



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

INFORMATION PAPER

GTE/22 — IP/06  
20/09/22

**CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Second Scrutiny  
Working Group Meeting (GTE/22)  
Mexico City, Mexico, 26 to 30 September 2022**

**Agenda Item 3: Review of the Results of Large Height Deviation (LHD) Analysis**

**NAARMO RVSM TRAFFIC COMPLIANCE MONITORING**

(Presented by NAARMO)

<b>EXECUTIVE SUMMARY</b>	
<p>This information paper provides an assessment of non-State-approved operators using the Reduced Vertical Separation Minimum (RVSM) airspace overseen by the North American Approvals Registry and Monitoring Organization (NAARMO) in North American and New York West airspace. The assessment process is described and the results for period December 2021 are presented. This audit was also presented at the RMACG/17 Part 1 Meeting in IP10.</p>	
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Strategic Objective 1 – Safety</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><li>• Summary of Discussions (RMACG/6), Cornwall, Canada, 6-10 June 2011: Task #10 “All RMAs conduct traffic scrutiny survey during the same time frame [December] in order to understand the magnitude of the situation.”</li><li>• Summary of Discussion (RMACG/10), Bangkok, Thailand, 18 - 22 May 2015: Paragraph 3.2.33 “The meeting discussed the need of the fixed month for scrutiny activities as decided at the RMACG/6 meeting and agreed that with the maturity of most of the monitoring programs, and with most of the RMAs</li><li>• performing monthly verification of the approval status, it is not necessary to fix a month for data collection, but it is of crucial importance the exchange of data between the RMAs to guarantee that all have the same correct information on approval status.”</li><li>• ICAO Annex 6 - Operation of Aircraft</li></ul>

## **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 Canada, Mexico, Contiguous United States (CONUS), and United States (U.S.) Caribbean airspace.

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 Canada, Mexico, CONUS, and U.S. Caribbean 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 At RMACG/6 it was decided that all RMAs would conduct a traffic scrutiny survey for their region of jurisdiction every December. (Reference 2) At RMACG/10 the requirement for a December traffic scrutiny survey was amended to allow the traffic scrutiny survey to be performed on any month. (Reference 3).

1.4 This paper describes the process used by the NAARMO to identify airframes operating within RVSM airspace, FL290 to FL410 for which an RVSM approval could not be confirmed. This is accomplished through systematic process of matching air traffic movement data and airframe approval records. The results for December 2021 within RVSM are presented in this paper for NAARMO airspace including; Canada, CONUS and New York West (U.S. Caribbean) airspace.

## **2. Discussion**

2.1 Each entry in the combined traffic sample summary file containing observed operations within Canada, CONUS, and New York West airspace was compared with the collective approvals database as of February 2022 to determine the approval status of the airframe or operator/aircraft type combination. The entries for which no approval or an expired approval is found are output to a list for further verification.

2.2 NAARMO did not receive a traffic sample from Mexico for this assessment period; therefore no scrutiny work was completed for this airspace. NAARMO is currently working with Mexico to obtain traffic data.

2.3 The verification process involves the exploration of systematic reasons for removing entries from the list. These reasons include but are not limited to:

- lags in State notification of approval to the RMA
- lags in updates to the approvals database and the local version of ICAO Doc 8585
- mistakes and typographical errors in the original traffic data
- code-sharing and lease arrangements between airlines
- mistakes related to ICAO aircraft type codes in approvals
- entries that appeared in only one of the four quarters

2.4 Table 1 provides a summary of the results of the NAARMO traffic RVSM compliance survey for the contiguous United States following the initial verification process. This list contains a total of 82 civilian non-approved operations listed alphabetically by RMA observed within RVSM airspace in CONUS. The count next to the State represents the number of airframes seen in the December 2021 traffic sample. The count next to the registration number represents the number of observations in the December 2021 traffic sample.

**Table 1: Summary of the 2021 non-approved operations in CONUS airspace**

<b>RMA</b>	<b>STATE</b>	<b>REGISTRATION</b>	<b>COUNT</b>
<b>ARMA Total: 1</b>			
ARMA	South Africa	ZSZCA	1
<b>CARSAMMA Total: 5</b>			
CARSAMMA	Bahamas	C6BFX	1
CARSAMMA	Bahamas	C6ZIP	11
CARSAMMA	Brazil	PSGUM	2
CARSAMMA	Brazil	PSYES	1
CARSAMMA	Trinidad & Tobago	9YGUY	1
<b>EURRMA Total: 6</b>			
EURRMA	Austria	OEIRC	1
EURRMA	Bulgaria	LZGNC	1
EURRMA	Estonia	ESFRX	1
EURRMA	Ukraine	URAZR	1
EURRMA	United Kingdom (Cayman Islands)	VPCJB	1
EURRMA	United Kingdom (Cayman Islands)	VPCJO	1
<b>NAARMO Total: 69</b>			
NAARMO	Canada	CFXDP	13
NAARMO	Canada	CGBDY	1
NAARMO	Mexico	XAAAL	6
NAARMO	Mexico	XAAFQ	3
NAARMO	Mexico	XAARR	2
NAARMO	Mexico	XAASR	1
NAARMO	Mexico	XABEG	4
NAARMO	Mexico	XABPT	1
NAARMO	Mexico	XACCC	16
NAARMO	Mexico	XACCM	2
NAARMO	Mexico	XACHR	1
NAARMO	Mexico	XACMM	1
NAARMO	Mexico	XACRG	1
NAARMO	Mexico	XADLA	2
NAARMO	Mexico	XADLN	4
NAARMO	Mexico	XADOC	2
NAARMO	Mexico	XAEGU	2

NAARMO	<b>Mexico</b>	XAFUD	4
NAARMO	<b>Mexico</b>	XAGJC	1
NAARMO	<b>Mexico</b>	XAHCN	3
NAARMO	<b>Mexico</b>	XAHSS	1
NAARMO	<b>Mexico</b>	XAJCZ	2
NAARMO	<b>Mexico</b>	XAJGV	1
NAARMO	<b>Mexico</b>	XAJLJ	3
NAARMO	<b>Mexico</b>	XAJMR	1
NAARMO	<b>Mexico</b>	XAKIM	2
NAARMO	<b>Mexico</b>	XALUC	4
NAARMO	<b>Mexico</b>	XAMCU	2
NAARMO	<b>Mexico</b>	XAMHA	4
NAARMO	<b>Mexico</b>	XAMLS	1
NAARMO	<b>Mexico</b>	XAMSA	9
NAARMO	<b>Mexico</b>	XAOFM	1
NAARMO	<b>Mexico</b>	XAORL	3
NAARMO	<b>Mexico</b>	XAPBT	1
NAARMO	<b>Mexico</b>	XAPSO	6
NAARMO	<b>Mexico</b>	XAQKY	1
NAARMO	<b>Mexico</b>	XARAN	1
NAARMO	<b>Mexico</b>	XARCE	3
NAARMO	<b>Mexico</b>	XARFS	1
NAARMO	<b>Mexico</b>	XARHA	1
NAARMO	<b>Mexico</b>	XARTS	4
NAARMO	<b>Mexico</b>	XASAN	2
NAARMO	<b>Mexico</b>	XASBT	5
NAARMO	<b>Mexico</b>	XASSE	2
NAARMO	<b>Mexico</b>	XAUZF	2
NAARMO	<b>Mexico</b>	XAVCA	3
NAARMO	<b>Mexico</b>	XAVCM	1
NAARMO	<b>Mexico</b>	XAVCY	1
NAARMO	<b>Mexico</b>	XAVDF	2
NAARMO	<b>Mexico</b>	XAVEG	2
NAARMO	<b>Mexico</b>	XAVEP	1
NAARMO	<b>Mexico</b>	XAVET	1
NAARMO	<b>Mexico</b>	XAVEX	1
NAARMO	<b>Mexico</b>	XAVRT	20
NAARMO	<b>Mexico</b>	XAVRX	1
NAARMO	<b>Mexico</b>	XAVSG	1
NAARMO	<b>Mexico</b>	XAVTO	1
NAARMO	<b>Mexico</b>	XAWNG	5

NAARMO	Mexico	XAXTR	1
NAARMO	Mexico	XAYNZ	6
NAARMO	Mexico	XBDGN	2
NAARMO	Mexico	XBFCR	2
NAARMO	Mexico	XBNVN	1
NAARMO	Mexico	XBNYV	1
NAARMO	Mexico	XBODN	2
NAARMO	Mexico	XBODW	1
NAARMO	Mexico	XBRJF	2
NAARMO	Mexico	XBRUR	1
NAARMO	Mexico	XBSGT	2
<b>NATCMA Total: 1</b>			
NATCMA	Ireland	EIGZF	1

2.5 Table 2 provides a summary of the results of the NAARMO traffic RVSM compliance survey for New York West airspace following the initial verification process. The results are listed alphabetically by RMA. This list contains a total of 7 civilian non-approved operations from six States observed within RVSM airspace in New York West airspace.

**Table 2. Summary of the non-approved operations from New York West airspace**

RMA	STATE	REGISTRATION	COUNT
<b>CARSAMMA Total: 1</b>			
CARSAMMA	Bahamas	C6ROV	1
<b>NAARMO Total: 6</b>			
NAARMO	Mexico	XAMHA	1
NAARMO	Mexico	XAXTR	1
NAARMO	United States	N347WS	1
NAARMO	United States	N503KH	2
NAARMO	United States	N680JK	1
NAARMO	United States	N800CJ	1

2.6 Table 3 provides a summary of the results of the NAARMO traffic RVSM compliance survey for Canada following the initial verification process. The results are listed alphabetically by RMA for 69 aircraft. The count next to the registration number represents the number of observations in the December 2021 traffic sample.

**Table 3. Summary of the non-approved operations from Canada**

RMA	STATE	REGISTRATION	COUNT
<b>CARSAMMA Total: 2</b>			
CARSAMMA	Bahamas	C6BAS	2
CARSAMMA	Barbados	8PASD	1
<b>EURRMA Total: 8</b>			

EURRMA	<b>Austria</b>	OEIRC	1
EURRMA	<b>Bulgaria</b>	LZGNC	2
EURRMA	<b>Estonia</b>	ESFRX	2
EURRMA	<b>France</b>	FWAVE	2
EURRMA	<b>Switzerland</b>	HBVZF	1
EURRMA	<b>Switzerland</b>	HBVZH	1
EURRMA	<b>Ukraine</b>	URAZR	3
EURRMA	<b>United Kingdom (Cayman Islands)</b>	VPCDO	1
<b>NAARMO Total: 56</b>			
NAARMO	<b>Canada</b>	CFXDP	6
NAARMO	<b>Canada</b>	CGBDY	1
NAARMO	<b>Canada</b>	CGJKL	6
NAARMO	<b>Canada</b>	CGOWX	1
NAARMO	<b>Mexico</b>	XACCC	12
NAARMO	<b>Mexico</b>	XACCM	6
NAARMO	<b>Mexico</b>	XAGJC	2
NAARMO	<b>Mexico</b>	XAICY	1
NAARMO	<b>Mexico</b>	XAJTM	1
NAARMO	<b>Mexico</b>	XAMHA	4
NAARMO	<b>Mexico</b>	XARCE	2
NAARMO	<b>Mexico</b>	XAVSG	1
NAARMO	<b>Mexico</b>	XAYNZ	2
NAARMO	<b>United States</b>	N1219M	5
NAARMO	<b>United States</b>	N125KA	1
NAARMO	<b>United States</b>	N131DS	1
NAARMO	<b>United States</b>	N1440Z	2
NAARMO	<b>United States</b>	N154RR	1
NAARMO	<b>United States</b>	N15GJ	1
NAARMO	<b>United States</b>	N178CF	2
NAARMO	<b>United States</b>	N1888	2
NAARMO	<b>United States</b>	N214WT	2
NAARMO	<b>United States</b>	N227JA	2
NAARMO	<b>United States</b>	N253RM	1
NAARMO	<b>United States</b>	N266TD	1
NAARMO	<b>United States</b>	N2Q	1
NAARMO	<b>United States</b>	N310RH	2
NAARMO	<b>United States</b>	N318FL	1
NAARMO	<b>United States</b>	N321SF	1
NAARMO	<b>United States</b>	N370RS	1
NAARMO	<b>United States</b>	N420NJ	1
NAARMO	<b>United States</b>	N44LS	1

NAARMO	United States	N44WN	1
NAARMO	United States	N510DC	5
NAARMO	United States	N515EV	1
NAARMO	United States	N521JK	1
NAARMO	United States	N535BP	1
NAARMO	United States	N550HW	1
NAARMO	United States	N600XR	1
NAARMO	United States	N603XP	1
NAARMO	United States	N612JC	1
NAARMO	United States	N619HP	2
NAARMO	United States	N621MD	1
NAARMO	United States	N630PM	1
NAARMO	United States	N680KG	1
NAARMO	United States	N680PA	1
NAARMO	United States	N687JL	2
NAARMO	United States	N710PT	1
NAARMO	United States	N719NC	1
NAARMO	United States	N812SH	2
NAARMO	United States	N82CA	2
NAARMO	United States	N896VR	1
NAARMO	United States	N9107	1
NAARMO	United States	N92ER	2
NAARMO	United States	N940WM	1
NAARMO	United States	N957CJ	3
<b>NATCMA Total: 3</b>			
NATCMA	Portugal	CSLDP	1
NATCMA	United Kingdom (Bermuda)	VQBIJ	1
NATCMA	United Kingdom (Bermuda)	VQBUD	20

2.7 Experience has shown that the primary systematic reason for failure to match operations and approvals is a delay in State notification of the approval status of some operators to the appropriate RMA. Thus, the importance of timely notification by States of operator approval status to RMAs is emphasized by these results.

### 3. Conclusion

3.1. The NAARMO is implementing a new process for more frequent traffic compliance checks. 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 note and review the contents of the NAARMO traffic scrutiny work presented in this paper.