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Twenty-Seventh Meeting of the Regional Airspace Safety  
Monitoring Advisory Group (RASMAG/27)

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**Agenda Item 5: Airspace Safety Monitoring Activities/Requirements in the Asia/Pacific Region**

**NAARMO LONG TERM HEIGHT MONITORING BURDEN**

(Presented by NAARMO)

**SUMMARY**

This paper provides an assessment of the monitoring burden associated with the long-term height monitoring requirements for airframes for which the NAARMO is the responsible Regional Monitoring Agency (RMA). NAARMO approvals and global monitoring records as of 30 June 2022, were used to assess the monitoring burden.

**1. INTRODUCTION**

1.1 The North American Approvals Registry and Monitoring Organization (NAARMO), a service provided by the U.S. Federal Aviation Administration's William J. Hughes Technical Center, has served since 2003 as the Regional Monitoring Agency (RMA) for the airspace covering the United States, Canada and Mexico.

1.2 As part of the duties of a Regional Monitoring Agency (RMA), outlined in ICAO Doc 9937(Reference 1), the NAARMO performs regular checks of the operator compliance with State approval requirements within the Pacific and North East airspace. The purpose of these checks is to identify non-approved operators and aircraft using the RVSM airspace to ensure the safety of the airspace.

1.3 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.) This paper provides the NAARMO monitoring burden based on the approvals contained within the NAARMO approvals database and global monitoring data available as of 30 June 2022.

**2. DISCUSSION**

2.1 The NAARMO approvals database as of 30 June 2022 was examined to determine the current NAARMO monitoring burden. First, compiled the approvals for the countries under NAARMO responsibility (Canada, Mexico, and the United States). Subsequently, grouping the U.S. aircraft by Operator(s) derived from aggregating corresponding Designators in the Letters of Authorization (LOA). Then, each airframe having a current full approval was paired with the appropriate monitoring category by applying the most current version of the Minimum Monitoring Requirements (MMR) table (as of 17 June 2022).

2.2 Any aircraft types missing from the current MMR table were assigned to MMR Category 3: RVSM Monitoring Non-Group Aircraft. Finally, each airframe was then paired to its last successful monitoring (if it exists) occurring within the past two years from 30 June 2020 to 30 June 2022.

NAARMO is investigating the use of U.S. Flight Plan data as a tool to gauge monitoring compliance, particularly in the IGA Fleet.

2.3 The total number of unique airframes identified as having a full RVSM approval from a state of registry under NAARMO responsibility as of 30 June 2022 was 23,093, with a resultant monitoring burden of 15,155 and a total of 837 aircraft not successfully monitored within the past two years (or 1,000 flight hours, whichever interval was longer). Table 1 provides a summation by State of Registry of airframes that require monitoring due to having no successful monitoring record within two years as of 30 June 2022.

State	Total # of Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Airframes Not Monitored within two years as of 30 June 2022
CANADA	1557	878	300
MEXICO	529	209	22
US – Section 3	21,007	14,068	515
<b>NAARMO Total</b>	<b>23,093</b>	<b>15,155</b>	<b>837</b>

**Table 1: Summary of NAARMO monitoring burden**

2.4 Each airframe having a current full RVSM approval was categorized under either Commercial or IGA operations. Table 2 presents NAARMO monitoring burden summaries by type of operator and State of Registry. To preserve the uniqueness of these airframes, each was grouped and counted under Commercial operations.

- As of 30 June 2022, there are 13,425 unique U.S. IGA airframes operated by 10,403 unique operators. The remainder of airframes to be monitored is 496 operated by unique operators.
- As of 30 June 2022, there are 7,582 unique U.S. commercial airframes operated by 57 unique operators. The remainder of airframes to be monitored is 19.

CANADA	Total # of Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Airframes Not Monitored within two years as of 30 June 2022
IGA	554	554	193
Commercial	1003	324	107
<b>Total Canada</b>	<b>1,557</b>	<b>878</b>	<b>300</b>
MEXICO	Total # of Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Airframes Not Monitored within two years as of 30 June 2022
IGA	23	23	2
Commercial	506	186	20
<b>Total Mexico</b>	<b>529</b>	<b>209</b>	<b>22</b>

US	Total # of Approved Airframes	Resultant Monitoring Burden (# Airframes)	Total # of Airframes Not Monitored within two years as of 30 June 2022
<b>IGA</b>	13,425	13425	496
<b>Commercial</b>	7,582	643	19
<b>Total US</b>	<b>21,007</b>	<b>14,068</b>	<b>515</b>
<b>NAARMO Total</b>	<b>23,093</b>	<b>15,155</b>	<b>837</b>

**Table 2: Itemized NAARMO monitoring burden**

2.5 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 also will have longer periods between monitoring.

### 3. CONCLUSION

3.1 The NAARMO is implementing a new process for the traffic compliance check. More frequent compliance checks will help identify repeat operations that file an RVSM approval without having an approval

3.2 The meeting is invited to:

- a) note and review the contents of the NAARMO traffic scrutiny work presented in this paper; and
- b) provide any relevant updates on the records contained within the results.

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### References

1. *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.

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