International Telecommunication Union

#### WORLD RADIOCOMMUNICATION SEMINAR 2012

GENEVA, 3-7 DECEMBER 2012

www.itu.int/ITU-R/go/WRS-12



## Workshop on FSS Space Plan

GBIC/AP30B

Presented by ITU-R/SSD Space Notification and Plans Division



## You have learned

- Concept of Space Plans
- Regulatory procedures in AP30B
- Submit /Validate notices









## You will learn

- How to perform technical examinations
- How to get, view and understand the results
- Familiar with BR software packages



GIBC

AP<sub>3</sub>oB Report

### COMPATIBILITY



## **Protection Criteria Categories**

#### Hard Limits

- ✓ If exceeded → the Submission is not receivable (unfavorable) and returned to notifying administration
- To preserve current and future use of a Radiocommunincation Service in general

### Coordination Trigger Limits

- Agreements of affected administrations is required
- ✓ To protect:
  - Existing assignments of Space Services Networks:
  - Existing and future terrestrial services on territories of administrations

### Hard limits in AP30B

### Article 21 of Radio regulations

Downlink PFD hard limit at the Earth's surface

### Annex 3 of Appendix 30B

- Downlink PFD hard limit
- on any portion of the surface of the Earth
- uplink PFD hard limit

towards any location in the GSO-satellite orbit located beyond the coordination arc

### Annex 3 PFD limits



## **Coordination requirements**

#### Service area coverage examination ( §6.6 of AP30B)

Identify the administrations whose territory is partially or wholly included in the service area of the network under examination.

#### Annex 4 examination

Identify the allotments or assignments of Appendix 30B are affected by the network under examination.

- Uplink single-entry C/I (at test points)
- Downlink single-entry C/I (at test points and grid points)
- Aggregate C/I (at test points)

Grid points for downlink examination

Interpolation of reference value:

The note 19 of Annex 4 to Appendix 30B (WRC-07)



## Exercise on GIBC (1)





 Go to the tab "Tools/Options"
 Select "30B\_9999.mdb" as SRS Database and "30B\_gims.mdb" as Additional GIMS Databases
 Go to the tab "PFD (Terrestrial serv.)"
 Type in the network ID: <u>112559999</u>
 Select "Hard limit" as the Examination
 "Start" the analysis
 Check the output files in the folder "C:\BR\_TEX\_RESULTS\PFD\112559999\..."

Check error message in MSG.LST !

## Exercise on GIBC (2)

### PFD Analysis (Annex 3 of AP30B)



- 1. Go to the tab "Tools/Options"
- 2. Select "30B\_9999.mdb" as SRS Database and "30B\_gims.mdb" as Additional GIMS Databases
- 3. Go to the tab "Appendix 30B"
- 4. Check "Annex 3 PFD"
- 5. Type in the network ID: <u>112559999</u>
- 6. "Start" the analysis

## View results of Annex 3

#### View in results database

- Located at: C:\BR\_TEX\_RESULTS\AP30B\112559999\.. and open ap30b\_pfd\_res table in the AP30B\_RESULTS.mdb file (or "Open database" in GIBC/AP30B)
- all pfd\_excess <0</li>
   favorable finding

#### View finding with AP30BTexCap software

- 1. Go to the tab "ANNEX 3--PFD"
- 2. "Upload "the results files after selecting its location
- 3. "View findings"

"A—" favorable finding "N—" unfavorable finding



AP30BTexCap

## Exercise on GIBC (3)

#### Annex 4 and service area coverage examinations

F	۲	
G	BC	

- 1. Go to the tab "Tools/Options"
- 2. Select "30B\_9999.mdb" as SRS Database and "30B\_gims.mdb" as Additional GIMS Databases
- 3. Go to the tab "Appendix 30B"
- 4. Check "SA Coverage" and "Annex 4 C/I"
- 5. Type in the network ID: <u>112559999</u>
- 6. "Start" the analysis

## View results of Annex 4

#### View in results database

- Located at: C:\BR\_TEX\_RESULTS\AP30B\112559999\.. and open ap30b\_clc\_res table in the AP30B\_RESULTS.mdb file (or "Open database" in GIBC/AP30B)
- f\_affected = "Y" Affected

#### View finding with AP30BTexCap software

- 1. Go to the tab "ANNEX 4-C/I"
- 2. "Upload "the results files after selecting its location
- 3. "View results" :

List of the affected networks and degradation values



AP30BTexCap

### View results of Service area coverage

#### View in results database

 Located at: C:\BR\_TEX\_RESULTS\AP30B\112559999\.. and open ap30b\_cover\_res table in the AP30B\_RESULTS.mdb file (or "Open database" in GIBC/AP30B)

List of territories and administrations

#### View finding with AP30BTexCap software

- 1. Go to the tab "Service area coverage "
- 2. "Upload "the results files after selecting its location
- 3. "View results" :

List of territories and administrations



AP30BTexCap

## View results of Service area coverage

- A strong tool to view the GBIC/AP30B results
- New functions are under development
- Find it at:
- ..\Br\_soft\BATCH\AP30B



#### AP30B Report

Appendi	< 30 30A	Tools / Opt	ons	C	paining Manager	
PFD	Appendix 8	PXT	Appen	dix 7	Appendix 30B	
Operator ID Network ID	Administ 112559999	Analysis Type		ancel /I Option	Start	
Messages Progre Wamir Debug	Filter ss ng	Annex 3 PFD SA Coverage Annex 4 C/I PFD (Art.21)		Detailed Report Date Limit Generate Grid		
Message PROGR> PROGR> PROGR> PROGR> PROGR> PROGR> PROGR> Appendix 3 Appendix 3	START OF AN GIMS INIT Generating grids Grid generation 0 of NORMAL END Compacting out 30B PFD calcul 30B SA Coverag 30B C/I calculat	NEX 4 s completed 66 groups are ar ) put database ation finished. 10:40:1 tion finished. 10:40	nalysed. 0:00. Resu 00. Results :00. Result	ults File is File is C ts File is	s C:\BR_TEX_R ∷\BR_ES C:\BR	
Calculation	n Results					
C:\BR_TE	tabase	AP30B\11255999 iew Log File	9\1211131 Open Fol	l03923∖v der	AP30B OLTS AP30BReport	

AP30	)BReport		and the second sec	L	_ 0	X
File	Edit Q	)uery	Help			
Output d	atabase pa	ath:	C:\BR_TEX_RESULTS\AP30B\112559999\121111173541\AP30B_RESULTS.MD	В		
			Reload selected database			
Main	Annex 3 -	PFD	Service Area Coverage Annex 4 - C/I Details of the anlayzed network			
- Analy	zed Netwo	ork —				
	Notice ID	): 112	2559999			
Ad	ministration	n: HO	)L			
Sat	ellite Name	: NS	S-FSS-G2 40.5W			
Satel	lite Position	n: <b>-40</b>	).5			
	Provision:	: A3	0B#6.1A			

AP3	OBReport				X
File	Edit Query	Help			
Output o	database path:	C:\BR_TEX_RESUL	TS\AP30B\112559	999\121111173541\AP30B_RESULTS.MDB	Z
		Reload selected	database		
Main	Annex 3 - PFD	Service Area Cove	rage 2	Service area coverage	
Analy	sis Parameters				
Input	database path:	C:\Users\Administra	tor\Desktop\WRS-1	12\VEN\AP30B Exercise\30B_9999.mdb	
Ana	alysis started on:	11/11/2012 5:35 PI	М		
Ana	alysis ended on:	11/11/2012 5:36 PI	М		
Anal	lysis was run by:	Administrator			
S	oftware version:	C:\Br_soft\2.6.0.0		In production?:	
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	RKG	R	1	HOL/ABW ; AFS ; AGL ; G/AIA ; ALB ; ALG ; AND ; XZZ/AOE ; ARG ; G/ASC ; ATA ; ATG ; AUT ; POR/AZR ; B ; BAH ; BDI ; BEL ; BEN ; G/BER ; HOL/BES ; BFA ; BIH ; F/BLM ; BLR ; BLZ ; BOL ; BOT ; BRB ; BUL ; NOR/BVT ; CAF ; CAN ; CHL ; CLM ; CME ; E/CNR ; COD ; COG ; F/CPT ; CPV ; CTI ; CTR ; CUB ; HOL/CUW ; CVA ; G/CYM ; CYP ; CZE ; D ; DMA ; DNK ; DOM ; E ; EGY ; EQA ; EST ; ETH ; F ; FIN ; G/FLK ; DNK/FRO ; G ; GAB ; G/GCA ; GHA ; G/GIB ; F/GLP ; GMB ; GNB ; GNE ; GRC ; GRD ; DNK/GRL ; GTM ; F/GUF ; GUI ; GUY ; HND ; HNG ; HOL ; HRV ; HTI ; I ; IRL ; ISL ; JMC ; KEN ; KNA ; LBR ; LBY ; LCA ; LIE ; LSO ; LTU ; LUX ; LVA ; F/MAF ; MCO ; MDA ; POR/MDR ; MEX ; MKD ; MLI ; MLT ; MNE ; MOZ ; MRC ; F/MRT ; G/MSR ; MTN ; MWI ; NCG ; NGR ; NIG ; NMB ; NOR ; CHL/PAQ ; PNR ; POL ; POR ; PRG ; PRU ; USA/PTR ; ROU ; RRW ; RUS ; S ; SDN ;	
	TCG	E	1	AGL ; ALB ; ALG ; AND ; XZZ/AOE ; AUT ; POR/AZR ; BDI ; BEL ; BEN ; BFA ; BIH ; BLR ; BUL ; CAF ; CME ; E/CNR ; COD ; COG ; CPV ; CTI ; CVA ; CYP ; CZE ; D ; DNK ; E ; EGY ; EST ; ETH ; F ; FIN ; DNK/FRO ; G ; GAB ; GHA ; G/GIB ; GMB ; GNB ; GNE ; GRC ; GUI ; HNG ; HOL ; HRV ; I ; IRL ; ISL ; KEN ; LBR ; LBY ; LIE ; LTU ; LUX ; LVA ; MCO ; MDA ; POR/MDR ; MKD ; MLI ; MLT ; MNE ; MRC ; MTN ; NGR ; NIG ; NOR ; POL ; POR ; ROU ;_	
	TKG	E	1	AGL: ALB: ALG: AND: XZZ/AOE: AUT: POR/AZR: BDI: BEL: BEN: BFA: BIH: BLR: BUL: CAF: CME: E/CNR: COD: COG: CPV: CTI: CVA: CYP: CZE: D: DNK: E: EGY: EST: ETH: F: FIN: DNK/FRO: G: GAB: GHA: G/GIB: GMB: GNB: GNE: GRC: GUI: HNG: HOL: HRV: I: IRL: ISL: KEN: LBR: LBY: LIE: LTU: LUX: LVA: MCO: MDA: POR/MDR: MKD: MLI: MLT: MNE: MRC: MTN: NGR: NIG: NOR: POL: POR: ROU:	

AP30	3Report											
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Output da	atabase path:	C:\BI	R_TEX_RESULTSV	AF308\112	559999\12111	11173541\AF30B_	RESULTS.MDB					
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hput	Input database path: C:\Users\Administrator\Desktop\WFS-12\VEN\AF308 Exercise\308_9999.mdb											
Ana	lysis stated on:	: 11/	11/2012 5:35 FM									
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<b>1</b>	Reset Query		Found 64 results									
	Beam Name	E/R	Frequency Band	Group ID	Point Type	Point Longitude	Point Latitude	PFD Excess	PFD Limit	Worst GSO Pos.		
	RCG	R	6/4	193	F	-99.16	19 28	1.369	-140	-50.5		
	RCG	R	6/4	193	F	-90.38	14.27	1.3	-140	-50.5		
	RCG	R	6/4	193	F	-84.13	9.56	1.246	-140	-50.5		
	RCG	R	6/4	193	F	-79.1	8.29	1.204	-140	-50.5		
	RCG	R	6/4	193	P	-78.23	-0.07	1.195	-140	-50.5		
	RCG	R	6/4	193	F	-77.02	-11.53	1.188	-140	-50.5		
	RCG	R	6/4	193	F	-74 01	4.4	1.161	-140	-50.5		
	RCG	R	6/4	193	F	-70.45	-33.26	1.173	-140	-50.5		

RCG

RCG

R

R

6/4

6/4

193

193

P

P

-68.14

-66.58

-16.22

10.38

1.126

1.109

-140

-140

-50.5

-50.5



-40.5	HOL	112559999	NSS-FSS-G2 40.5W	List	18.288	2.1	13/10-11
-40.5	HOL	112559999	NSS-FSS-G2 40.5W	List	4.884	2.3	6/4
-40.5	HOL	112559999	NSS-FSS-G2 40.5W	List	12.919	2.2	6/4
-41.8	LBR	90558126	LBR00000	Allotment	14.086	2.3	13/10-11
-41.8	LBR	90558126	LBR00000	Allotment	16.204	2.2	13/10-11
-41.8	LBR	90558126	LBR00000	Allotment	20.757	2.1	13/10-11
-41.8	LBR	90558126	LBR00000	Allotment	19.456	2.3	6/4
-41.8	LBR	90558126	LBR00000	Allotment	20.136	2.2	6/4
-41.8	LBR	90558126	LBR00000	Allotment	26.829	2.1	6/4
-40.5	MCO	105559005	MCO-FSS-40.5W	Pending	16.825	2.3	13/10-11
-40.5	MCO	105559005	MCO-FSS-40.5W	Pending	17.685	2.2	13/10-11
-40.5	MCO	105559005	MCO-FSS-40.5W	Pending	22.98	2.3	6/4
-40.5	MCO	105559005	MCO-FSS-40.5W	Pending	24.071	2.2	6/4



🔄 Reset Query	Found 8 results in 124 ms

Orbital Position	Admin.	Ntwk. Org.	Notice ID	Satellite Name	Network Status	Frequency Band	SE Down TP Degradation	SE Down GP Degradation	SE Up Degradation	AG Degradation
-40.5	HOL		112559999	NSS-FSS-G2 40.5W	List	13/10-11	15.262	24.99	18.288	13.143
-40.5	HOL		112559999	NSS-FSS-G2 40.5W	List	6/4	10.43	12.919		4.884
-41.8	LBR		90558126	LBR00000	Allotment	13/10-11	15.907	16.204	20.757	14.086
-41.8	LBR		90558126	LBR00000	Allotment	6/4	20.053	20.136	26.829	19.456
-40.5	MCO		105559005	MCO-FSS-40.5W	Pending	13/10-11	17.683	17.685		16.825
-40.5	MCO		105559005	MCO-FSS-40.5W	Pending	6/4	24.069	24.071		22.98
-45	USA		96559003	USASAT 13I	List	13/10-11	2.054	4.153		4.086
-43	USA		104559005	USASAT-55E	List	13/10-11	23.545	23.761	7.201	18.854

AP30BR	eport															
File Ed	lit Quer	y Hel	р													
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	nex 3 - PFL		ce Area Coverage								in produc					
Analysis s	succeeded	? 🔽														
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Arrected r Technica	networks su I examinatio	mmary n summa	ry	V	Affected Test Poin	ts -	Affected	Grid Points								
C/I value: Reference	s at test and e situation	l/or grid p	points		Not Affected Test	Points	Not Affe	cted Grid Points								
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	C/]	Va	lues a	t TPs.	/GPs	мсо										
	,			Fr	equency Band :					2		Set the	e View	<sup>r</sup> crite	ria	
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				G	rp. ld. Aff. Up. :											
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				G	rp. ld. lnf. Up. :											
				<b>[</b> G	rp. Id. Int. Dn. :											
🔄 Res	set Query	Fo	und 9 results in 265 r	ns												
Ad	lmin. Not	tice ID	Satellite Name	Orbital Position	Frequency Band	Grp. Id. Aff. Up	Grp. Id. Aff. Dn	Grp. Id. Inf. Up	Grp. ld. Inf. Dn	Inf. Notice Id	Inf. Sat. Name	Station Type	Point Longitude	Point Latitude	C/I	C/I Refe 🔺
M	CO 105	559005	MCO-FSS-40.5W	-40.5	6/4	297	0	193	0	112559999	NSS-FSS-G2 40.5W	P	7.4	43.67	23.058	3(
M	CO 105	559005	MCO-FSS-40.5W	-40.5	13/10-11	295	0	196	0	112559999	NSS-FSS-G2 40.5W	Р	7.4	43.67	24.058	3(
M	CO 105	559005	MCO-FSS-40.5W	-40.5	6/4	0	298	0	163	112559999	NSS-FSS-G2 40.5W	P	7.4	43.67	-16.312	26.
M	CO 105	559005	MCO-FSS-40.5W	-40.5	6/4	0	298	0	164	112559999	NSS-FSS-G2 40.5W	P	7.4	43.67	-11.312	26.
M	ICO 105	559005	MCO-FSS-40.5W	-40.5	6/4 13/10-11	29/	298	0	181	U 112559999	NSS-ESS-G2.40.5W	P	7.4	43.67	-16.313	2
M	ICO 105	559005	MCO-FSS-40.5W	-40.5	13/10-11	0	296	0	182	112559999	NSS-FSS-G2 40.5W	P	7.4	43.67	1.028	24.5
M	CO 105	559005	MCO-FSS-40.5W	-40.5	13/10	295	296	0	0	0		P	7.4	43.67	-8.976	19.2 🔻
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AP	AP30BReport											
File	Edit	Query He	lp									
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	Reload selected database											
Main	Annex 3	3 - PFD   Servi	ce Area Coverage Anr	1ex 4 - C/I								
	Detailed report?											
	Grid gene	erated?					A6A database p	path:				
Rep	oort Type -											
Affe	cted netwo	orks summary										
C/I	nnicai exari values at te	nination summa est and/or grid	points									
Refe	erence situa	ation										
				Filte	r Field F	ilter Value				Available Fil	Iter Values	
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	for		aitustion	Notic	e ID :							
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				Grp.	ld. Aff. Up. :							
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	Peast Or		und 105 marsha in 205 m									
	neset qu		Junu 165 lesuits in 265 li	15								
	Admin.	Notice ID	Satellite Name	Orbital Position	Frequency Band	Grp. Id. Aff. Up	Grp. Id. Aff. Dn	Point Longitude	Point Latitude	New C/I Reference	C/I Reference	Annex 4 Subsection
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	-25.48	37.78	32.3	999.99	2.3
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	-23.63	15.07	32.133	999.99	2.3
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	-17.78	64.7	32.322	999.99	2.3
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	-13.74	25.17	32.189	999.99	2.3
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	-11.41	10.72	20.898	999.99	2.3
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	-8	53.44	32.31	999.99	2.3
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	-5.67	38.14	32.274	999.99	2.3
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	-2.05	53.86	32.308	333.33	2.3
	HUL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	1.98	46.21	32.293	333.33	2.3
	HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	100	103	2.03	20.40	32.172	333.33	2.3
	HOL	112559999	NSS-F35-02 40.5W	-40.5	6/4	102	162	0.UZ	0.22	32.303	000 00	2.3
	HUL	112000000	N33-F33-G2 40.0W	-40.0	0/4	135	100	0.40	3.23	20.003	333.33	2.3

The Bureau has produced video presentations to assist administrations in using the new GIBC software package:

http://www.itu.int/en/ITU-R/space/plans/Pages/AP30B.aspx

# Any Question ?

