



Agenda Item 3: CNS Developments
3.4 Follow-up to GNSS Implementation and Action Plan

PROGRESSIVE DEACTIVATION OF NDB STATIONS

(Presented by the Secretariat)

SUMMARY	
This working paper presents an inventory of NDB equipment identified in the Region, based on NDB Frequency List No. 1 registered in the ICAO NACC Office, State AIP publications and Table CNS 3 of Doc 8733 for updating and completing purposes. This information will be used for the NDB deactivation plan.	
References	
• List No. 1 – List of Facilities operating on Frequencies in the LF/MF Band (190-1750 KHz). • Doc 8733 - <i>Air Navigation Plan - Caribbean and South American Regions</i>. • Report of GREPECAS/14 Meeting, San Jose, Costa Rica, 16 to 20 April 2007. • Second amendment to Doc 9750 - <i>Global Air Navigation Plan for CNS/ATM Systems</i> • State Letter EMX 0103 dated 1 February 2008.	
Strategic Objectives	<i>This working paper relates to Strategic Objective D.</i>

1. Background

1.1 Doc 9750 AN/963 - *Global Air Navigation Plan for CNS/ATM Systems* GPI-21 Initiative indicates the strategy posed by ICAO for “Navigation Systems” directed at the introduction and evolution of performance-based navigation with the support of an appropriate structure consisting of a suitable combination of global navigation satellite systems (GNSS), autonomous navigation systems (inertial navigation systems) and conventional ground navigation aids. The ultimate objective is GNSS transition, eliminating the need to rely on ground aids, although due to the vulnerability of GNSS due to interference, it may be necessary to keep some ground aids in specific zones.

1.2 CAR/SAM Regional Strategy for the introduction and application of non-visual radio aids is contained in attachments H and I to Doc 8733, updated by GREPECAS Conclusion 12/45, which amended the “Regional guidelines for the transition to the global navigation satellite systems (GNSS)” and the “Regional strategy for the introduction and application of non-visual aids to approach, landing and departure,” included in Appendices S and T to the GREPECAS/12 report. This strategy essentially consists of keeping ILS and implementing GNSS; NDBs are not envisaged in this strategy.

1.3 Moreover, in accordance with SARPs, NDBs are not mandatory aids for approaches, landing and departure; VORs being the mandatory aid in terminal area and en-route, complemented by DME. Likewise, bearing in mind the progress of on-board avionics for fleets operating in the CAR/SAM Regions that support satellite navigation using GNSS, and with the aim of fulfilling required navigation performance in airspaces, maintaining or improving safety, and conserving resources, it was deemed necessary to develop a progressive NDB stations deactivation plan.

2. Analysis and Estimates for the Progressive Deactivation of NDB Equipment

2.1 In this regard, GREPECAS 14 adopted the following Conclusion:

CONCLUSION 14/56

PROGRESSIVE DEACTIVATION OF NDB STATIONS

That in order to develop progressive deactivation of NDB Stations without affecting safety, States/Territories/International Organizations and airspace users:

- a) analyse the service provided by each NDB station, its function, and procedural existence with other aids such as VOR/DME, GNSS-RNAV, as well as aircraft capacity/development operated in serviced airspace;*
- b) based on the analysis described in item a) above, and in the Table included in Appendix AF to this part of the Report, develop a plan for the progressive deactivation of NDB stations; and*
- c) inform the corresponding ICAO NACC or SAM Regional Office regarding their respective plan for the progressive deactivation of NDB stations before **30 November 2007**.*

2.2 State Letter ref. **EMX0103**, dated 1 February 2008, urged States/Territories/International Organizations to again present information on their NDB equipment deactivation plans by **20 June 2008**.

2.3 In order to support States with the preparation of this information, the **Appendix** to this working paper presents an inventory of existing NDB equipment registered in this Region, which sources are:

- “List No. 1 – List of Facilities operating on Frequencies in the LF/MF Band (190-1750 KHz)”
- available information of Table CNS 3 of the ANP, VOL II (FASID), Doc 8733
- information published by States in their AIPs and other aeronautical publications.

3. **Suggested Actions**

3.1 The Meeting is invited to:

- a) note the information contained in this working paper;
- b) review and update the designation of NDB equipment included in the Appendix to this paper;
- c) based on the operability of this equipment and its coexistence with other radio aids at the site, inform the Meeting of the estimated NDB deactivation date of respective States in line with the format indicated in GREPECAS Conclusion 14/56; and
- d) submit other updates to this information by 20 June 2008, as indicated in State Letter EMX0103.

REGIONAL DEACTIVATION PLAN OF NDB STATIONS
PLAN REGIONAL PARA DESACTIVACION DE ESTACIONES NDB

Update: April 04, 2008

Administration/Location Administración/ Lugar	Identification/ Identificación	Function/ Función	Deactivation Date/ Fecha de desactivación	Remarks/Observaciones	En AIP pero no en lista/Tabla	En todo	En tabla/Lista pero No en AIP
1	2	3	4	5	FAISD Table 3	AIP	Frequency List
ANGUILLA (United Kingdom) THE VALLEY WALL BLAKE, Anguilla I.	ANG	A/E	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
ANTIGUA AND BARBUDA SAINT JOHNS/V.C. Bld, Antigua I.	ANU	A/E	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
	ZDX	A/E	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
BAHAMAS ALICE TOWN/South Bimini, Bimini I.	ZBB	E	?	Not in AIP	x	-	x
FREEPORT/Intl, Grand Bahama I.	ZFP	AE	?		x	x	x
GEORGE TOWN/EXUMA Intl.	ZGT	A/L	?	No en AIP	x	-	x
NASSAU/Intl, New Providence I.	ZQA	AE	?		x	x	x
Great Inagua, Great Inagua I.	ZIN	E	?		-	x	x
Islands, Great Bahama I.	BHF	E	?		-	x	-
San Salvador, San Salvador I.	ZSJ	AE	?	PRIVATE	-	x	x
Stella Maris, Long Is.	ZLS	E	?		-	x	x
Chub Cay, Berry I.	ZCC		?		-	-	x
Governor's Harbour, Euleuthera I.	ZGB		?		-	-	x
Grand Bahamas, Grand Bahama I.	GBN		?		-	-	x
Marsh Harbour, Great Abaco I.	ZMH		?		-	-	x
Rock Sound, Euleuthera I.	RSD		?		-	-	x
Treasure Cay, Great Abaco I.	ZTC		?		-	-	x
Walter's Cay, Walker's Cay	ZWC		?		-	-	x
West End, Grand Bahama I.	ZWE		?		-	-	x
BARBADOS BRIDGETOWN/Grantley Adams Intl.	BGI	A/E	2005	It will remain serviceable until maintenance support becomes exhaustive. No later than 2018	x	x	x
BELIZE BELIZE/Intl.	BZE	AE	?		x	x	x
CAYMAN ISLANDS CAYMAN BRAC/Gerrard Smith Intl.	CBC	AE	?		x	x	x
GEORGETOWN/Owen Roberts Intl.	ZIY	AE	?		x	x	x
COSTA RICA COTO	COT	AE	?		x	x	x
CHILES CHILE	CHI	E	?		x	x	x
HORCONES BARRA DEL COLORADO	HOR	AE	?		x	-	x
FIORA	FIO		?		-	x	x
LIMON	LIO		?		-	-	x
PARRITA	PAR	E	?		-	x	x
CUBA CAYABO	UCY	T, E	?		x	x	x
CAYO LARGO DEL SUR/Vto Acuña Intl.	UCL	AE	?		x	x	x
CIEGO DE AVILA/Maximo Gomez Intl.	UCV	A	?		x	x	x
HOLGUIN/Frank Pais Intl.	UHG	AE	?		x	x	x
NUEVA GERONA	UNG	AE	?		x	x	x
SANTIAGO DE CUBA/Antonio Maceo	UCU	AE	?		x	x	x
BARACOA	UBA	AE	?		-	x	x
BAYAMO	UBY	AE	?		-	x	x
CAYO LAS BRUJAS	UBR	AE	?		-	x	x
JARDINES DEL REY	UCC	AE	?		-	x	-
CIENFUEGOS	UCF	AE	?		-	x	x
GUANTANAMO	UGT	AE	?		-	x	x
HABANA	UHA	A	?		-	x	x
MOA	UMO	AE	?		-	x	x
CAMAGUEY	UCM	AE	?		-	x	x
NUEVAS	UNV	E	?		-	x	x
PLAYA BARACOA	UPB	A	?		-	x	x

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SANTA CLARA	USC	AE	?		-	X	X
TRINIDAD	UTD	A	?		-	X	X
TUNAS	UVT	AE	?		-	X	X
ZARAGO	UZG	E	?		-	X	X
VARDER/Varadero	VA	A	?		-	X	X
VARADERO/ Juan G. Gomez Intl.	UVR		?		-	-	X
SAN JULIAN	USJ		?		-	-	X
ISABELA	UIS		?		-	-	X
MANZANILLO/Sierra Maestra	UMZ	AE	?		-	-	X
DOMINICAN REPUBLIC							
BARAHONA/Maria Montés Intl.	BHN	AE	?		X	-	X
HERRERA/Herrera Intl.	HER	AE	?		X	X	X
LA ROMANA/La Romana Intl.	LRN	AE	?		X	-	X
PUERTO PLATA/Gregorio Luperon Intl.	PPA	AE	?		X	X	X
PUNTA CANA/Punta Cana Intl.	PCA	AE	?		X	X	X
PUNTA CAUCEDO/SANTO DOMINGO/De las Américas Intl.	HIV	AE	?		X	X	X
GUERRA	LAS	AE	?		-	X	X
EL CATEY	DAB			Proyectado	-	-	X
Arroyo Barril				Proyectado	-	-	X
Constenza				Proyectado	-	-	X
El Portillo				Proyectado	-	-	X
Montecristi				Proyectado	-	-	X
EL SALVADOR							
SAN SALVADOR/El Salvador Intl.	LAN	A	?		x	X	X
SAN SALVADOR/Ilopango Intl.	YSX	A	?		x	-	X
FRENCH ANTILLES (France)							
FORT DE FRANCE/Le Lamentin, Martinique	FXF	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	X	-	X
FORT DE FRANCE/Le Lamentin, Martinique	FOF	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	X	X	X
POINTE-A PITRE/Le Raizet, Guadeloupe	PTP	A	2018	As indicated in Conclusion 1/8 de NACC/WG/01	X	X	X
SAINT-BARTHELEMY/S. Barthelemy Intl.	BY	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	-	-	X
GRENADA							
SAINT GEORGES/Point Salines	GND	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	X	X
GRENADA/Pearls	ZGT		2018	As indicated in Conclusion 1/8 de NACC/WG/01	-	-	X
GUATEMALA							
Mundo Maya/Flores Intl.	TIK	AE	?		x	X	X
GUATEMALA/La Aurora	GUA	T	?		x	-	X
IZTAPA	IZP	A	?		x	X	X
PUERTO BARRIOS/Puerto Barrios	BAR	AE	?		x	X	X
RABINAL	RBN	E	?		x	X	X
CHINAJA			?	PROYECTADO	-	-	X
HUEHUETENANGO	HUE	A	?		-	X	X
Quetzaltenango				PROYECTADO	-	-	X
POPTUN	POP	AE	?		-	X	X
RETALHULEU	REU	AE	?		-	X	X
RUBELSANTO	RUB	A	?		-	X	X
COBAN			?	PROYECTADO 2009	-	-	X
COATEPEQUE			?	PROYECTADO 2010	-	-	X
SAN JOSE	SGA	AE	?		-	X	X
HAITI							
Port-Au-Prince/Port-Au-Prince Intl.	HHP		?		-	-	X
HONDURAS							
COPAN RUINAS	RUI	E	?		x	-	X
LA CEIBA/Golosón Intl.	LCE	AE	?		x	X	X
Coxen Hole/ROATAN	ROA	A	?		x	X	X
SAN PEDRO SULA/La Lima	LMS	A	?		-	X	X
SAN PEDRO SULA/La Mesa Intl.	SAP	A	?		x	X	X

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TEGUCIGALPA/Toncontin Intl.	TGU	AE	?		x	x	-
	TNT	AE	?		x	x	-
PUNTA CASTILLA	CTL	AE	?		-	x	x
PUERTO LEMPIRA	PLP	E	?		-	x	x
PICACHO/Tegucigalpa	PIC	E	2008	Decomissioned: AIP Honduras	-	x	x
ENRIQUE SOTO CANO	ESC		?		-	-	x
ISLAS DEL CISNE	SWA		?		-	-	x
SAN JUAN BENQUE	SJB		?		-	-	x
TEGUCIGALPA/Toncontin Intl.	TEG		?		-	-	x
JAMAICA							
KINGSTON/Norman Manley Intl.	KIN	AE	November 20, 2006	Jamaica Letter: 04 April, 2008	x	x	x
MONTEGO BAY/Sangster Intl.	MBJ	AE	13-Mar-08	Jamaica Letter: 04 April, 2008	x	x	x
MEXICO							
ABKATUM 1A	PM1		?	PEMEX	-	-	x
ABKATUM 5	PM2		?	PEMEX	-	-	x
ACAPULCO/Gral. Juan N. Alvarez Intl.	SMS	E	?		x	-	x
AKAL C	PA1		?	PEMEX	-	-	x
AKAL J	PA2		?	PEMEX	-	-	x
BOCAS	PBI		?	PEMEX	-	-	x
CHETUMAL/Chetumal Intl.	CTM	A	?		x	-	x
ENSENADA	ENS	AE	?		-	x	x
IXTOC	PI1		?		-	-	x
KU22	PK1		?		-	-	x
KU 407	PK2		?		-	-	x
KU 482	PK3		?		-	-	x
LEGUAS	AGG		?		-	-	x
NAUTLA	NAU	E	?		-	x	x
CHIHUAHUA/Gral. Roberto Fierro Villalobos Intl.	CUW	AE	?		x	x	x
OAXACA	OAX	A	?		-	x	x
PEÑASCO	PPE	E	?		-	x	-
CHOIX	CHX	E	?		x	x	x
COZUMEL/Cozumel Intl.	CZL	AE	?		x	x	x
NEGRO	GRN	E	?		-	x	-
LA PAZ/ Gral. Manuel Marques de Leon Intl.	LAP	A	?		-	x	x
GUAYMAS/Gral. José Maria Yañez Intl.	GYM	AE	?		x	x	x
LOS MOCHIS			?	RECOMENDADO	x	-	x
MERIDA/Lic. Manuel Crescencio Rejón Intl. (PROGRESO)	MPG	E	?		x	x	x
MEXICO/Lic. Benito Juárez Intl.	MW	A	?		x	-	x
NEPTUNO	PO1		?		-	-	x
NHOCH-A	PN1		?		-	-	x
SAN MARCOS	SMC	A	?		x	-	x
SANTA ANITA		A	?	RECOMENDADO	x	-	x
TAMPICO/Gral. Francisco Javier Mina Intl.	TAM	A	?		x	x	x
CUERNAVACA	CVJ	A	?		-	x	x
TEPEXPAN	TPX		?		-	x	x
TEPIC		A	?	RECOMENDADO	-	-	x
MONTERRAT (United Kingdom)							
PLYMOUTH/H. Bramble, Montserrat I.	MON	L	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
NETHERLANDS ANTILLES (Netherlands)							
PHILIPSBURG/Prinses Juliana, St. Maarten I.	PJM	AE	?		x	x	x
WILLEMSTAD/Hato, Curacao I.	PJB	A	?		x	-	x
FLAMINGO Intl, BONAIRE	PJB	A	?		-	x	-
ST. EUSTATIUS	PJE	A	?		-	x	-
NICARAGUA							
MANAGUA/Augusto César Sandino Intl.	YNP	AE	?		x	x	x
CORN ISLAND	CRI		?		-	-	x
SAN JUAN DEL NORTE	SJN		?		-	-	x

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PUERTO RICO (United States)							
DORADO	DOP	AE	?		x	x	x
MAYAQUEZ/Mayaquez	MAZ	A	?		x	-	x
POINT TUNA	X	E	?		x	-	x
ROOSEVELT ROADS	NRR	T	?		x	-	x
SAN JUAN DE PUERTO RICO/Luis Muñoz Marín Intl.	L	A	?		x	-	x
SAN PAT		T	?		x	-	x
Saint Kitts and Nevis							
Basseterre/ Robert L. Bradshaw, St. Kitts Is.	SKB	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	-	x	-
SAINT LUCIA							
CASTRIES/George F. Charles	SLU	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
VIEUXFORT/Hewanorra Intl.	BNE	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
SAINT VINCENT AND THE GRENADINES							
CANOUAN/Canouan Is.	CAI	A	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
KINGSTOWN/E.T. Joshua	SV	AE	?	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
MUSTIQUE/ Mustique Intl.				RECOMMENDED	x	-	x
TRINIDAD AND TOBAGO							
PORT OF SPAIN/Piarco Intl. Trinidad I.	TRI	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
PIARCO APP/ Galeota	GAL	A	2018	As indicated in Conclusion 1/8 de NACC/WG/01	-	x	-
SCARBOROUGH/Crown Point, Tobago I.	TAB	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	x	x
HELIDECK, Trinidad I.	BGH		?		-	-	x
HELIDECK, Poinsettia I.	BGH		?		-	-	x
TURKS AND CAICOS ISLANDS (United Kingdom)							
GRAND TURK/Grand Turk Intl.	GT	A	?		x	x	x
PROVIDENCIALES/Providenciales Intl.	PV	AE	?		x	x	x
SOUTH CAICOS/South Caicos Intl.	SC	A	?		-	x	-
VIRGIN ISLANDS (United Kingdom)							
ROADTOWN/Terrance B. Lettsome, Tortola I.	BFI	AE	2018	As indicated in Conclusion 1/8 de NACC/WG/01	-	x	-
VIRGIN ISLANDS (United States)							
CHRISTIANSTED/Henry E. Rohlsen,	SX	A	2018	As indicated in Conclusion 1/8 de NACC/WG/01	x	-	x