

**CAR/SAM Grupo de Trabajo De Escrutinio (GTE)
Training Seminar/Meeting**

**Merida, Yucatan Mexico
September 25-27, 2007**

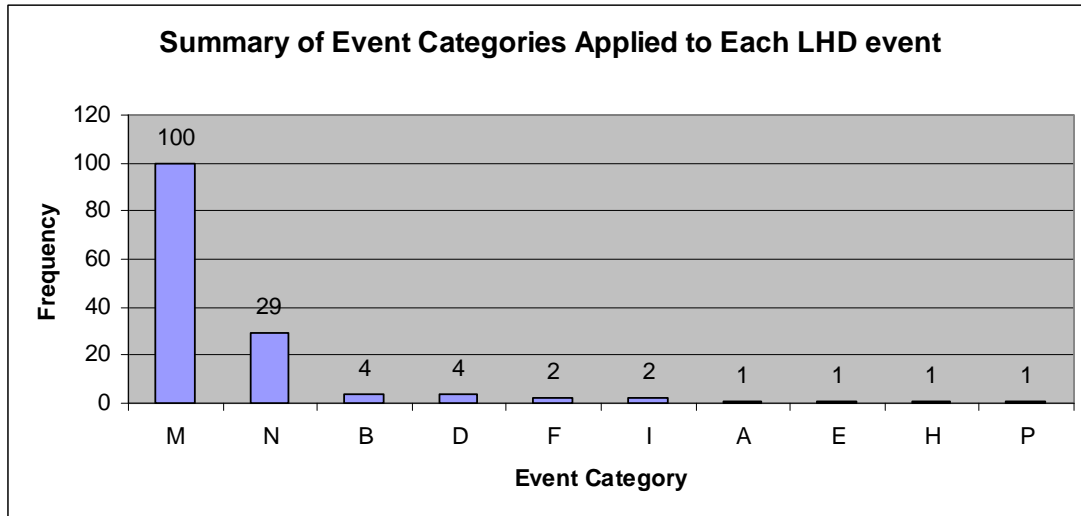
Draft Report

The Fourth Training Seminar/Meeting of the CAR/SAM Grupo de Trabajo De Escrutinio (GTE) was hosted by the ICAO North American, Central American and Caribbean (NACC) and Merida Regional Air Traffic Control office of SENEAM. This Training Seminar/Meeting is Session 1 of 2. The second Training Seminar/Meeting is scheduled for 03 – 07 March 2008 in Lima, Peru. The following is the report from the first session. It will be combined with the report from the second session to form the complete report.

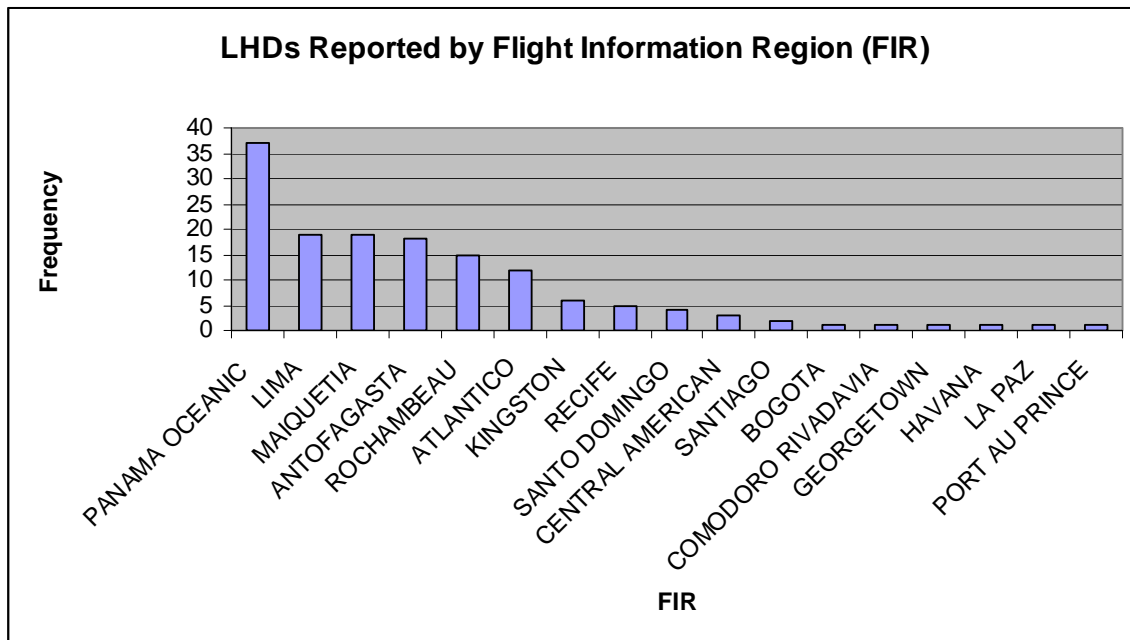
1. Large Height Deviation (LHD) Analysis

- 1.1.The GTE examined all occurrences of large height deviations of 90m (300ft) or greater reported to CARSAMMA during the period of January 2007 to August 2007. A total of 218 reports were evaluated. The details of each report are included in Appendix A.
- 1.2.The Group assigned an estimate of flight time spent at incorrect flight level, deviation magnitude, number of levels crossed and an event category to each event. These values are the primary contributors to the estimate of operational risk for operations in Reduced Vertical Separation Minimum (RVSM) airspace.
- 1.3.An initial analysis revealed that the reporting FIR, Asuncion, was utilizing the LHD Reporting Form for purposes other than reporting an LHD event. Since the inclusion of these reports will skew the calculations of this analysis, the reports were extracted. It was noted that, although the reports did not pertain to the current GTE analysis, the reports will be reviewed and evaluated by CARSAMMA.
- 1.4.It was also noted that a significant number LHD events categorized as Code “M” and Code “N” were associated with the Dakar FIR. A total of 19 events were observed accounting for approximately 13% of the reported LHDs.
- 1.5.The results of the Group’s analysis are as follows:

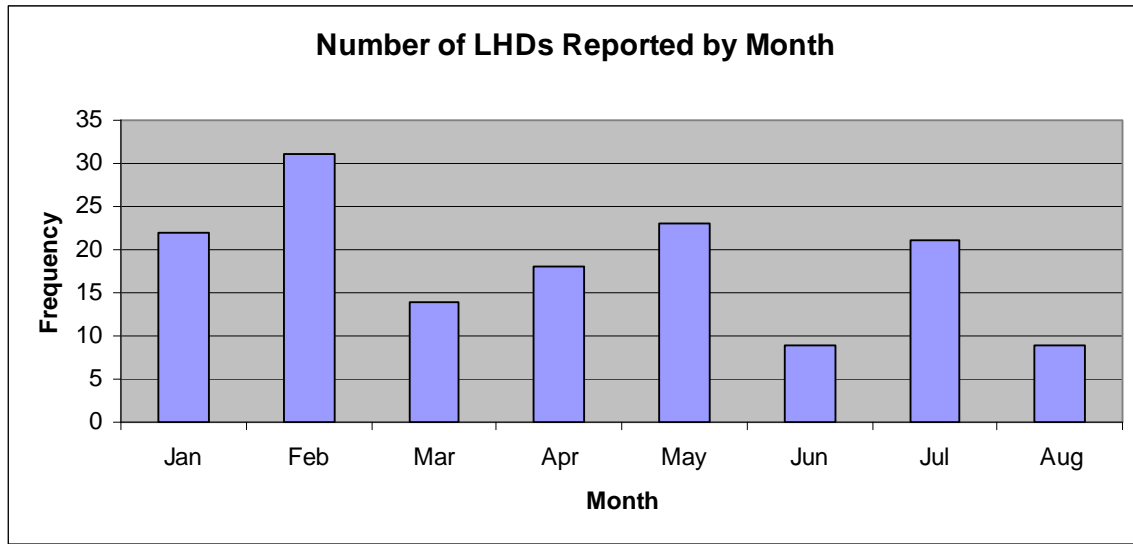
1.6. The following chart provides a summary of the number of categories assigned to each event. The top two categories, M and N, account for approximately 88% of the reported LHDs. A table of event categories is included in Appendix B.



1.6.1. The following chart provides a summary of the frequency of LHDs reported by flight information region (FIR). The top six reporting FIRs contributed approximately 81% of the reported LHDs.



1.6.2. The following chart provides a summary of LHD events reported by month.

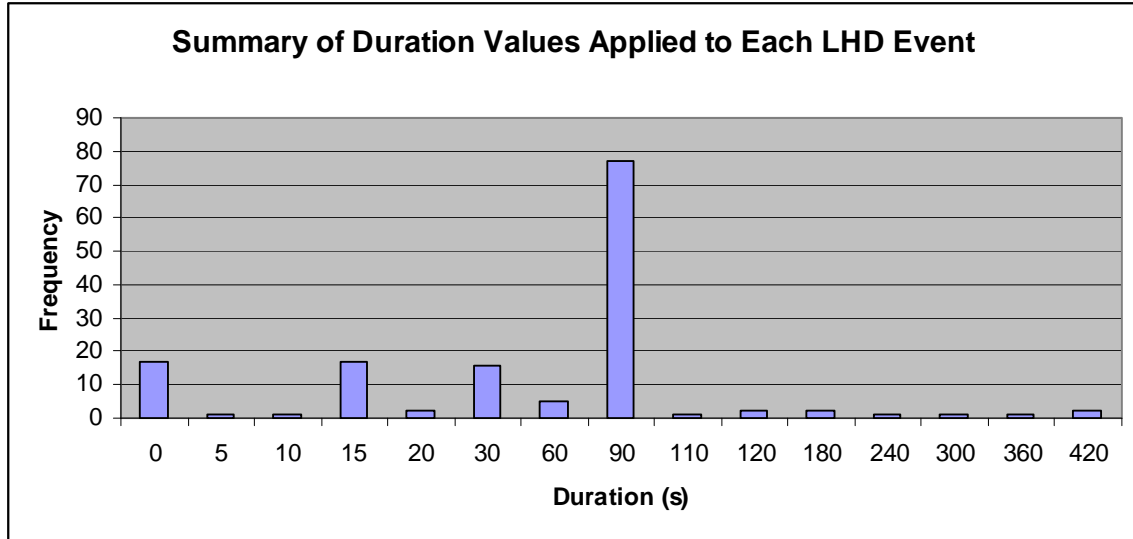


1.6.3. The following table summarizes the number of LHDs reported by FIR by month.

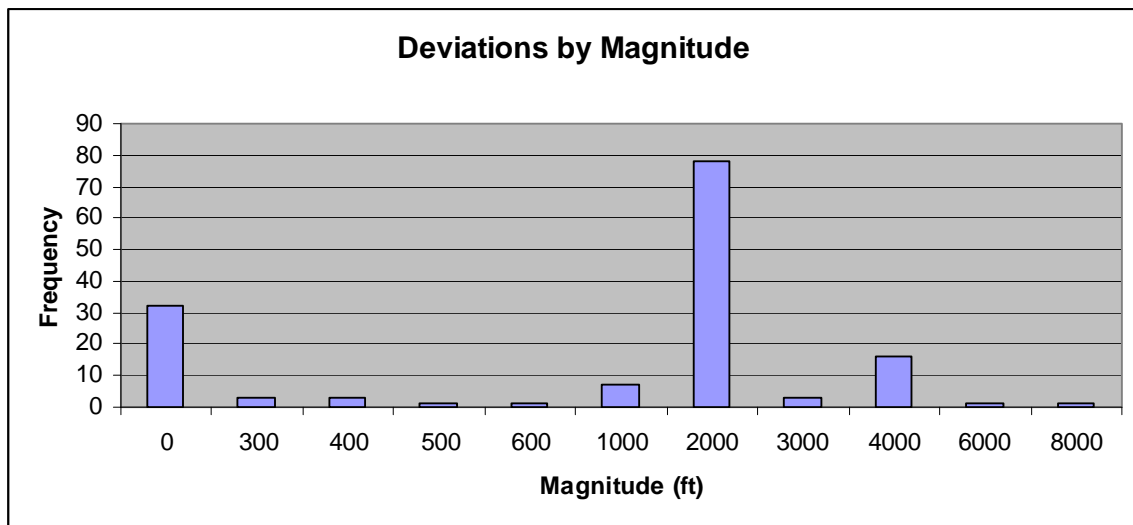
FIR / Total LHDs Reported	Month	Total
ANTOFAGASTA / 18	Feb	5
	Apr	1
	May	3
	Jun	1
	Jul	6
	Aug	2
ATLANTICO / 12	Jan	3
	Feb	2
	Mar	2
	Apr	1
	May	1
	Aug	3
BOGOTA / 1	Mar	1
CENTRAL AMERICAN / 3	Jan	1
	Feb	1
	Jul	1
COMODORO RIVADAVIA / 1	Feb	1
GEORGETOWN / 1	Feb	1
HAVANA / 1	Jan	1
KINGSTON / 6	Apr	2
	May	3
	Jul	1
LA PAZ / 1	Apr	1
LIMA / 19	Jan	1
	Feb	3
	Mar	3
	Apr	4
	Jun	1

	Jul	6
	Aug	1
MAIQUETIA / 19	Jan	3
	Feb	12
	May	4
PANAMA OCEANIC / 37	Jan	11
	Feb	1
	Mar	6
	Apr	2
	May	6
	Jun	4
	Jul	5
	Aug	2
PORT AU PRINCE / 1	Jan	1
RECIFE / 5	Feb	1
	Mar	1
	Apr	1
	Jun	1
	Aug	1
ROCHAMBEAU / 15	Feb	2
	Mar	1
	Apr	4
	May	5
	Jun	2
	Jul	1
SANTIAGO / 1	Apr	2
SANTO DOMINGO / 4	Jan	1
	Feb	1
	May	1
	Jul	1
Grand Total		147

1.6.4. The following chart summarizes the duration values applied to each LHD event. The largest value, 90 s, accounts for approximately 53% of the reported events. The 90 s duration value is the default value used when the GTE is unable to determine the time spent at incorrect flight level



1.6.5. The following chart summarizes the LHDs by magnitude. The deviation magnitude of 2000ft is observed the most often, accounting for approximately 53% of the reported LHDs.



Appendix A

EVENT DATE	ACFT TYPE	EVENT FL	HT LHD	DURATION	CODE	FIR	Time (S)
1/5/2007	A343	350	2000	90	M	ATLANTICO	90
1/13/2007	B763	310	0	0	N	MAIQUETIA	90
1/13/2007	B763	350	0	0	N	MAIQUETIA	90
1/15/2007	B752	370	2000	120	M	LIMA	120
1/17/2007	B762	380	2000	90	M	PANAMA OCEANIC	90
1/19/2007		320	2000	90	M	SANTO DOMINGO	90
1/20/2007	DC10	280	0	0		PANAMA OCEANIC	0
1/20/2007	B737	400	0	0	N	PANAMA OCEANIC	90
1/20/2007	MD80	370	-2000	90	M	PANAMA OCEANIC	90
1/23/2007	MD83	340	2000	90	M	PANAMA OCEANIC	90
1/23/2007	B738	380	0	90	N	PANAMA OCEANIC	90
1/24/2007	A346	350	4000	90	M	ATLANTICO	90
1/24/2007	B737	360	0	0	M	PANAMA OCEANIC	0
1/25/2007	A346	360	2000	90	M	ATLANTICO	90
1/25/2007	B722	370	-2000	90	M	PANAMA OCEANIC	90
1/26/2007	B763	360	2000	90	M	PANAMA OCEANIC	90
1/27/2007	B763	360	4000	30	M	PORT AU PRINCE	30
1/27/2007	B738	370	4000	90	M	HAVANA	90
1/27/2007	B738	370	4000	90	M	CENTRAL AMERICAN	90
1/27/2007	B738	390	2000	90	M	MAIQUETIA	90
1/31/2007	MD83	340	-2000	90	M	PANAMA OCEANIC	90
1/31/2007	B737	380	4000	90	M	PANAMA OCEANIC	90
2/1/2007	A	360	2000	360	M	LIMA	360
2/2/2007	B763	380	2000	90	M	COMODORO RIVADAVIA	90
2/2/2007	B763	380	2000	90	M	ANTOFAGASTA	90
2/2/2007	SW3	0	0	0		MAIQUETIA	0
2/4/2007	B735	330	-2000	90	M	PANAMA OCEANIC	90
2/4/2007	B735	330	-2000	90	M	ANTOFAGASTA	90
2/6/2007	A346	300	-2000	15	M	ROCHAMBEAU	15
2/6/2007	DH8	0	0	0		MAIQUETIA	0
2/6/2007	BE99	0	0	0	N	MAIQUETIA	0
2/6/2007	IL62	350	0	0	N	MAIQUETIA	90
2/6/2007	B763	350	0	0	N	MAIQUETIA	90
2/6/2007	GLF2	350	0	0	N	MAIQUETIA	90
2/6/2007	B763	310	0	0	N	MAIQUETIA	90
2/7/2007	A346	360	0	15	M	ROCHAMBEAU	0

2/8/2007	DC10	330	0	5	N	MAIQUETIA	5
2/8/2007	A310	360	2000	90	M	ATLANTICO	90
2/8/2007	B733	330	0	0	N	MAIQUETIA	90
2/10/2007	IL62	370	0	0	N	MAIQUETIA	90
2/12/2007	A319	360	2000	180	M	LIMA	180
2/13/2007	A319	330	-2000	90	M	ANTOFAGASTA	90
2/14/2007	A332	370	2000	90	M	ATLANTICO	90
2/16/2007	CL60	330	-4000	90	M	ANTOFAGASTA	90
2/16/2007	A320	350	2000	240	M	MAIQUETIA	240
2/16/2007	B763	340	2000	90	M	MAIQUETIA	90
2/17/2007	B763	370	2000	30	M	LIMA	30
2/20/2007	B738	370	2000	90	M	CENTRAL AMERICAN	90
2/20/2007	LR55	433	300	60		RECIFE	0
2/21/2007	B752	350	1000	90	M	SANTO DOMINGO	90
2/25/2007	B763	330	-3000	90	H,M	ANTOFAGASTA	0
2/25/2007	B763	330	-3000	90	H,M	ANTOFAGASTA	90
2/25/2007	B762	340	2000	20	M	GEORGETOWN	20
3/9/2007	B772	360	2000	15	N	ROCHAMBEAU	15
3/9/2007	BE40M	406	600	90	B,D	RECIFE	90
3/14/2007	A343	380	2000	90	M	ATLANTICO	90
3/15/2007		340	4000	90	D-N	BOGOTA	90
3/15/2007	B764	320	2000	90	M	PANAMA OCEANIC	90
3/15/2007		340	4000	90		LIMA	0
3/15/2007	E190	340	0	90	N	PANAMA OCEANIC	90
3/19/2007	A310	370	2000	90	M	PANAMA OCEANIC	90
3/20/2007	MD83	340	2000	90	M	PANAMA OCEANIC	90
3/21/2007	MD11	340	2000	90	M	ATLANTICO	90
3/24/2007	B763	300	-2000	30	M	LIMA	30
3/25/2007	B737	330	-4000	90	M	PANAMA OCEANIC	90
3/27/2007	B764	320	2000	90	M	PANAMA OCEANIC	90
3/29/2007	B764	350	2000	30	M	LIMA	30
4/5/2007		360	0	15	N	KINGSTON	15
4/5/2007	A320	360	2000	180	M	LIMA	180
4/8/2007	B763	370	2000	90	M	PANAMA OCEANIC	90
4/8/2007	B763	370	2000	90	M	KINGSTON	90
4/8/2007	B763	310	1000	30	B	LA PAZ	30
4/9/2007	A343	360	0	15	N	ROCHAMBEAU	15
4/11/2007	A340	340	0	15	N	ROCHAMBEAU	15
4/11/2007	A343	340	2000	15	M	ROCHAMBEAU	15
4/11/2007	IL76	300	-8000	90	M	ANTOFAGASTA	90
4/11/2007	A342	400	2000	90	M	ATLANTICO	90
4/11/2007	A343	340	0	15	N	ROCHAMBEAU	15
4/15/2007	A343	364	400	90	B,D	RECIFE	90
4/15/2007	B737	390	2000	60	M	LIMA	60

4/18/2007	B737	400	2000	90	M	PANAMA OCEANIC	90
4/22/2007	B735	300	-4000	90	M	SANTIAGO	90
4/23/2007	A	360	2000	90	M	LIMA	90
4/26/2007	F100	300	1000	90	M	SANTIAGO	90
4/26/2007	B763	390	2000	30	M	LIMA	30
5/1/2007	K35R	360	0	0	N	PANAMA OCEANIC	90
5/4/2007	A306	340	2000	90	M	PANAMA OCEANIC	90
5/6/2007	B763	320	0	90	M	ANTOFAGASTA	90
5/9/2007	B752	380	2000	90	M	PANAMA OCEANIC	90
5/9/2007	B727	330	2000	90	M	MAIQUETIA	90
5/9/2007	E190	380	4000	90	M	PANAMA OCEANIC	90
5/10/2007	B737	380	4000	90	M	PANAMA OCEANIC	90
5/11/2007	B767	350	2000	90	M	MAIQUETIA	90
5/14/2007		310	-1000	60	I	KINGSTON	60
5/14/2007	A306	313	300	60	F	KINGSTON	30
5/15/2007	A346	370	2000	15	M	ROCHAMBEAU	15
5/16/2007		380	2000	90	M	SANTO DOMINGO	90
5/17/2007	B727	330	0	0	N	MAIQUETIA	90
5/17/2007	A346	370	3000	15	N	ROCHAMBEAU	15
5/17/2007	A32	0	0	15	N	ROCHAMBEAU	15
5/17/2007	A343	340	0	15	M	ROCHAMBEAU	0
5/21/2007	B744	360	0	15	N	ROCHAMBEAU	15
5/24/2007	B742	360	500	15	F	KINGSTON	15
5/26/2007	B738	370	2000	90	M	MAIQUETIA	90
5/30/2007	MD81	340	2000	90	M	PANAMA OCEANIC	90
5/30/2007	MD11	400	2000	90	M	ATLANTICO	90
5/30/2007	B763	370	2000	90	M	ANTOFAGASTA	90
5/31/2007	B763	370	2000	90	M	ANTOFAGASTA	90
6/8/2007	A343	360	2000	15	M,I	ROCHAMBEAU	15
6/8/2007	A343	340	0	15	N	ROCHAMBEAU	15
6/12/2007	B762	390	6000	420	M	LIMA	420
6/19/2007	A320	330	0	0	N	ANTOFAGASTA	90
6/24/2007	AT43	0	0	0	P	RECIFE	0
6/26/2007	B752	380	2000	90	M	PANAMA OCEANIC	90
6/27/2007	E190	300	-4000	90	M	PANAMA OCEANIC	90
6/27/2007	A319	370	2000	90	M	PANAMA OCEANIC	90
6/29/2007	MD83	340			N	PANAMA OCEANIC	90
7/1/2007	A320	350	-2000	90	M	PANAMA OCEANIC	90
7/1/2007	G150	400	4000	90	M	PANAMA OCEANIC	90
7/3/2007	B763	340	-2000	30	M	ANTOFAGASTA	30

7/4/2007	B767	350	-4000	30	M	LIMA	30
7/10/2007	A315	300	-4000	90	M	SANTO DOMINGO	90
7/12/2007	C510	357	-300	420	A	CENTRAL AMERICAN	90
7/13/2007	B763	370	2000	30	M	ANTOFAGASTA	30
7/13/2007	B763	370	2000	90	M	ANTOFAGASTA	90
7/13/2007	B763	370	2000	30	M	LIMA	30
7/13/2007	B763	370	2000	30		LIMA	0
7/14/2007	B763	350	2000	90	M	ANTOFAGASTA	90
7/16/2007	A310	320	2000	10	M	ANTOFAGASTA	10
7/18/2007	H25B	330	-2000	90	M	PANAMA OCEANIC	90
7/18/2007	MD80	340	2000	90	M	PANAMA OCEANIC	90
7/21/2007	B737	380	2000	30	M	LIMA	30
7/21/2007	B738	380	2000	90	M	ANTOFAGASTA	90
7/21/2007	A343	340	0	15	N	ROCHAMBEAU	15
7/22/2007	B767	360	2000	30	M	LIMA	30
7/22/2007	B737	406	-400	90	D	KINGSTON	90
7/22/2007	B737	380	2000	30	M	LIMA	30
7/31/2007	B763	370	2000	90	M	PANAMA OCEANIC	90
8/3/2007	A319	370	2000	90	M	RECIFE	90
8/7/2007	A346	350	-2000	120	M	ATLANTICO	120
8/14/2007	A310	330	1000	30	B	ANTOFAGASTA	30
8/17/2007	LJ60	430	1000	90	M	PANAMA OCEANIC	0
8/20/2007	F900	430	1000	300	M	ATLANTICO	0
8/21/2007	A346	380	2000	60	M	ATLANTICO	60
8/22/2007	B763	390	2000	20		ANTOFAGASTA	0
8/22/2007	MD83	360	0	90	N	PANAMA OCEANIC	90
8/22/2007	B763	390	2000	30	M	LIMA	30
9/11/2007	H25A	294	400	110	E	CURITIBA	110

Appendix A

List of Participants

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Appendix B

Error Categorization Codes

Code	Cause of Large Height Deviation
A	Failure to climb/descend as cleared
B	Climb/descend without ATC clearance
C	Entry into airspace at an incorrect flight level
D	Deviation due to turbulence or other weather related cause
E	Deviation due to equipment failure
F	Deviation due to collision avoidance system (TCAS) advisory
G	Deviation due to contingency event
H	Aircraft not approved for operation in RVSM restricted airspace
I	ATC system loop error ; (e.g. pilot misunderstands clearance message or ATC issues incorrect clearance)
J	Equipment control error encompassing incorrect operations of fully functional FMS or navigation system (e.g. by mistake the pilot incorrectly operates INS equipment)
K	Incorrect transcription of ATC clearance or re-clearance into the FMS
L	Wrong information faithfully transcribed into the FMS (e.g. flight plan followed rather than ATC clearance or original clearance followed instead of re-clearance)
M	Error in ATC-unit-to-ATC-unit transition message
N	Negative transfer received from transitioning ATC-unit
O	Other
P	Unknown

Appendix C

List of Action Items

1. The Group will continue to encourage the regular submission of complete reports to CARSAMMA.
2. The Group will increase LHD reporting awareness and quality of information collected
 - a. It was noted that the “cause” provided on some reports conflicted with the summary of the reported event.
 - b. Additionally, all parties involved in LHD reporting should be aware of the methodology applied to the calculation of duration of time at incorrect flight level. The Group speculated that some reports might have contained an inaccurate duration value.
3. The Group will reconsider the definition of ATC Loop Error as presented in Appendix D versus Diagram 1-B/pg 10 table1 in the GTE Reference Guide (coordinate titles of the table)
4. The Group noted that some LHD reports require further investigation.
 - a. There were a few reports that indicated that an aircraft traveled through the entire PIARCO FIR without any coordination. Further information is required to determine whether if these events took place as indicated and assess the duration of each event.
 - b. There were a noticeable amount of coordination errors that involved the DAKAR FIR.
 - c. After evaluating a number of LHD reports submitted by Asuncion, the Group noted that this particular FIR may be utilizing the LHD Reporting Form for purposes other than to report an LHD.
 - d. Reports involving the following FIRs also require additional investigation: Maiquetia/Curacao, Barranquilla and Bogota.
5. The Group agreed to review the Terms of Reference (TOR) and evaluate a proposal to amend the lines of authority from ATM/CNS sub-group to add Aviation Safety Board (ASB) and revise the TOR accordingly. Additionally, submit the amended TOR to the ATM committee of GREPECAS for consideration and action.
6. Each member of the Group was requested to identify funding sources that could support future meetings.
7. The Group proposed that CARSAMMA attend the global meeting of RMAs to harmonize collision risk methodology.

8. The Rapporteur will establish a formal time table for future GTE meetings. The next meeting is scheduled to take place in Lima, Peru on 03 – 07 MAR 2008.
9. CARSAMMA committed to develop a CD containing detailed instructions regarding accurate and regular LHD reporting.
10. The Rapporteur will write a letter that will be distributed to all of the regional offices updating them on the activities of the GTE.
11. The Rapporteur, in conjunction with the ICAO NACC office, will seek assistance from the ICAO WACAF office to address the poor coordination that exists between Dakar FIR and the ANSPs of the CAR/SAM regions. (Please see Item 4.b.)
12. The Rapporteur will report the performance of one aircraft operator involved in a Code N, Negative transfer received from transitioning ATC-unit, which made a significant contribution to the time spent at wrong flight level determination. (Please see Item 4.a. above.)