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INFORMATION PAPER

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**CAR/SAM Planning and Implementation Regional Group (GREPECAS) Twenty Third Scrutiny
Working Group Meeting
(GTE/23)**

Lima, Peru, 11 to 15 September 2023

Agenda Item 2: Review of the result of Large Height Deviations (LHD) Analysis

MITIGATING RISKS ASSOCIATED WITH LARGE HEIGHT DEVIATIONS USING DATA TECHNIQUES

(Presented by Trinidad and Tobago)

EXECUTIVE SUMMARY

This Information Paper is an annual visual progress report on the use of data in recommending Risk Mitigation Strategies for the reduction of Large Height Deviations (LHDs) in the Trinidad and Tobago Air Navigation Services provider (ANSP). Using a Risk Mitigation Dashboard, focus is on the profile of the ANSP for the last four (4) years including the present (2019-2023) and the use of data to identify the elements that increase the risk of LHD Occurrences. This paper also attempts to predict the benefits of implementing the recommended strategies associated with the occurrence of Large Height Deviations (LHDs).

Strategic Objectives:

- Safety
- Air Navigation Capacity and Efficiency
- Security & Facilitation
- Economic Development of Air Transport

References:

- CARSAMMA Website :
http://portal.cgna.decea.mil.br/carsamma/home/listalhd?!=es_es
- TTZP Risk Mitigation Dashboard 2023 :
<https://prezi.com/i/8fi-9ozpdwqz/>

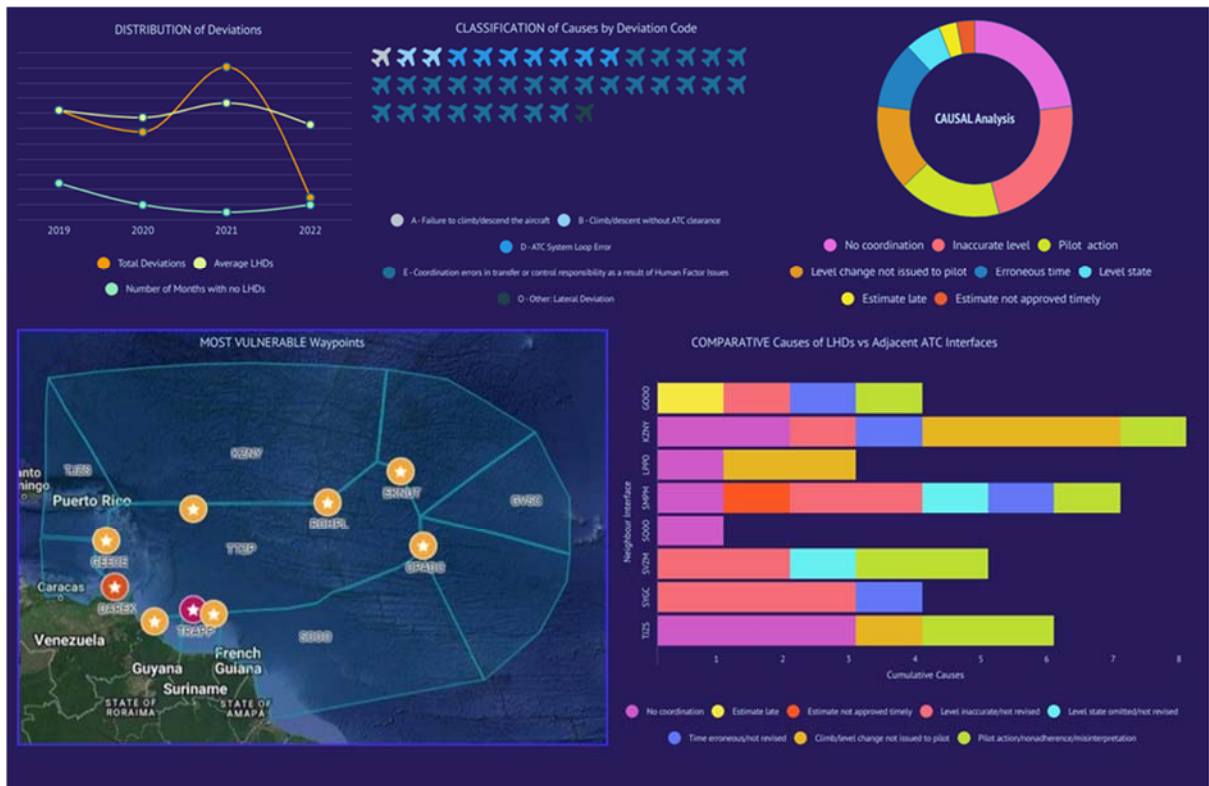
1. Review

1.1 A dashboard for the analysis of LHD data from the previous year for period 2019-2022 revealed that the risk of LHD occurrence is increasing even though the number of reports are sporadic for any year. This year the risk values for the occurrences from CARSAMMA's website and the data collection

from TTZP region provide the basis for determining the elements in the workspace that contribute to the increasing risk.

1.2 The LHD Analysis Dashboard 2022 shown below identified Human Factors that led to coordination errors as the main contributor to LHDs and the neighbouring ATC interfaces of New York Oceanic (KZWX) and San Juan CERAP (TJZS) were the most vulnerable to these occurrences. This year, a closer look at the circumstances or contextual scenarios of these occurrences emphasize the need for active risk monitoring and a data pipeline for risk mitigation.

LHD ANALYSIS DASHBOARD TTD 2019-2022



2. Risk mitigation Dashboard for LHDs 2020-2023

2.1 Extraction of the position and time of each LHD from the electronic reports submitted to CARSAMMA determined the impact. The narrative examined the causal factors to derive suitable mitigations because even when the ANSP is not culpable for the error, there may be a risk present. The risk assessment values and outcomes obtained from CARSAMMA’s website indicated the risk severity for the period January 2022 until May 2023.

2.2 The position TRAPP remains the most susceptible to LHDs and the neighbouring interfaces of KZWX and TJZS still have the highest risk of deviations. This year’s data reiterates the increase in risk of LHDs occurring and points in the direction of active risk monitoring and management.

LHD RISK MITIGATION DASHBOARD TTO 2019-2023



<https://prezi.com/i/8fi-9ozpdwqz/>

3. Possible Risk Mitigation Strategies

3.1 The risk of LHDs is increasing with flights facing a moderate risk of at least 20% chance of experiencing a deviation at the TCPs with KZWB and TJZS ATC interfaces. The narratives of these reports reveal that coordination errors account for almost half of the occurrences while changes in traffic density affect the risk outcomes by at least 60%. LHDs are most likely to occur during the periods of 2100-2359 UTC and 0300-0559 UTC. These are times when the changes in traffic density are the greatest. An example is a period where the workload becomes light when it was previously heavy and *vice versa*.

3.2 At the last GTE meeting, Trinidad and Tobago promised to examine the data to discover any explanations for the rising impact of the human factors. From a data perspective, the data highlights in the above paragraph point to the lack of situational awareness and the need for threat and error management as well as team resource management.

3.3 As indicated in the dashboard above, the departmental manager received the following recommendations in the table below for his consideration. Some of the recommendations are already taking effect. However, to perceive these benefits the risks require a data pipeline or documentation, data management and monitoring.

LHD RISK MITIGATION STRATEGIES TTO

STRATEGY	TARGET GROUP	OBJECTIVE/BENEFIT	ALREADY EFFECTED	NEEDS REVIEW
ON-THE-JOB-TRAINING	Incoming and graduating ATCOs	Competency-Based training including Situational Awareness	Y	
SIMULATOR SESSIONS	All ATCOs	Increase Situational Awareness	Y	Y
WORKSHOPS	Supervisors	TRM TEM		
PRESENTATIONS	All ATCOs	Human Factor elements in ATC communication		
SELF STUDY	All ATCOs	Keep informed and current		
CHECKLISTS	All ATCOs	Contingencies, unusual situations, handovers	Y	Y
SHIFT RESTRUCTURE	Unit Chiefs	Dense periods, issues of equipment/facility	Y	
TRAINING RESTRUCTURE	Project Management team	Based on data analysis of scores instead of time requirements	Y	Y
FREE ROUTE AIRSPACE DEPLOYMENT	Project Management team	Improve the accuracy of TCP and the responsibility of control		
AIDC IMPLEMENTATION	Project Management team	Persist with implementation in spite of challenges	Y	Y
DATA PIPELINES LHDS	Data unit	Documentation, data collection and analysis	Y	
PRESENTATIONS	Supervisors	Raise awareness	Y	
SHIFT RESTRUCTURE	Supervisors	Workload management		
MONTHLY MEETINGS	Supervisors	Shift management	Y	Y
REFRESHER TRAINING	All ATCOs	Maintain Situational Awareness	Y	Y
WORKSHOPS	Unit Chiefs	Shift management techniques		
RISK MONITORING	Data unit	Use of data results as decision-making tool		

4. Conclusion

4.1 The risks associated with LHD occurrences have increased. Active risk mitigation and data management of these risks are necessary for the ANSP to perceive the benefits.