

24 October 2016
F500-L17-006

CTA Martín García
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Servicios a la Navegación en el Espacio Aéreo Mexicano
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15620 México, D.F.
México

Subject: Addendum to MITRE Letter F500-L17-001, *Cancún and Cozumel Preliminary Procedural Separation: Informal Working Notes*

Dear CTA García:

I respectfully submit to you this technical letter that provides information on MITRE's initial investigation of procedural separation for the routes within the Cancún (MMUN)/Cozumel (MMCZ) Terminal Maneuvering Area (TMA) to support dual independent test-bed operations at MMUN. This letter, along with its associated appendix, is intended to provide complementary graphical depictions of the procedural separation route definition information (e.g., waypoint names and coordinates, altitude and airspeed restrictions, etc.) that was previously sent to Servicios a la Navegación en el Espacio Aéreo Mexicano (SENEAM). Refer to MITRE document F500-L17-001, *Cancún and Cozumel Preliminary Procedural Separation: Informal Working Notes*, dated 17 October 2016 for more detailed information.

Appendix A contains graphical depictions of the route definitions for the MMUN Area Navigation (RNAV) Standard Terminal Arrival Route (STAR) and RNAV Standard Instrument Departure (SID) definitions from the September 2016 route definition document (refer to MITRE document F500-L16-051, dated 7 September 2016). Important information, such as waypoints, altitudes, and airspeeds being considered to procedurally separate the routes are shown. Figure A-1 shows the procedural separation route information for Runways 12L and 12R. Figure A-2 shows the procedural separation route information for Runways 30L and 30R.

Airspeed restrictions, however, were not added to the MMUN RNAV SIDs in an effort to allow aircraft to maintain the most efficient forward airspeed as determined by the pilot. Furthermore, the MMUN conventional SIDs designed by MITRE were not examined for procedural separation due to the low volume of aircraft utilizing conventional SIDs at MMUN.

Any waypoints that were added since the above-mentioned September 2016 route definition document was submitted are identified on Figures A-1 and A-2 with bold magenta text. Any waypoints that were moved are identified with bold green text. These waypoint changes are being provided for consideration by SENEAM and for further discussion with MITRE.

MITRE's initial investigation of procedural separation for MMCZ indicated that altitude and/or airspeed restrictions to provide procedural separation may not be appropriate. For example, placing altitude restrictions on the MMCZ procedures would likely require MMUN traffic to incur additional level-offs and/or higher climb gradients that would reduce design efficiencies. Therefore, graphical depictions of MMCZ routes are not provided in this document.

Finally, it is important to note that in the early August 2016 workshop in Cancún, it was decided by SENEAM that the currently published conventional STARs at MMUN and the currently published conventional STARs and conventional SIDs at MMCZ would continue to be used in the future. This was due to the minimal number of conventional aircraft flying into and out of the MMUN/MMCZ TMA. Therefore, these procedures would need to be handled individually and separated by controller intervention. While the number of aircraft is minimal, both SENEAM and MITRE agreed that this should not present any significant problems or complexity to the operations inside of the MMUN/MMCZ TMA.

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

Sincerely,

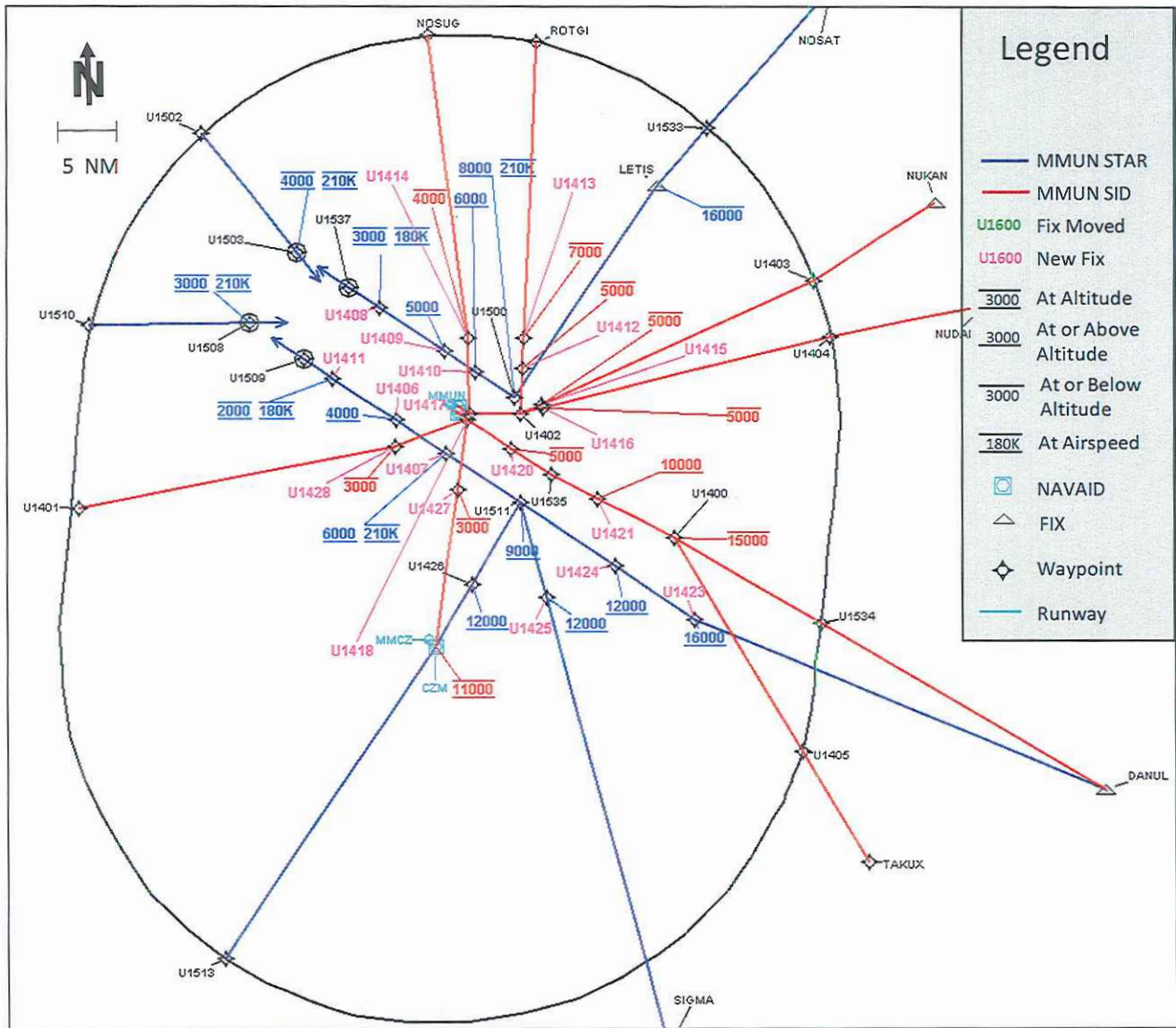


Ing. Robert W. Kleinhans
Project Technical Coordinator

cc: Dr. Bernardo Lisker

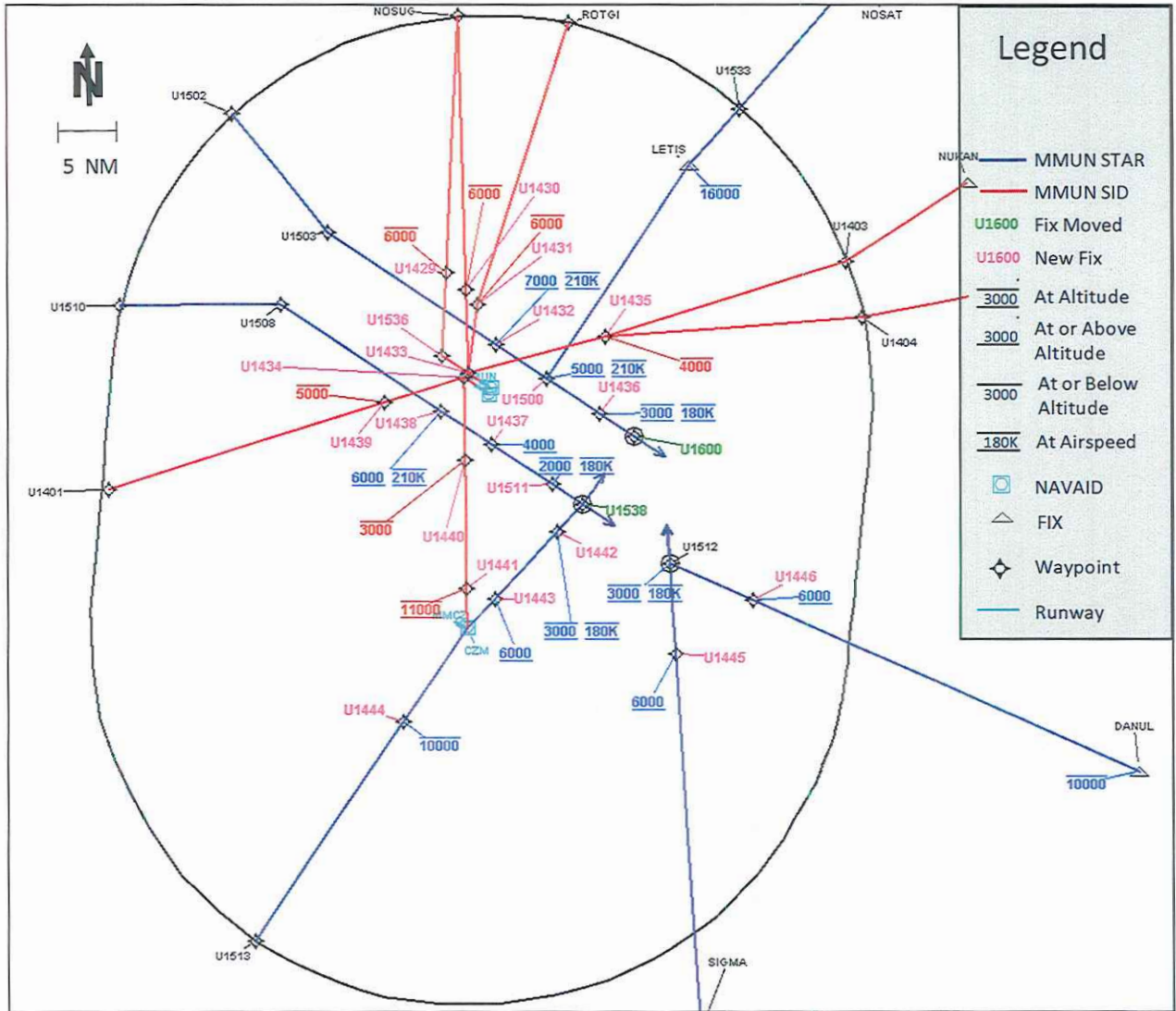
Appendix A

Graphical Depiction of MMUN RNAV STAR and SID Procedural Separation Route Definitions



Note: airspeeds are shown as indicated airspeed in knots; altitudes are shown in feet above Mean Sea Level.

**Figure A-1. MMUN STARS and SIDs for Runways 12L/R:
 Initial Procedural Separation Considerations**



Note: airspeeds are shown as indicated airspeed in knots; altitudes are shown in feet above Mean Sea Level.

Figure A-2. MMUN STARs and SIDs for Runways 30L/R:
Initial Procedural Separation Considerations