Agenda
Item 3: Other matters

RELOCATION OF TRANSPONDER AND FREQUENCIES (INTELSAT SATELLITE 14/315)

(Working paper presented by the Secretariat)

SUMMARY

This working paper presents information related to the relocation of transponders and frequencies of the VSAT stations of the REDDIG II.

Reference

- Report of the Twenty-fourth Meeting of the REDDIG Coordination Committee (RCC/24) (Lima, Peru, March 03 to 06, 2020); and
- Report of the Twenty-third (Extraordinary) Meeting of the REDDIG Coordination Committee (RCC/23) (Teleconference, August 21, 2019).

1. Background

1.1 REDDIG II has been operating its satellite network with the INTELSAT 14/315 satellite from the beginning in 2015. On June 24, 2020, Intelsat informed us that they had planned a transponder and frequency relocation for the ICAO network.

1.2 The reason for this change was due, according to the information provided by the satellite provider, to the restructuring of the spectrum, based on the future demand for the use of 5G, which would not allow the REDDIG to work with the transponder and the frequencies used.

1.3 Below, you can see the details of the data related to the parameters used in REDDIG II from 2015 to 2020.

Satellite	Intelsat 14/315
Transponder	A28CV/A28CV
Beam	AMCV/AMCV
Polarization	V/V
Lease Assignment	6013.6/3788.6 - 6018.0/3793.0
Lease Resource	4.4 MHz

2. **Description**

2.1 After several coordinations with Intelsat, it was decided to carry out the required changes.

2.2 On August 6, 2020, the REDDIG Administrator informed all States about this action and that the aforementioned relocation would take place in the week of August 17, 2020.

2.3 It was reported on the reassignment of the new frequency range corresponding to the 38C transponder, keeping the same polarization in transmission and reception, this being vertical / vertical.

2.4 The work order used is attached to this Working Paper as **Appendix A** and below is an extract of the referred parameters.

Satellite	Intelsat 14/315
Transponder	A38CV/A38CV
Beam	AMCV/AMCV
Polarization	V/V
Lease Assignment	6329.6/4104.6 - 6338.4/4113.4
Lease Resource	8.8 MHz

2.5 The planned change was made immediately. The most important work in this regard was carried out by the NCC Manaus, which had to reprogram the new frequencies and reconfigure all the stations.

2.6 This process lasted 10 minutes, during which time all services continued working normally through the terrestrial network.

2.7 From the moment of migration to the new transponder and to the new frequencies, different actions have been carried out with Intelsat and the collaboration of the technical staff of the nodes, with the aim of maximizing performance, improving isolation parameters, and certifying the optimal operation of the stations.

3. **Suggested Action**

3.1 Taking into account that the entire network is working with new frequencies, the Coordination Committee is invited to: :

a) To take note of the information contained in this working paper and its Appendixes A dn B; and

b) Notify the national authorities that manage and administer the spectrum, about the change in frequencies.

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SSOG REFERENCE: [EC:200818-048][GRP=CSE][LOC=315][REP=DELGLA][8/18/2020 7:28:48 PM]

SUBJECT: Intelsat 14/315 Deg E., SSOG Lineup for Relocation of International Civil Aviation Organization [SVO=680300-1]

All carrier activations/deactivations need to be coordinated through the Intelsat Network Operations Center (NOC). All new antennas accessing the Intelsat system for the 1st time must perform on-axis isolation measurements in the designated frequencies on the transponder in use. Please contact the NOC.

Contact Information	
NOC	Tel: + 1 404 381 2900 US Toll-Free: 1 844 683 5728 Email: noc@intelsat.com
Customer Technical Contact	
Uplink	
Capacity Manager	Lady Pilar Delgado Rodriguez Senior Principal Engineer, Asset Provisioning PHONE: +1 703-559-7616 EMAIL: Pilar.Delgado@intelsat.com

Operational Service Issues (Reporting) To report a service issue, please contact Intelsat NOC and open a trouble ticket. For urgent issues, please contact Intelsat NOC on the phone.
Network Operations Center Tel: US Toll Free +1-84INTELSAT (+1-844-683-5728) or +1-404-381-2900 NOC@Intelsat.com
Operational Service Issues (Escalations) If not satisfied with the progress of a trouble ticket, customers can progressively escalate an existing trouble ticket using the following Escalation path.
If not satisfied with progress/resolution of your ticket by Intelsat NOC, please contact: Network Operations Center - Shift Supervisor Tel: US Toll Free +1-84INTELSAT (+1-844-683-5728) or +1-404-381-2900 (When calling, please ask for the Shift Supervisor) NOCSupervisors@Intelsat.com
If not satisfied with progress/resolution of your ticket by Intelsat NOC Shift Supervisor, please contact: Network Operations Center - Shift Manager Tel: US Toll Free +1-84INTELSAT (+1-844-683-5728) or +1-404-381-2900 (When calling, please ask for the Shift Manager) NOC.SHIFT.Managers@Intelsat.com

Service Summary	
SSOG Start Date	8/18/2020
Customer	International Civil Aviation Organization
Service Order Number	680300-1
SSOG Document	SSOG 600, Sect 3.1

Participating earth stations:

Code	Antenna Name
ATL-C06	ATL-C06 (AC4)/P+647
P+4566	Bogota/COL
P+4841	Maiquetia/VEN
P+4843	MONTEVIDEO/URY
P+4844	Paramaribo/SUR
P+4846	LIMA/Callao/PER
P+4847	Luque/Asuncion/PRY
P+4848	CAYENNE/Cayenne/GUF
P+4849	Georgetown/GUY
P+4850	Guayaquil/ECU
P+4852	Renca/Santiago/CHL
P+4854	Recife/RECIFE-PE/BRA
P+4855	Manaus/Manaus-AM/BRA
P+4856	Curitiba/BRA
P+4857	El Alto/La PAZ/BOL
P+4858	Ezeiza/ARG
P+9106	Asuncion/PRY
P+9402	PIARCO/TTO
RCF+0CF1	BRASILIA

For further information regarding this message contact:
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Best Regards,
Jose Lorenzana
Intelsat

Satellite	Intelsat 14/315
Transponder	A28CV/A28CV
Beam	AMCV/AMCV
Polarization	V/V
Lease Assignment	6013.6/3788.6 - 6018.0/3793.0
Lease Resource	4.4 MHz

The following carriers will be discontinued:

Carrier ID / SLR ID	Tx E/S code	Rx E/S code	TX Freq MHz	RX Freq MHz	Modulation	Info. Rate (kbps)	Symbol Rate (ksps)	Coding	Allocated BW (MHz)	PEB (MHz)	U/L EIRP (dBW)	D/L EIRP dBW (B.C.)
CXR:18663197	P+4858	ATL-C06	6014.49600	3789.49600	8PSK	2432	1215.94	DIGITAL*FEC=2/3*RS=1/1	1.45910	1.60436	50.19	25.68
CXR:18663200	P+4858	ATL-C06	6015.89350	3790.89350	8PSK	2216	1107.94	DIGITAL*FEC=2/3*RS=1/1	1.32950	1.47673	49.83	25.32
CXR:19795010	RCF+0CF1	ATL-C06	6017.18700	3792.18700	8PSK	2080	1039.95	DIGITAL*FEC=2/3*RS=1/1	1.24790	1.31614	52.35	24.82

Satellite	Intelsat 14/315
Transponder	A38CV/A38CV
Beam	AMCV/AMCV
Polarization	V/V
Lease Assignment	6333.6/4108.6 - 6338.0/4113.0
Lease Resource	4.4 MHz

The following carriers will be activated:

Carrier ID SLR ID	Tx E/S code	Rx E/S code	TX Freq MHz	RX Freq MHz	Modulation	Info. Rate (kbps)	Symbol Rate (ksps)	Coding	Allocated BW (MHz)	PEB (MHz)	U/L EIRP (dBW)	D/L EIRP dBW (B.C.)
CXR:30045670	P+4858	P+4849 P+4841 P+4857 P+4848 P+4847 P+4846 P+4852 P+4566 P+9106 P+4844 P+4855 P+4854 P+4850 P+4843 P+4856 P+9402 P+4858	6334.46900	4109.46900	8PSK	2432.0002	1215.9	DIGITAL*FEC=2/3*RS=1/1	1.45910	1.60591	48.85	23.36
CXR:30045680	P+4858	P+4843 P+4855 P+4847 P+4841 P+4849 P+4852 P+9402 P+9106 P+4846 P+4566 P+4857 P+4854 P+4844 P+4848 P+4850 P+4856 P+4858	6335.89350	4110.89350	8PSK	2216	1107.9	DIGITAL*FEC=2/3*RS=1/1	1.32950	1.44741	48.40	22.91

Carrier ID SLR ID	Tx E/S code	Rx E/S code	TX Freq MHz	RX Freq MHz	Modulation	Info. Rate (kbps)	Symbol Rate (ksps)	Coding	Allocated BW (MHz)	PEB (MHz)	U/L EIRP (dBW)	D/L EIRP dBW (B.C.)
CXR:30045690	RCF+0CF1	P+4856 P+4850 P+4841 P+9402 P+4844 P+4847 P+4854 P+4858 P+4855 P+4849 P+4848 P+4843 RCF+0CF1 P+4846 P+4857 P+9106 P+4852 P+4566	6337.18700	4112.18700	8PSK	2080.0002	1039.9	DIGITAL*FEC=2/3*RS=1/1	1.24790	1.3454	51.40	22.60

SLR ID is an internal Intelsat reference to identify the services operating from an Intelsat teleport. For services operating from a non-Intelsat teleport, the SLR ID reference will be blank.

Customer Support Engineering & Capacity Management

Link Budget Report for:

Opportunity-ID / SSR-ID

Done by: kunzkeh Date: 18 Sep 2020

Application: STRIP7 v6.8.4.0 Operational

Satellite and Role:	IS-14 @ 315.00°E
Transponder:	A38CV/A38CV (AMCV / AMCV)
Dw-link beam pointing:	0.00°E; 0.00°N
Sat. TWT Power [Watts]:	65.0
Sat. D/L EIRP at be/bp [dBW]:	36.4 / 44.4
SFD at be/bp [dBW/m^2]:	-83.2 / -90.2
Band Up/Dw [MHz]:	(6266 - 6338) / (4041 - 4113)
Polarization Up/Dw:	V / V

Total lease resource [MHz]:	4.4
Total D/L EIRP Avail. at be/bp [dBW]:	22.7 / 30.7
Total D/L EIRP Used at be/bp [dBW]:	22.7 / 30.7
Total BW Used [MHz]:	4.1
Xp Operational Mode: Multi-Carrier	
Nominal OBO=	-4.5 dB

Antennas	Diameter [m]	Gtx [dBi]	G/T [dB/K]	Latitude [°N]	Longitude [°E]	Xpol [dB]	Location (Nearest City and Country)	Notes	TOTAL HPA Power [W]
P+4566	3.7	45.4	22.0	4.70	285.86	27.0	Bogota/COL - COLOMBIA		
P+4841	3.7	45.4	22.0	10.60	293.02	27.0	Maiquetia/VEN - VENEZUELA		
P+4843	3.7	45.4	22.0	-34.83	303.98	27.0	MONTEVIDEO/URY - URUGUAY		
P+4844	3.7	45.4	22.0	5.46	304.80	27.0	Paramaribo/SUR - SURINAME		
P+4846	3.7	45.4	22.0	-12.02	282.89	27.0	LIMA/Callao/PER - PERU		
P+4847	3.7	45.4	22.0	-25.24	302.49	27.0	Luque/Asuncion/PRY - PARAGUAY		
P+4848	3.7	45.4	22.0	4.82	307.64	27.0	CAYENNE/Cayenne/GUF - FRENCH GUIANA		
P+4849	3.7	45.4	22.0	6.50	301.75	27.0	Georgetown/GUY - GUYANA		
P+4850	3.7	45.4	22.0	-2.16	280.11	27.0	Guayaquil/ECU - ECUADOR		
P+4852	3.7	45.4	22.0	-33.39	289.26	27.0	Renca/Santiago/CHL - CHILE		
P+4854	3.7	45.4	22.0	-8.14	325.07	27.0	Recife/RECIFE-PE/BRA - BRAZIL		
P+4855	3.7	45.4	22.0	-3.02	299.95	27.0	Manaus/Manaus-AM/BRA - BRAZIL		
P+4856	3.7	45.4	22.0	-25.40	310.76	27.0	Curitiba/BRA - BRAZIL		
P+4857	3.7	45.4	22.0	-16.51	291.81	27.0	El Alto/La PAZ/BOL - BOLIVIA		
P+4858	3.7	45.4	22.0	-34.81	301.46	27.0	Ezeiza/ARG - ARGENTINA		8.7
P+9402	3.7	45.4	22.0	10.63	298.48	27.0	PIARCO/TTO - TRINIDAD AND TOBAGO		
RCF+0CF1	3.8	45.7	22.2	-15.79	312.12	27.0	BRASILIA - BRAZIL		7.4

Tx E/S	Rx E/S	Carrier Type	Per Carrier Link Parameters and Results															
		#, Type, [I.R, OH, FEC, RS, modulation]	Noise BW [MHz]	Space Factor (Roll-off)	Alloc. BW [MHz]	PEB [MHz]	b.e. D/L EIRP [dBW]	C/N thresh. [dB]	Clear Sky C/N [dB]	Eb/No thresh. [dB]	Clear Sky Eb/No [dB]	Link Availab. [%/yr]	U/L EIRP [dBW]	HPA size (Watt)	HPA OBO [dB]	WGL [dB]	UPC [dB]	Gx apprvl
P+4858	P+4858	DIG (2.432 Mbps, OH=0.0%, 2/3 FEC, 8-Phase)	1.216	1.20	1.459	3.027	18.1	7.0	14.3	3.1	10.2	>= 99.96	51.7	4.3	0.0	0.0	0.0	No
	P+9402								14.3		10.7	>= 99.96						
	P+4846								14.7		10.8	>= 99.96						
	P+4566								14.3		10.4	>= 99.96						
	P+4841								14.3		10.4	>= 99.96						
	P+4843								14.0		10.0	>= 99.96						
	P+4844								13.1		9.5	>= 99.96						
	P+4847								14.7		10.6	>= 99.96						
	P+4848								12.3		8.7	>= 99.96						
	P+4849								13.9		10.3	>= 99.96						
	P+4850								14.6		10.8	>= 99.96						
	P+4852								14.2		10.0	>= 99.96						
	P+4854								12.9		9.3	>= 99.96						
	P+4855								13.7		10.0	>= 99.96						
	P+4856								14.4		10.2	>= 99.96						
	P+4857								15.1		11.2	>= 99.96						
P+4858	P+9402	DIG (2.216 Mbps, OH=0.0%, 2/3 FEC, 8-Phase)	1.108	1.20	1.330	3.084	18.2	7.0	14.8	2.9	11.1	>= 99.96	51.8	4.4	0.0	0.0	0.0	No
	P+4846								15.2		11.2	>= 99.96						
	P+4858								14.8		10.7	>= 99.96						
	P+4857								15.5		11.7	>= 99.96						
	P+4856								14.9		10.7	>= 99.96						

	P+4855									14.1		10.5	>= 99.96						
	P+4854									13.4		9.8	>= 99.96						
	P+4852									14.7		10.5	>= 99.96						
	P+4850									15.0		11.3	>= 99.96						
	P+4849									14.4		10.7	>= 99.96						
	P+4848									12.8		9.2	>= 99.96						
	P+4844									13.6		9.9	>= 99.96						
	P+4843									14.5		10.5	>= 99.96						
	P+4841									14.7		10.9	>= 99.96						
	P+4566									14.8		10.9	>= 99.96						
	P+4847									15.1		11.1	>= 99.96						
RCF+0CF1	P+4847	DIG (2.080 Mbps, OH=0.0%, 2/3 FEC, 8-Phase)	1.040	1.20	1.248	2.612	17.5	7.0	14.8	2.8	10.7	>= 99.96	54.4	7.4	0.0	0.0	0.0	No
	P+4844									13.2		9.6	>= 99.96						
	P+4566									14.5		10.6	>= 99.96						
	P+4841									14.4		10.6	>= 99.96						
	P+4843									14.1		10.1	>= 99.96						
	P+4848									12.4		8.8	>= 99.96						
	P+4849									14.0		10.4	>= 99.96						
	P+4850									14.7		11.0	>= 99.96						
	P+4852									14.4		10.1	>= 99.96						
	P+4854									13.1		9.4	>= 99.96						
	P+4855									13.8		10.1	>= 99.96						
	P+4856									14.5		10.3	>= 99.96						
	P+4857									15.2		11.4	>= 99.96						
	P+4858									14.5		10.4	>= 99.96						
	P+9402									14.5		10.8	>= 99.96						
	P+4846									14.9		10.9	>= 99.96						
	RCF+0CF1									13.8		9.7	>= 99.96						
		TOTAL:	3 Carriers			4.036	8.723	22.7											

ISCO comments:

Antenna pattern comments:

Notes: Clear Sky C/N includes 0.3 dB additional margin for terrestrial interference. Uplink antenna mis-pointing & HPA instability and downlink antenna mis-pointing are accounted for in the uplink and the downlink respectively (0.5 dB). Eb/No includes 0.4 dB IF-RF degradation.

* Analysis results based on today's operational levels of interference. Results are not guaranteed due to possible fluctuations in operational interferences over time.