runway End	19 30 03.5N/99 00 33.2W
17L/35R	17L Runway End	19 32 39.3N/99 00 13.7W
	35R Runway End	19 29 56.7N/99 00 19.7W
18R/36L	18R Runway End	19 32 41.6N/98 59 15.0W
	36L Runway End	19 29 59.1N/98 59 21.0W
18L/36R	18L Runway End	19 32 31.3N/98 59 01.6W
	36R Runway End	19 30 05.0N/98 59 07.1W
19R/01L	19R Runway End	19 32 53.7N/98 58 15.9W
	19R Displaced Threshold (Tentative)	19 32 39.8N/98 58 16.4W
	01L Runway End	19 30 27.3N/98 58 21.4W
19L/01R	19L Runway End	19 32 53.2N/98 58 02.2W
	19L Displaced Threshold (Tentative)	19 32 39.3N/98 58 02.7W
	01R Runway End	19 30 26.9N/98 58 07.6W

Note: the runway coordinates contained in this table are associated with a runway configuration whose aeronautical feasibility has been proven. However, the coordinates are subject to changes due to factors such as detailed civil engineering analyses, flight checks, final runway lengths and thresholds, and approvals that must be obtained from the appropriate aviation authorities of Mexico.

Runway Construction and Phasing

MITRE is mindful about the importance of phasing construction of the airport in a manner that will simultaneously accomplish short-term goals relating to construction best practices and long-term strategic aims. The core of this decision making process relates to which runways are built first, which runways are built afterwards (in the mid-term) and how this can be accomplished without causing disruption. MITRE recognizes that this is an out-of-scope activity. However, due to the importance of this matter and how much MITRE cares about the success of the project, following Dr. Bernard Lisker's consultation with you, MITRE assembled a team of experts with direct construction management and planning experience and also consulted external individuals. The following paragraphs summarize the conclusions reached by the team.

MITRE strongly recommends that the master planners (i.e., ARUP) consider that runways 35L/17R, 36L/18R, and 01R/19L[1] (i.e., runways 1, 3, and 6 from west to east) are the ones constructed first, for the opening of the airport. Constructing the outer runways (1 and 6) will help to ensure and protect the ability of the airport to achieve its

[1] Runway numbers reflect the ultimate runway configuration of the airport so they can be identified on Figure 1.

ultimate runway layout configuration later, and mitigate likely future development and expansion problems. The eastern-most runway (6) can at first primarily be used by Fuerza Aérea Mexicana (FAM) transport aircraft that will relocate to NAICM from Santa Lucía Military Base (Santa Lucía), as well as Presidential and other governmental aircraft operations. Taxiing from the terminal to runway 6 will be minimal at first as commercial aircraft will use runways 1 and 3. Runways 4 or 2 would be the most logical runway candidates to be constructed next.

There are many additional details that can be provided as how to accomplish a reasonable plan associated to an operational concept. However, as this is intended as a summary, it suffices to say at this point that constructing runways 1, 3, and 6 initially is reasonable and doable. It is also a good strategy, as environmental pressure may never allow construction of runway 1 once runway 2 already exists. If that happened, the airport would never grow to have the superior capacity expected from a six-runway airport.

MITRE also recommends that all runways be constructed with a minimum width of 60 m to allow for operational flexibility for aircraft that require a wide runway. Doing so should not increase costs significantly. Furthermore, widening runways to 60 m later would be expensive and complicated requiring closing the runway, relocating runway lights, and other modifications.

To minimize impact when constructing future runways (i.e., beyond the first three mentioned above), it is advisable that the taxiway system/flow plan for the ultimate runway/taxiway system be examined before initial airport construction begins. This will allow for taxiways to be located in such a way as to match up with taxiways that will eventually cross future runways. Furthermore, drainage, soil preparation, and grading for the ultimate runway/taxiway system, independent of runway phasing, should be completed before initial construction as well. These preparatory items will help mitigate operational issues during future runway construction.

Critical Aeronautical Steps

In order to assist ASA and other stakeholders in the planning of this project, MITRE gathered an additional and large group of airport, procedure, Air Traffic Control (ATC), and airspace experts together and held several intense brainstorming meetings to discuss the critical NAICM-related aeronautical items that should be addressed during the 2014 through early 2016 timeframe. While this, as the construction phasing analysis, is an out-of-scope activity, it reflects once again MITRE's sincere commitment to the project.

The objective of these meetings was to identify upcoming key aeronautical analyses and/or tasks that should be conducted in order to make ASA and other stakeholders aware of crucial aeronautical items so that decisions are not made and work is not conducted until those items have been properly addressed. As a result, costly mistakes that have been made at other major international airports can be avoided. Relevant examples of recent airports that have had serious and costly problems include the following:

Amsterdam

Schiphol Airport opened a new runway (18R/36L) in November 2003. Simultaneous parallel departure operations using Runways 36L and 36C were planned and initially implemented in late 2004 using Area Navigation (RNAV) procedures. Almost immediately the procedures were stopped by ATC after unanticipated incidents took place that appeared to place aircraft in close proximity to each other on non-parallel paths. This situation led to acute political problems in The Netherlands followed by many resignations. Finally, after several years, alternative procedures were implemented to allow simultaneous departures using diverging routes, but that has created more noise exposure for surrounding communities.

Berlin

The new Berlin Brandenburg Airport was originally due to open on 30 October 2011, but is still not yet operational. At least four official opening dates have not been met, and no date is currently established for when the airport will open. The year 2016 is widely accepted as the earliest opening date. Construction delays (including the bankruptcy of the construction planning company) and technical difficulties, including failure to meet requirements in the construction permit, failed mandatory acceptance tests, and serious flaws in wiring, programming and implementation of various critical systems within the terminal building are the principal reasons for the delays.

Frankfurt

In October 2011, Frankfurt Airport opened a fourth runway. This runway had been planned since the mid-1990s, but experienced fierce opposition by environmentalists and was only approved for construction in 2007. Approval was given based on the expectation of certain runway capacity targets. However, since the opening of the runway, additional environmental constraints have been imposed on departure routings that caused additional interactions with operations on other runways. On top of that, some airspace design issues were uncovered recently. This has resulted in an estimated maximum achievable runway capacity that is 20% below the planning targets.

These three airport examples are just a few of the many examples that are abundantly found in the airport world and the majority are preventable through proper planning and close coordination among all stakeholders.

As previously mentioned, MITRE gathered a large group of experts to discuss the critical NAICM-related aeronautical items that should be addressed during the 2014 through early 2016 timeframe. Those critical items are listed in Table 2, which also provides additional information regarding the prerequisites needed to address them. Primary and secondary participants are also identified. It is important to emphasize that the table is a summary tool rather than an all-encompassing review of all the details affecting each item on the table.

Please note, however, that this information is only being provided to serve as a starting point to generate further discussions with ASA, Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM), Dirección General de Aeronáutica Civil (DGAC), and other stakeholders.

Some items discussed in Table 2 are outside of MITRE's area of expertise or responsibility, such as flight checks, Instrument Landing System (ILS) equipment signal verification, as well as tasks associated with the Master Plan and engineering/construction plans. Nevertheless, it is important that these items be handled in a coordinated manner as well. Finally, non-aeronautical related items such as the acquisition of non-federally owned land to the east of the NAICM site that is required for runway construction, as well as preparatory construction planning and work (e.g., drainage, soil engineering, etc.) are outside of MITRE's control.

Beyond the early 2016 timeframe, key NAICM-related aeronautical activities such as the analysis of the enroute airspace structure to support NAICM operations, as well as assisting SENEAM with its development of Human-in-the-Loop (HITL) simulations and developing a monitoring plan to assess operating procedures once the NAICM operation starts will also be conducted by MITRE, but are not mentioned at this point.

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Table 2. Summary of Critical Aeronautical Steps

Critical Aeronautical Step	Description	Prerequisite	Primary Participants	Secondary Participants	Important Associated Issues/Comments
Coordination with airlines and other key airport stakeholders	Joint meetings with airlines and other key airport users to make them fully aware of all aeronautical- and master planning-related matters, and to obtain important input and feedback.	Coordination by ASA of a joint meeting with the airlines and others.	ASA, master planners, MITRE, airlines	SENEAM, DGAC	Airlines may have important issues that could affect the overall plans and operation of the airport that would need to be addressed, which could impact other activities and schedules.
Flight Checks and/or Flight Validation activities[2]	Final approaches at NAICM are very long and exceed normal operating standards of ILS equipment. Flight Checks using actual ILS equipment to ensure that appropriate signal reception can be achieved, including magnetic effects, should be conducted. High terrain and numerous obstacles exist around the NAICM site, which complicates procedure development. Flight Validation activities should be conducted to ensure that unknown/uncharted obstacles do not exist, and that procedures are safe and flyable, including the examination of Ground Proximity Warning System matters.	Appropriate discussions with ILS manufacturer. Commissioning of an appropriately equipped aircraft, including Performance-Based Navigation (PBN) capabilities.	ASA, MITRE, SENEAM, airlines	ILS manufacturer	This requires intense planning and coordination, including technical consultation with the appropriate ILS manufacturer before a decision is made on how to proceed. All of this takes long lead-times to conduct, including the acquisition and installation of ILS equipment.
Finalize runway lengths *This item and the following one are part of an iterative process*	Establish the ultimate runway length requirements considering the types of aircraft and operations that are expected to use the airport. This should involve feedback from the airlines.	Conduct a payload and range analysis to establish runway length requirements. This should be complemented by an engine-out analysis.	ASA, airlines	MITRE	Any required longitudinal shifts of the runway need to be closely coordinated with MITRE. Decisions regarding the grading of hills at Chiconautla and Chimalhuacán may affect final runway lengths and other aeronautical factors.

[2] A Flight Check is an inflight investigation and evaluation of air navigation aids and instrument flight procedures to ascertain or verify that they meet established tolerances and provide safe operations for intended use. It involves the operation of a suitably equipped aircraft for the purpose of calibrating ground based navigational aids or monitoring the performance of navigation systems. A Flight Validation is part of the instrument flight procedure validation process to confirm that the procedure is operationally acceptable for safety, flyability and design accuracy. It is an inflight evaluation concerned with factors that may affect the suitability of an instrument flight procedure for publication, other than those associated with the performance of a navigation aid or system. Refer to United States (U.S.) Federal Aviation Administration Order 8200.1C, United States Standard Flight Inspection Manual.

Critical Aeronautical Step	Description	Prerequisite	Primary Participants	Secondary Participants	Important Associated Issues/Comments
Decision by aviation authorities regarding the grading (including to what extent) of hills at Chiconautla and Chimalhuacán *This item and the previous one are part of an iterative process*	The hills at Chiconautla and Chimalhuacán penetrate some International Civil Aviation Organization (ICAO) Annex 14 Obstacle Limitation Surface(s). Chiconautla penetrates the ICAO Annex 14 Approach and Takeoff Climb Surfaces, as well as the U.S. Standard for Terminal Instrument Procedures (TERPS) final approach obstacle assessment surface. Chimalhuacán, on the other hand, only penetrates the ICAO Annex 14 Approach Surface.	Determination of final runway lengths.	ASA, MITRE, SENEAM, DGAC	Master planners	The TERPS penetrations at Chiconautla must be removed. Note that several tall antennas need to be removed as well.
Development of the final Master Plan	Development of the final Master Plan based on the MITRE-Recommended Runway Configuration (July 2012). Note that this configuration assumes that the terminal building will be constructed between the western-most and center pair of closely-spaced parallel runways. In order to ensure that signal interference and line-of-site problems, as well as obstacles are kept under control, at a minimum, a general architectural plan depicting building heights should be completed at this point. Likewise, the position and height of the Air Traffic Control Tower should have been established.	Coordination with airlines and other stakeholders; finalize runway lengths; Flight Checks and Flight Validation, and final examination of all relevant aeronautical matters that could potentially affect runway locations and instrument procedures.	ASA, master planners, airlines, and any other key stakeholders	MITRE	Coordinate any runway shifts with MITRE. Runways 1, 3, and 6 (from west to east) should be constructed first for the opening of the airport. All runways should be 60 m wide. To minimize impact when constructing future runways (i.e., beyond the first three mentioned above), it is advisable that the taxiway system/flow plan for the ultimate runway/taxiway system be examined before initial airport construction begins. This will allow for taxiways to be located in such a way as to match up with taxiways that will eventually cross future runways. Ensure no facilities are located that could impact ILS critical/sensitive areas or cause electromagnetic issues.
Final review of instrument procedures and other key aeronautical work by SENEAM and other authorities	All aeronautical work needs to be reviewed and modified as necessary by SENEAM to obtain DGAC approval.	Completion of all aeronautical work that can affect runway siting and operational procedures.	ASA, MITRE, SENEAM, DGAC	Not Applicable	Requires a detailed survey of the NAICM site and its surroundings (for which MITRE is responsible). Note that this survey is underway and it is to be completed by October 2014.

Critical Aeronautical Step	Description	Prerequisite	Primary Participants	Secondary Participants	Important Associated Issues/Comments
Development of airport engineering and construction plans	Preparation of detailed civil engineering designs and plans taking into consideration the final Master Plan. This is an extremely detailed plan, with highly interactive components. For example, a modern airport's automated functions are strongly correlated to its architectural design.	Conclusion of the final Master Plan and subsequent final review of instrument procedures and other aeronautical work.	ASA, DGAC, construction management company, master planners	MITRE	Drainage, soil preparation, and grading for the ultimate runway/taxiway system, independent of runway phasing, should be completed before initial construction. This will help to mitigate operational issues during future runway construction.
Regulatory modernization to support the operation of NAICM	Development of selected regulations.	Identify key regulatory guidance and processes that are currently missing/incomplete and are required for NAICM.	ASA, MITRE, SENEAM, DGAC	Airlines and other stakeholders	Key regulatory matters to address include authorization to allow climb gradients on missed approaches, as well as regulations concerning Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures.
Airspace design of the new Mexico Terminal Maneuvering Area (TMA)	Development of the final airspace design of the new Mexico TMA to support opening-day operations at NAICM and, subsequently, development of a notional airspace design of the ultimate six-parallel runway configuration.	Completion of all aeronautical work that can affect runway siting and operational procedures.	ASA, SENEAM, MITRE	Airlines	This must consider plans for an expanded Toluca Airport and a new airport in the State of Hidalgo. This should also assume closing of Santa Lucía's runway and elimination of its associated Special Use Airspace (SUA), as well as the establishment of a non-interfering helicopter training area. SENEAM-lead Human-in-the-Loop (HITL) simulations will occur later in the project, possibly leading to some modifications to this item's work.
Initial Air Traffic Management transition planning	Implement dual independent operations at Cancún as a test case to prepare controllers. Examine workforce planning, radar positions, and other operational requirements needed to conduct dual independent approach and departure operations at Cancún.	ATC equipment acquisition, procedure development, airspace design.	ASA, SENEAM, MITRE, airlines	ASUR	MITRE successfully conducted recently and delivered to ASA a preliminary collision risk analysis for Cancún to determine if its runway spacing is appropriate to conduct dual independent approaches. Information on surveillance, display, and communications-override equipment required to conduct those operations was also provided to ASA.

Along with this technical letter, three enclosures are included. Each one is identified and briefly described below:

- **Enclosure No. 1:** ***Helicopter Operations at Santa Lucía Military Base in Conjunction with NAICM Operations – Preliminary Report.*** This report discusses MITRE's analysis of the feasibility of FAM helicopter arrival and departure operations at Santa Lucía coexisting with operations at NAICM. The objectives of this analysis were to determine whether those helicopter operations can be operated independently from operations at NAICM, as well as what restrictions would need to be placed on helicopter operations to avoid capacity-limiting airspace interactions.

- **Enclosure No. 2:** ***Exploratory Analysis of Potential New Airport Sites in Hidalgo – Status Report.*** The objective of this report is to provide ASA with an update on MITRE's exploratory investigation of potential airport sites within the State of Hidalgo. Preliminary findings that take into account information obtained during the MITRE team's recent helicopter aerial investigation of the sites are also included.

- **Enclosure No. 3:** ***Independent Approaches to Two Runways at Cancún – Preliminary Runway Spacing Analysis and Air Traffic Control-Related Equipment Requirements.*** MITRE has been informed that Cancún is considering implementation of independent approaches to its two existing parallel runways in the mid-term. This will provide a significant increase in capacity for Cancún. It will also allow Cancún to serve as a test location so that air traffic controllers can obtain an understanding of independent operations and gain experience for later implementation of independent operations at NAICM.

  To support the above-mentioned plan, MITRE conducted a preliminary collision risk analysis for Cancún using the MITRE-developed Simultaneous Instrument Approach Model (SIAM), a sophisticated fast-time computer model. Additionally, MITRE identified and described the required radar and surveillance display capability for Cancún based on the preliminary collision risk analysis, as well as communications-override requirements.

  This report describes MITRE's analyses and enables SENEAM to start making arrangements for the acquisition and/or development of appropriate equipment and systems to support dual independent operations at Cancún.

Other Activities

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

- The following visits to MITRE occurred in late January, after the 1 February technical letter was prepared and submitted to ASA. Therefore, a description of those visits is being provided in this technical letter.

    - On 28 January, yourself and Ing. Jorge Nevárez visited MITRE to conduct detailed discussion on the overall status of the project and to prepare for the visits occurring over the following two days (described below). During this visit, an intense brainstorming session was conducted regarding potential runway configurations at NAICM.

    - On 29 January, yourself, Ing. Nevárez, Lic. Manuel Ángel Núñez, and two representatives from ARUP visited MITRE. Prior to the arrival of the ARUP representatives, Lic. Núñez was updated on the overall status of the project. The meeting with the representatives from ARUP was extremely useful and allowed for a professional exchange of ideas and concerns regarding the NAICM runway configuration and associated procedures, as well as the importance of the many critical aeronautical tasks and activities yet to be conducted that could affect overall airport plans.

    - On 30 January, Ing. Nevárez, Lic. Núñez, and five officials from the FAM visited MITRE. During that visit, the officials from the FAM were given a presentation that provided them with a thorough understanding of the NAICM project. The officials were also given a tour of MITRE's Air Traffic Management (ATM) laboratory, which included several demonstrations of scenarios showing potential interactions between operations at Santa Lucía and NAICM. Throughout the day, important discussions were held regarding the relocation of Santa Lucía and the potential new airport sites being considered in the State of Hidalgo for the development of a joint civil/military airport to replace Santa Lucía. MITRE reached certain understandings with the FAM visitors regarding the relocation of Santa Lucía, which are discussed farther below.

- On 5 February, Ing. Claudio Arellano, Director-General of SENEAM and CTA. Rodolfo Olivares, Subdirector-General of Air Traffic Services, visited MITRE. As this was the first visit to MITRE by Ing. Arellano he was provided a detailed presentation on the overall NAICM project and made aware of its current status. A visit to MITRE's ATM laboratory was conducted as well, which included demonstrations of scenarios of interactions between operations at Santa Lucía and NAICM. As a result, Ing. Arellano fully understands the NAICM project, its issues, and its current status. Additionally, MITRE explained to

Ing. Arellano and CTA. Olivares the aeronautical tasks under the ASA-MITRE Agreement that are primary responsibility of SENEAM, with MITRE's support.

It is important to mention that the visit by Ing. Arellano and CTA. Olivares was combined with a visit to MITRE's Advanced Air Traffic Control Trainer laboratory. This was pertaining to a separate project that could assist with NAICM tasks later.

- On 17-20 February, a team of MITRE engineers travelled to Mexico City. During that visit, the following activities were conducted:

    - Visit to Santa Lucía: On Tuesday 18 February, the MITRE team, along with Ing. Nevárez and Lic. Núñez visited Santa Lucía to meet with officials from the FAM in order to further discuss plans to relocate operations from Santa Lucía. The FAM provided MITRE with a detailed presentation regarding the mission of the base, as well as information regarding its needs, characteristics, facilities, and services. A tour of the base was also provided. This allowed the MITRE team to obtain a thorough understanding of the design and importance of the base.

    - Visit to Querétaro Airport: On 18 February, after the visit to Santa Lucía was completed, the MITRE team along with Ing. Nevárez travelled to Querétaro Airport. The objective of the visit was to obtain a better understanding of overall operations at the airport, and to examine its potential for accommodating FAM fixed-wing training and maintenance operations. During the visit, the MITRE team met with airport management officials and went to the Air Traffic Control Tower to observe operations and ask questions of controllers regarding ATC procedures. As a result of the visit, MITRE learned of an area on the airport that could potentially accommodate FAM facilities and operations. However, the area in question is limited in size and more investigation to determine its appropriateness is required.

    - Meeting with Officials from the Secretariat of Communications and Transportation: On 18 February, Dr. Bernard Lisker met with top officials from the SCT. In attendance were Lic. Carlos Almada, Lic. Manuel Ángel Núñez, Ing. Claudio Arellano, Ing. Jorge Nevárez, and yourself. During this meeting, Dr. Lisker provided the officials with a detailed description of the status of the project and, more importantly, informed them of the problems, issues, challenges, and risks facing it.

    - Visit to Hidalgo: On 19 February, the MITRE team conducted a full-day of helicopter tours of potential airport sites in the State of Hidalgo. Officials from the State of Hidalgo and Lic. Núñez accompanied the MITRE team on some of the flights. The helicopter tours helped MITRE

to visually assess the characteristics of the sites and collect first-hand information. A new site near the town of Tetepango was identified during the helicopter tours as well, and is now being examined by MITRE.

Afterwards, extremely useful discussions with the Governor of the State of Hidalgo and other state officials were held. During these discussions, the Governor expressed interest in accommodating FAM fixed-wing training and maintenance activities at the new airport in Hidalgo. MITRE is now considering the potential for having FAM fixed-wing training and maintenance activities at the potential new airport sites.

- Visit to the *Centro México* Area Control Center (ACC): On 20 February, the MITRE team visited the *Centro México* ACC to observe operations and hold discussions with air traffic controllers. The primary objective of the visit was to observe operations at Querétaro Airport to better understand how traffic is handled at that airport. MITRE was also interested in obtaining information on how enroute traffic is handled.

  Important information on several other project-related subjects, such as Traffic Flow Management (TFM) operations, how military aircraft are handled within the ACC, airspace sector workload matters, how traffic is handled at other smaller satellite airports in the Mexico City area (e.g., Puebla and Cuernavaca), and helicopter operations was also obtained.

  The visit to the ACC was extremely useful and MITRE wishes to express its gratitude to CTA. Olivares for coordinating the visit.

- The above-mentioned discussions, which were also a continuation of the base relocation subjects discussed during the FAMs visit to MITRE on 30 January, resulted in the following understandings:

  1. All Santa Lucía helicopter operations (including helicopter maintenance) are to remain at the base, pending a MITRE analysis. See enclosure 1 to this technical letter.

  2. All Santa Lucía helicopter training is to relocate to a FAM-recommended area that MITRE will analyze. FAM was to send to MITRE the coordinates of that area by 25 February for MITRE's immediate analysis. MITRE, however, never received the information nor has received an explanation as to why the information was not sent.

  3. The Santa Lucía runway is to be closed. As a result, all fixed-wing operations will cease. These operations will be relocated as follows:

- Fixed-wing maintenance and training operations are to relocate, along with its support facilities, to another airport, possibly Querétaro Airport or a new airport in Hidalgo.

- Fixed-wing transport operations are to relocate to NAICM, along with its support facilities. MITRE suggests that the eastern-most runway is used to that affect.

4. All SUAs associated with Santa Lucía operations are to be eliminated

It is important at this juncture to emphasize that the need to close the Santa Lucía runway has been studied for several years, its importance has been solidly proven, and its connection to crucial aspects of safety and capacity established beyond doubt. Leaving that runway open for a theoretically low number of operations not only is not advisable from a safety and capacity point of view, but a proposed fixed-wing maintenance base for Santa Lucía can still be constructed either at Querétaro Airport or at a new airport in Hidalgo.

MITRE wishes to express its strongest concern about continuing efforts to leave that runway open, as MITRE does not want to be associated with a decision that could cause serious air traffic problems.

- On 27 February, Dr. Lisker had a lengthy telephone conversation with Ms. Jackie Coburn from ARUP. During that conversation, project related matters were discussed in a friendly and professional manner. Both MITRE and ARUP agreed to continue to consult with each other during upcoming project stages. Dr. Lisker also expressed MITRE's concerns regarding the matter of flight checks, airline discussions, and other aeronautical tasks that may still involve Master Plan changes.

- The MITRE team conducted a thorough review of data that was sent by ASA in late February. Following that review, MITRE submitted a document to Ing. Jorge Nevárez on 6 March 2014 (see MITRE letter F500-L14-018), which provides feedback on the MITRE teams review of the data. That document is being sent along with this technical letter. Ing. Nevárez sent additional data to MITRE in March 2014, which the MITRE team is in the process of reviewing.

- As requested by Ing. Nevárez, the MITRE team conducted a thorough review of an ASA-prepared report pertaining to an Automated Weather Observing System (AWOS) being considered for installation at the potential new airport sites in the State of Hidalgo. MITRE sent a document to Ing. Jorge Nevárez on 6 March 2014 (see MITRE letter F500-L14-019) that provided the MITRE teams opinion

regarding the system being considered, including several questions and comments. That document is also being sent with this technical letter.

It is important to mention that the idea of reconfiguring the weather station currently owned by ASA by replacing some sensors with new sensors causes MITRE very much concern, as problems may arise that would delay MITRE's Hidalgo-related airport work or impact results. Therefore, MITRE recommends the purchase of new devices, instead of "patching" existing models.

Once a formal technical proposal from ASA's selected AWOS manufacturer has been provided, please forward it to MITRE for review prior to ordering the system. This will help ensure that ASA is obtaining an appropriate AWOS system for the Hidalgo sites.

- MITRE is responsible for the procurement of a satellite-based survey of the NAICM site and its surroundings. **MITRE is glad to report that the survey has been ordered, payment by MITRE to the surveying company will follow soon, and results are expected to be received by October 2014**.

  Intense licensing preparation and negotiations have been conducted that will allow ASA to obtain a copy of the survey products if it desires directly from the survey company, free of charge.

  The development of the survey will require onsite work. In order for the survey team to conduct its work they need some local assistance, such as:

  - Transportation with a driver fluent in English (or another person from ASA who is in the vehicle who is fluent) who knows Mexico City and its surroundings very well.
  - Staff from ASA who will accompany the survey team during the onsite work, and assist with securing permission to access areas, if applicable, to allow the survey team to perform its work.
  - Receipt and storage of the fieldwork equipment that the survey team will ship to Mexico in a secure manner (i.e., in a locked room).

  MITRE sent an e-mail to Ing. Nevárez requesting that ASA provide the above-mentioned support and Ing. Nevárez agreed. MITRE appreciates the effort by ASA.

- Ing. Nevárez informed MITRE of plans by the government of the State of Mexico to construct an auditorium near the NAICM site. As requested by Ing. Nevárez, MITRE will examine the impact of this proposed auditorium on instrument approach and departure procedures and other obstacle limitation surfaces.

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MITRE was contacted on 26 March by the government of the State of Mexico to offer detailed information so that MITRE may proceed with its investigation. As a result, MITRE sent a request to the State of Mexico and, depending on their expediency, MITRE may be able to complete its examination sometime between late April and late May. Dr. Lisker plans to inform ASA in more detail about this contact to MITRE by the State of Mexico.

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

Sincerely,

Ing. Robert W. Kleinhans
Project Technical Coordinator

Enclosures: 5, including 3 sent for the first time

cc: Dr. Bernard Lisker