



ICAO

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North American, Central American and Caribbean Office  
INFORMATION PAPER

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**CAR/SAM Planning and Implementation Regional Group (GREPECAS)  
Twenty Fourth Scrutiny Working Group Meeting (GTE/24)  
Mexico City, Mexico, 5 to 9 August 2024**

- Agenda Item 3: Review of the Results of Large Height Deviation (LHD) and the Collision Risk Model (CRM) Analysis**  
**3.3 Results of the assessment project for safety in RVSM airspace for the CAR and SAM Regions**

**LONG TERM HEIGHT MONITORING BURDEN**

(Presented by NAARMO)

<b>EXECUTIVE SUMMARY</b>	
This paper presents an assessment of the monitoring burden associated with the long-term height monitoring requirements for airframes for which the North American Approvals Registry and Monitoring Organization (NAARMO) is the responsible Regional Monitoring Agency (RMA).	
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Safety</li><li>• Air Navigation Capacity and Efficiency</li><li>• Security &amp; Facilitation</li><li>• Economic Development of Air Transport</li><li>• Environmental Protection</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• ICAO Doc 9937 - Operating Procedures and Practices for Regional Monitoring Agencies in Relation to the Use of a 300 m (1000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive, International Civil Aviation Organization, First Edition – 2010</li></ul>

**1. Introduction**

1.1 To meet the ICAO Annex 6 Long Term Height Monitoring (LTHM) requirements, NAARMO maintains a database of approvals and height monitoring history for aircraft registered within States under NAARMO responsibility (Canada, Mexico, and the United States.)

1.2 This paper provides the NAARMO monitoring burden based on the approvals contained within the NAARMO approvals database as of 17 June 2024 and global monitoring data available as of June 2024. Along with the most current version of the Minimum Monitoring Requirements (MMR) table (as of 14 June 2024.)

## 2 Discussion

2.1 To determine the current NAARMO monitoring burden. First, the approvals for the countries under NAARMO responsibility are compiled. Then, each airframe currently having RVSM Approval is paired with the appropriate monitoring category from the MMR table. Any aircraft types missing from the current MMR table were assigned to Category 3. Next, each unique operator/aircraft type/monitoring group combination is compared against the collective monitoring data to determine whether any of the respective aircraft had been monitored within the last two years. Finally, the burden is tallied.

2.2 The total of number of unique airframes identified as having a full RVSM approval from a state of registry under NAARMO responsibility as of **17 JUN 2024** was **23,306**, with a resultant monitoring burden of **14,935** and a total of **461** aircraft not successfully monitored within the past two years (or 1,000 flight hours, whichever interval was longer).

2.3 Table 1 provides an itemized view by State of Registry of airframes that require monitoring due to having no successful monitoring record within two years as of 17 June 2024 for Canada, Mexico, and the United States. Canada has a total of **71** aircraft not successfully monitored within the past two years, while, Mexico has a total of **11** aircraft, and the United States has a total of **379** aircraft.

Canada	Total # of Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Airframes Not Monitored within two years as of 17 June 2024
COM	1021	334	19
IGA	460	460	52
<b>Canada Total</b>	<b>1481</b>	<b>794</b>	<b>71</b>
Mexico	Total # of Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Airframes Not Monitored within two years as of 17 June 2024
COM	430	139	11
IGA	10	10	0
<b>Mexico Total</b>	<b>440</b>	<b>149</b>	<b>11</b>
United States	Total # of Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Airframes Not Monitored within two years as of 17 June 2024
COM	7726	333	8
IGA	13659	13659	371
<b>United States Total</b>	<b>21385</b>	<b>13992</b>	<b>379</b>
<b>Total</b>	<b>23306</b>	<b>14935</b>	<b>461</b>

**Table 1 - Itemized Long-term Height Monitoring Burden by State**

2.4 The sampling of ASE by group allows the potential for specific airframes to remain unmonitored over long durations. IGA aircraft that take several years to complete 1000 flight hours will typically have longer periods between monitoring.

2.5 ADS-B is the primary source of RVSM monitoring data for NAARMO, as a result operators who routinely fly in ADS-B airspace have nearly 100% of their aircraft monitored. Since, the implementation of Automatic Dependent Surveillance-Broadcast (ADS-B) Monitoring in the United States, the number of aircraft remaining unmonitored for the past 2 years have been greatly reduced.

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