Workshop on FSS Space Plan

GBIC/AP30B

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

International Telecommunication Union

You have learned

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

SpaceCap

SpaceVal

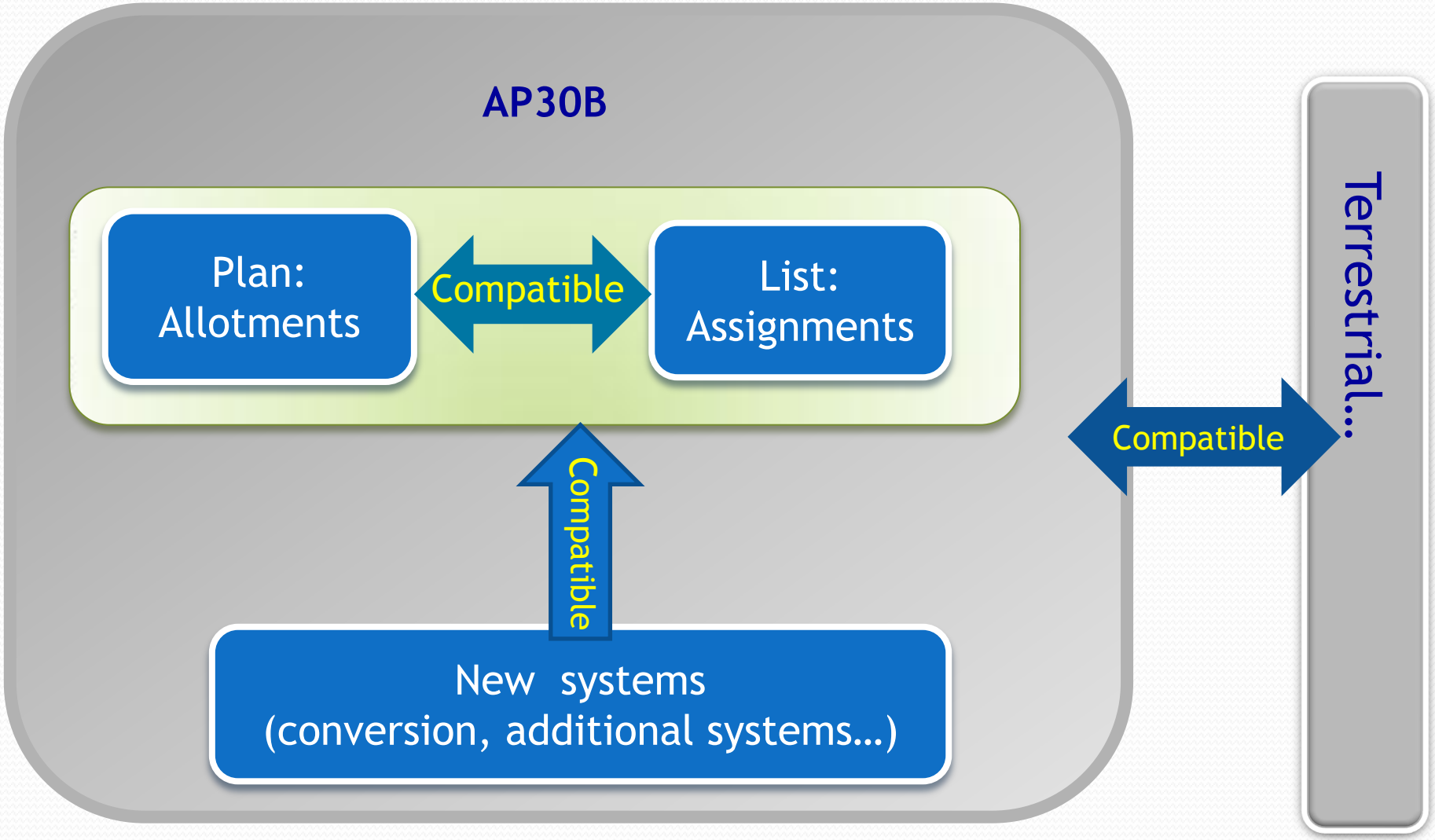
You will learn

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

GIBC

AP30B 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*

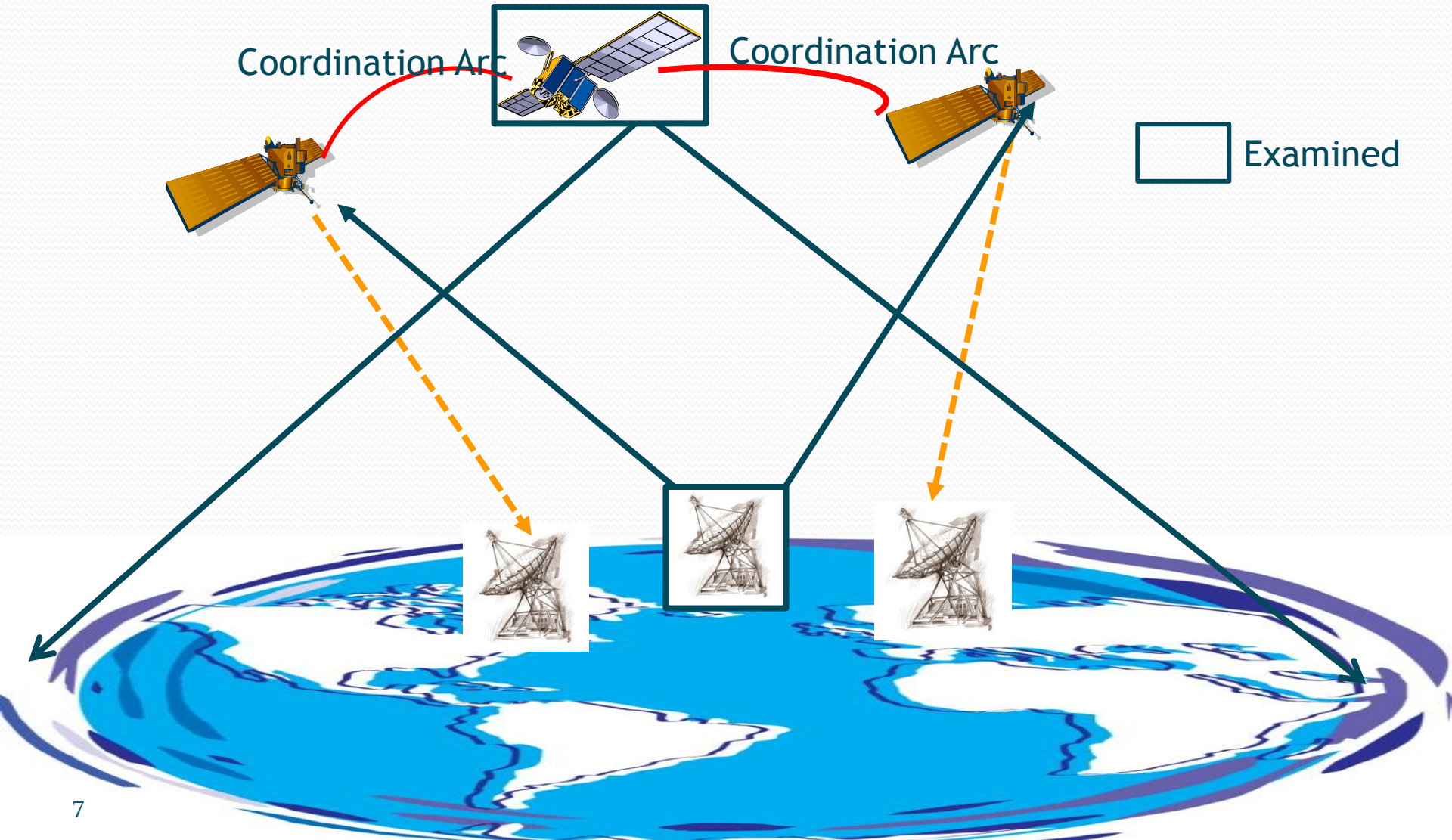
Hard limits in AP30B

- 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.

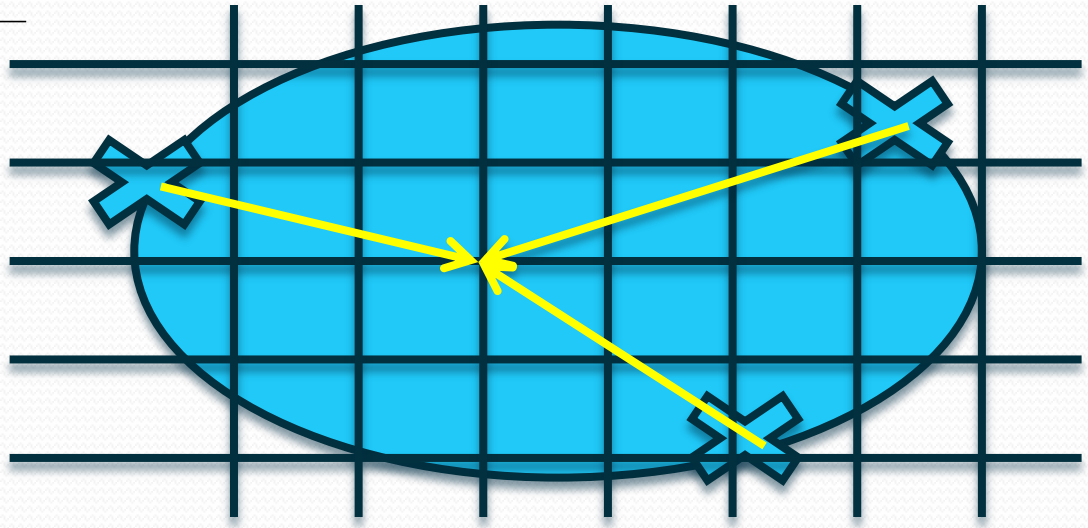
  - Uplink single-entry *C/I* (at test points)
  - Downlink single-entry *C/I* (at test points and grid points)
  - Aggregate *C/I* (at test points)

Grid points for downlink examination

Interpolation of reference value:

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

$$V_{Eg} = \frac{\sum_{h=1}^{Nt} R_{Th} \times (d_{Th})^{-2}}{\sum_{h=1}^{Nt} (d_{Th})^{-2}}$$



Exercise on GIBC (1)

- PFD Analysis (terrestrial)

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 “PFD (Terrestrial serv.)”
4. Type in the network ID: *112559999*
5. Select “Hard limit” as the Examination
6. “Start” the analysis
7. 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: *112559999*
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 ⇨ 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

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: *112559999*
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

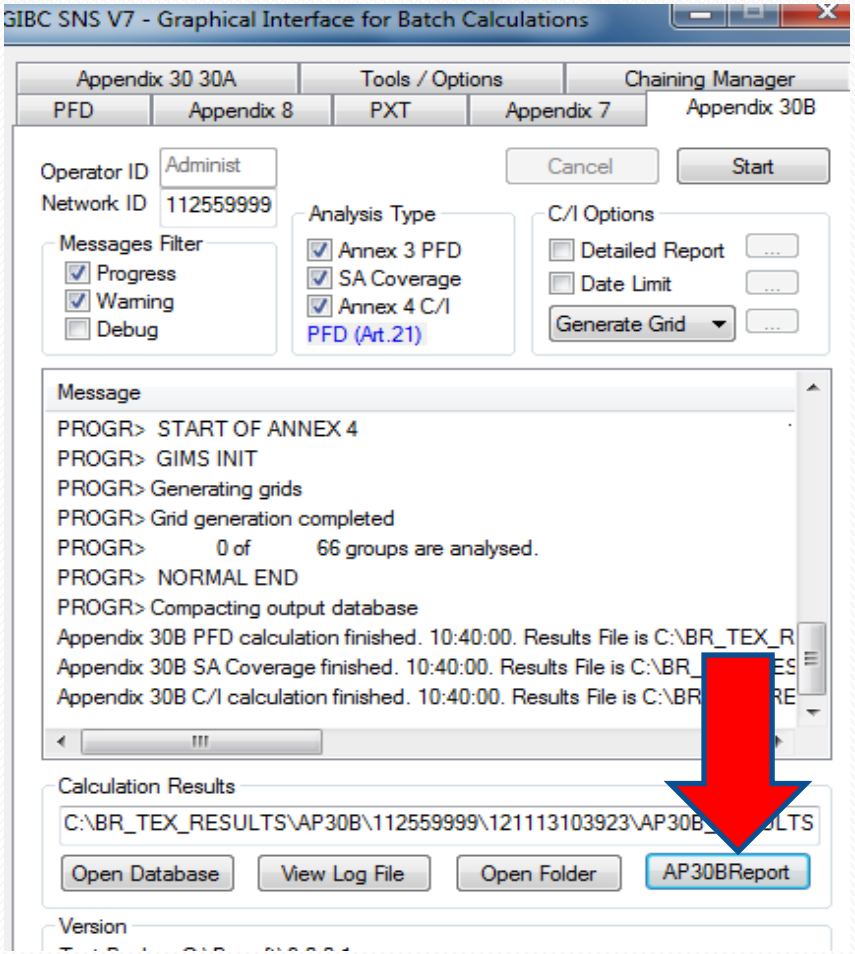
AP30BTexCap

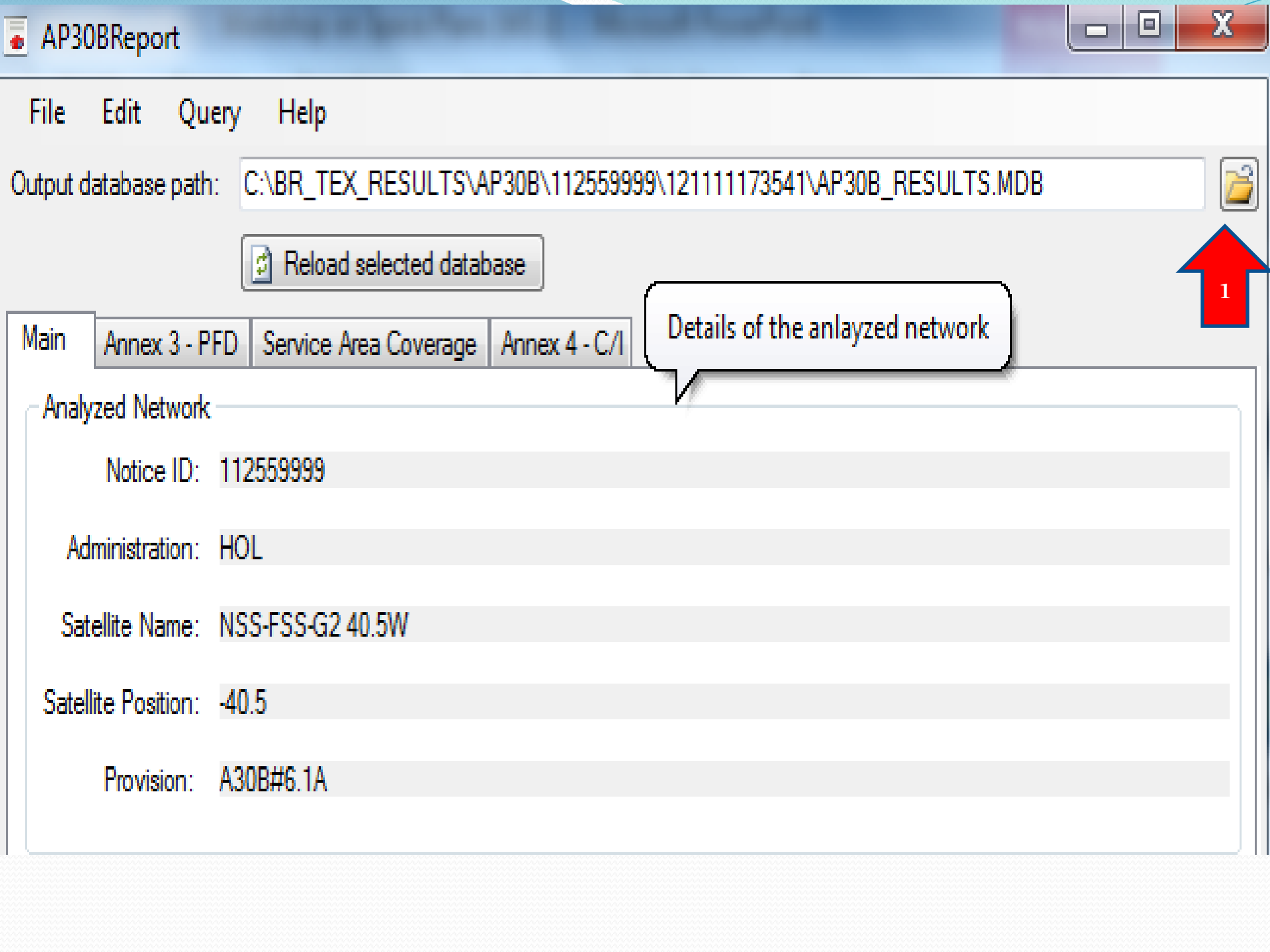
View results of Service area coverage

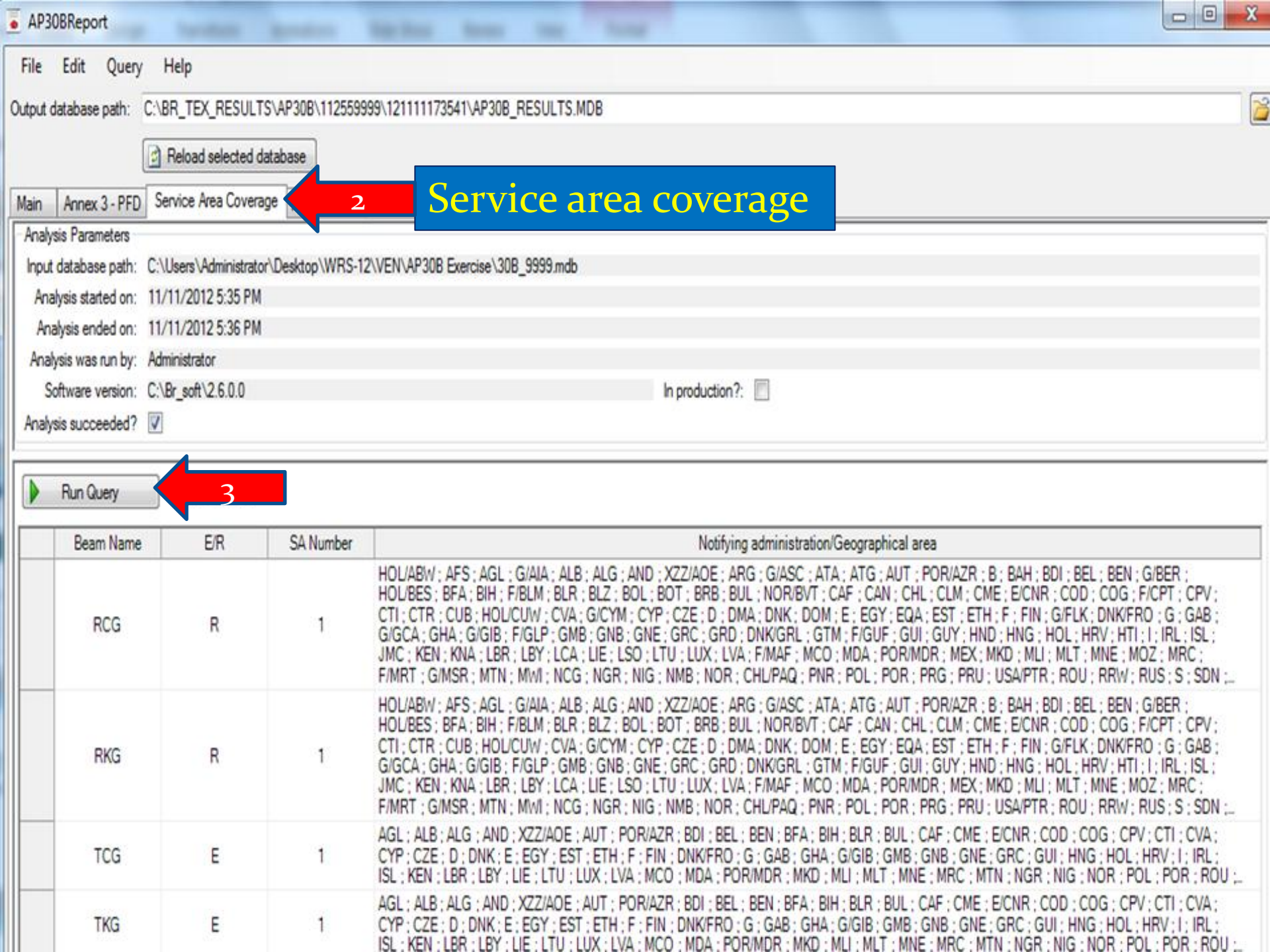
- A strong tool to view the GBIC/AP30B results
- New functions are under development
- Find it at:

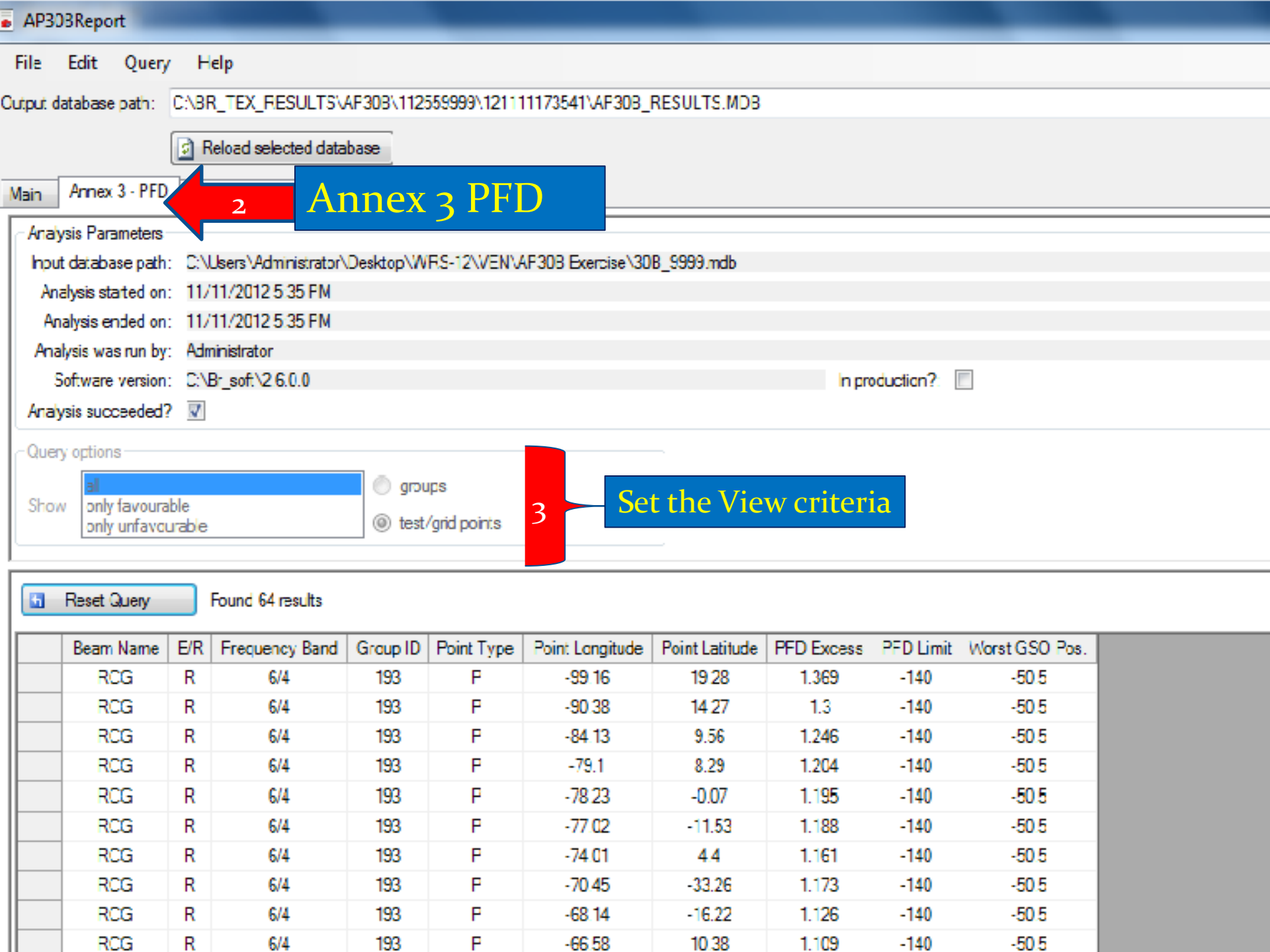
..\Br_soft\BATCH\AP30B

AP30B Report

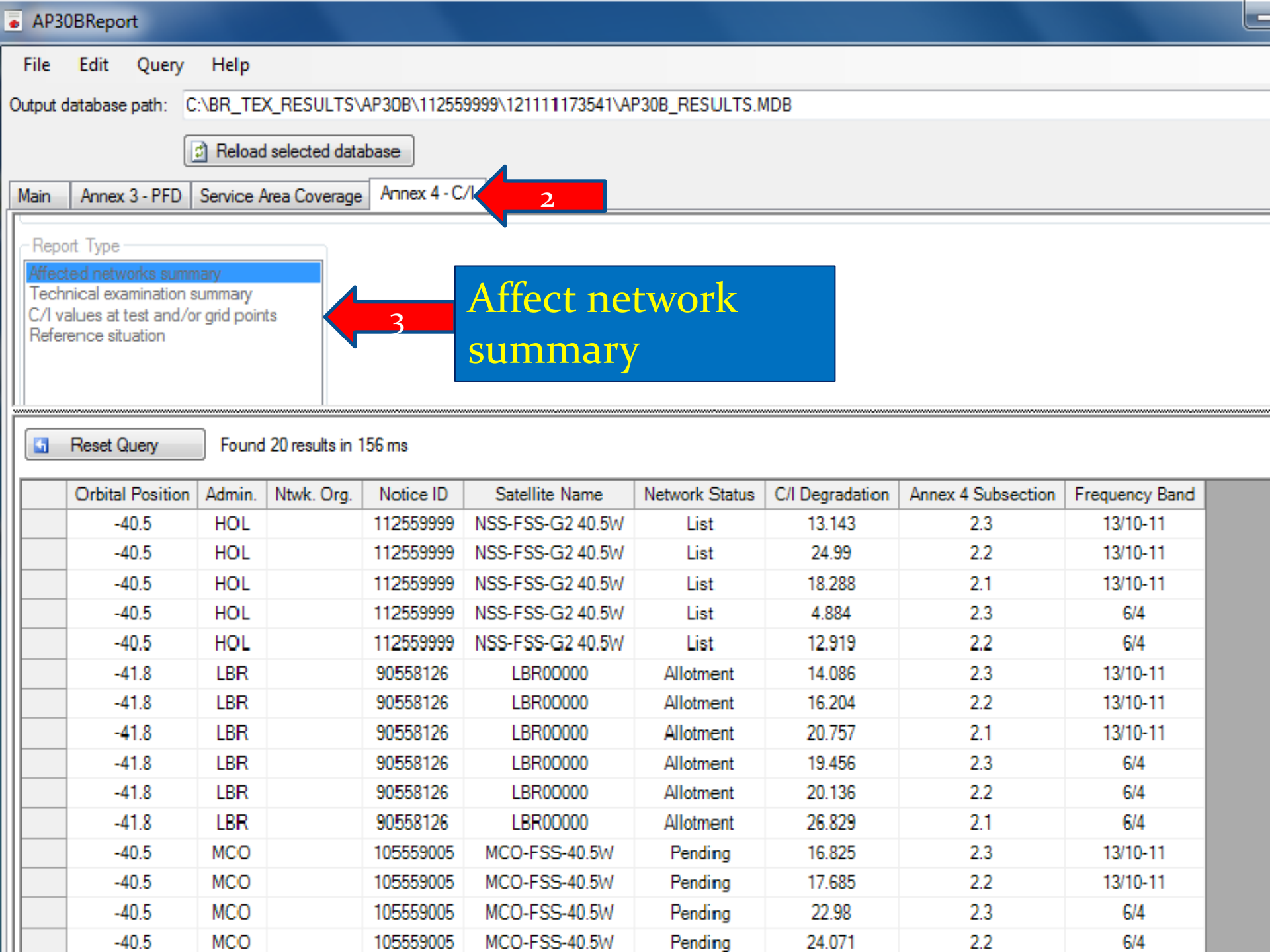



AP30BReport
File
Edit
Query
Help
Output database path:
C:\BR_TEX_RESULTS\AP30B\112559999\121111173541\AP30B_RESULTS.MDB
Reload selected database
1
Main
Annex 3 - PFD
Service Area Coverage
Annex 4 - C/I
Details of the anlayzed network
Analyzed Network
Notice ID:
112559999
Administration:
HOL
Satellite Name:
NSS-FSS-G2 40.5W
Satellite Position:
-40.5
Provision:
A30B#6.1A

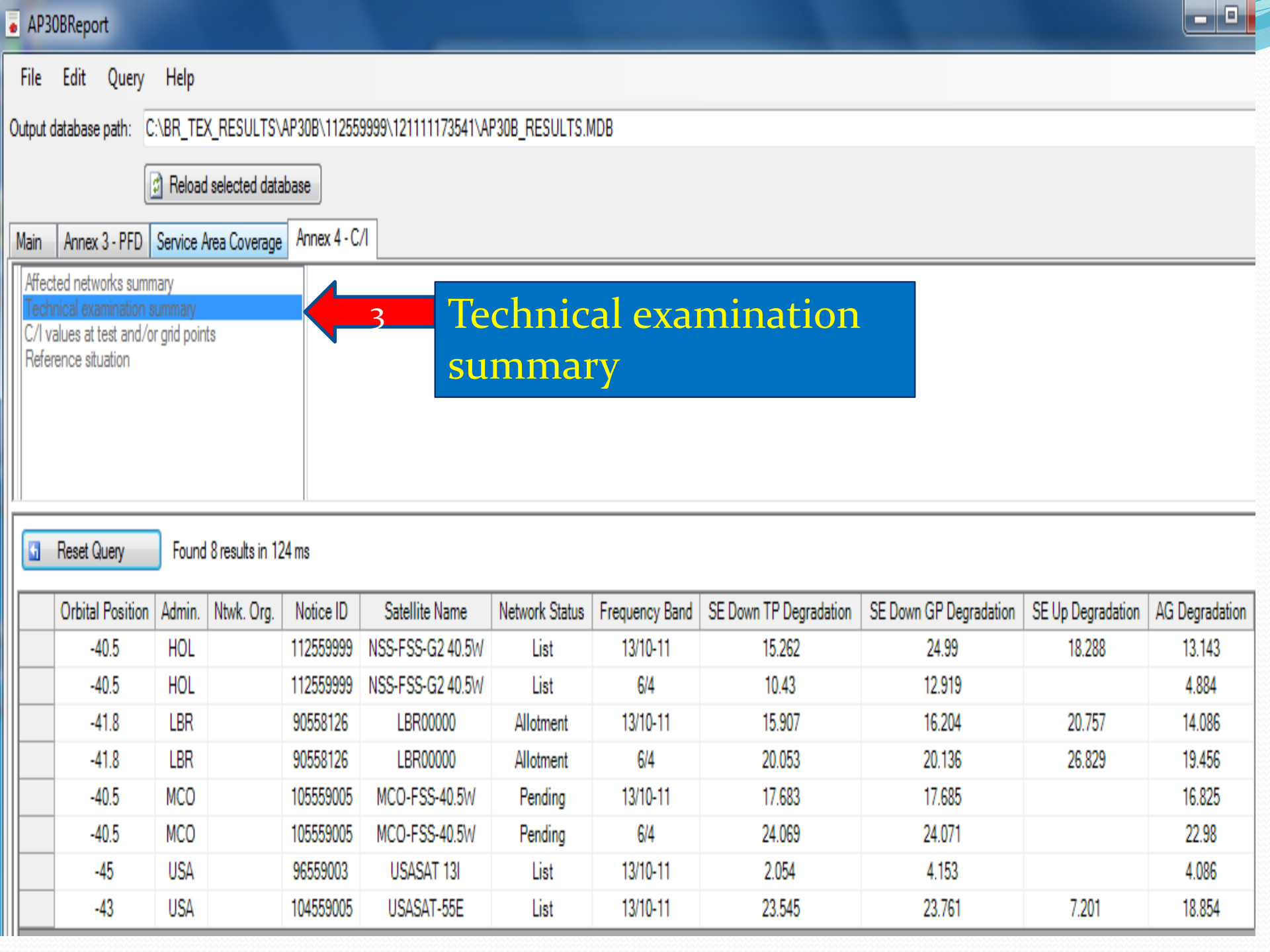

AP30BReport
File
Edit
Query
Help
Output database path:
C:\BR_TEX_RESULTS\AP30B\112559999\121111173541\AP30B_RESULTS.MDB
Reload selected database
Main
Annex 3 - PFD
Service Area Coverage
2
Service area coverage
Analysis Parameters
Input database path:
C:\Users\Administrator\Desktop\WRS-12\VEN\AP30B Exercise\30B_9999.mdb
Analysis started on:
11/11/2012 5:35 PM
Analysis ended on:
11/11/2012 5:36 PM
Analysis was run by:
Administrator
Software version:
C:\Br_soft\2.6.0.0
In production?:
Analysis succeeded?
Run Query
3
Beam Name
E/R
SA Number
Notifying administration/Geographical area
RCG
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 ;...
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 ;...



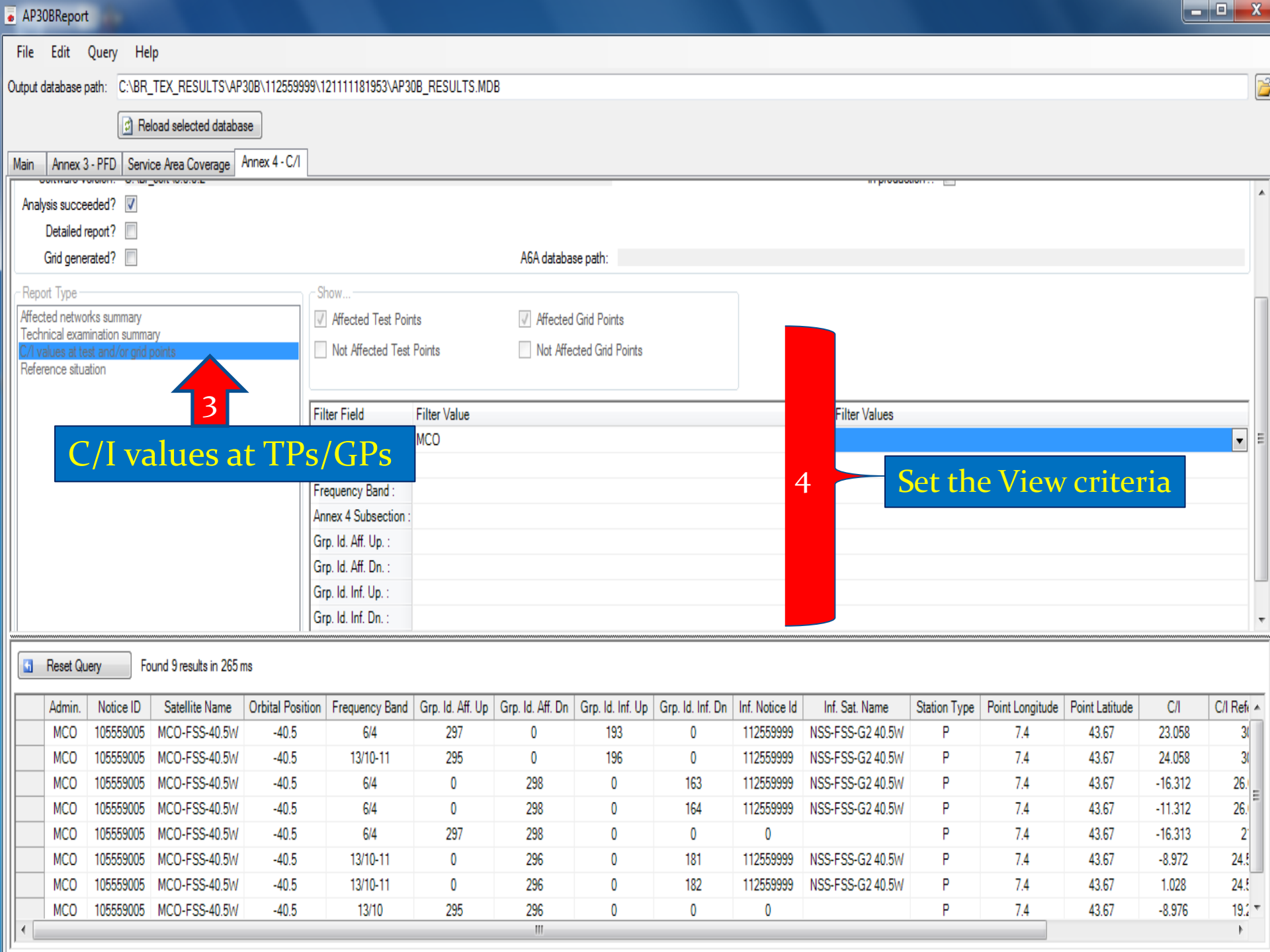
	Beam Name	E/R	Frequency Band	Group ID	Point Type	Point Longitude	Point Latitude	PFD Excess	PFD Limit	Worst GSO Pos.
	RCG	R	6/4	193	F	-99.16	19.28	1.369	-140	-50.5
	RCG	R	6/4	193	F	-90.38	14.27	1.3	-140	-50.5
	RCG	R	6/4	193	F	-84.13	9.56	1.246	-140	-50.5
	RCG	R	6/4	193	F	-79.1	8.29	1.204	-140	-50.5
	RCG	R	6/4	193	F	-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	R	6/4	193	F	-68.14	-16.22	1.126	-140	-50.5
	RCG	R	6/4	193	F	-66.58	10.38	1.109	-140	-50.5



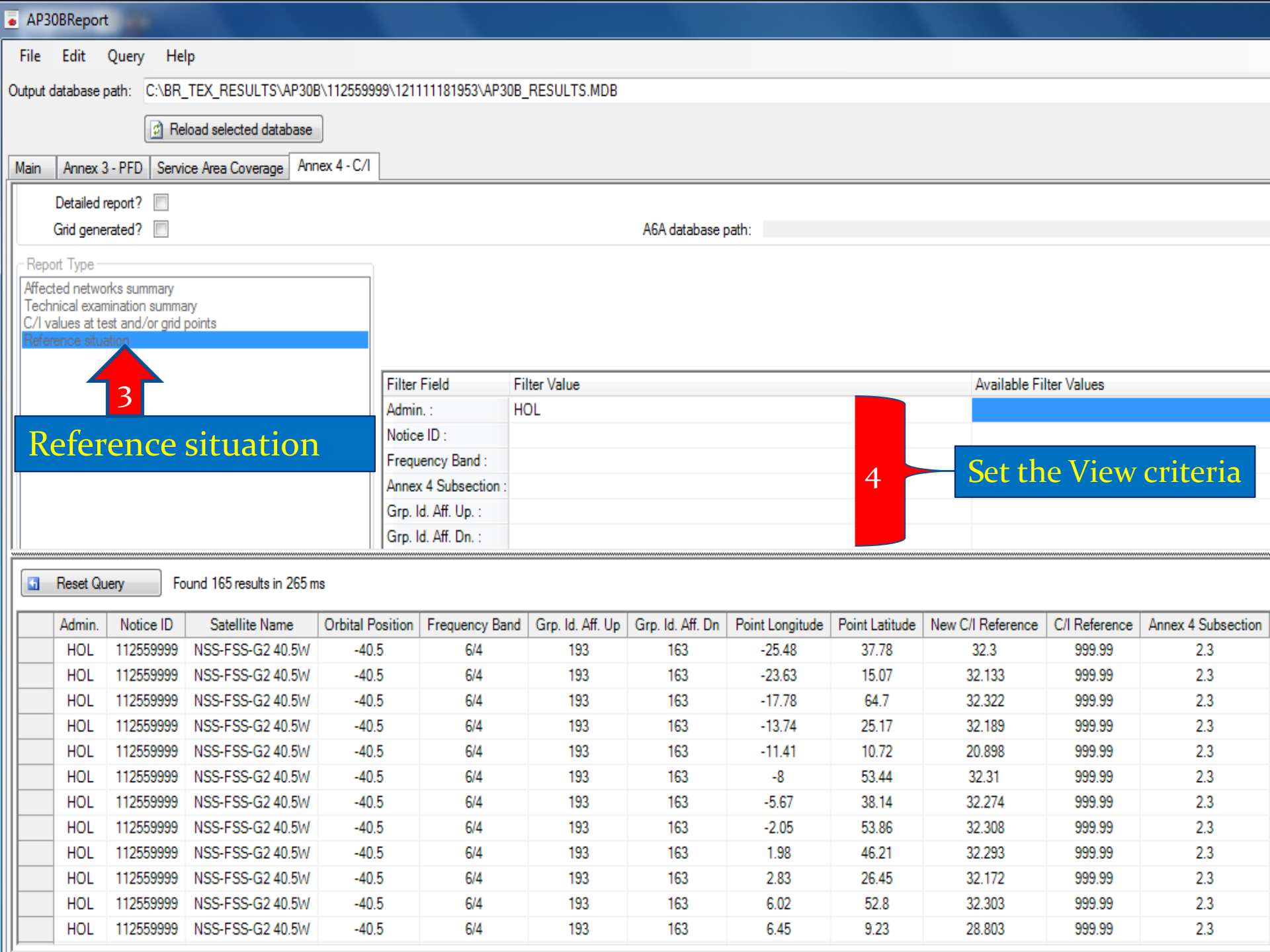
	Orbital Position	Admin.	Ntwk. Org.	Notice ID	Satellite Name	Network Status	C/I Degradation	Annex 4 Subsection	Frequency Band
	-40.5	HOL		112559999	NSS-FSS-G2 40.5W	List	13.143	2.3	13/10-11
	-40.5	HOL		112559999	NSS-FSS-G2 40.5W	List	24.99	2.2	13/10-11
	-40.5	HOL		112559999	NSS-FSS-G2 40.5W	List	18.288	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



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



Admin.	Notice ID	Satellite Name	Orbital Position	Frequency Band	Grp. Id. Aff. Up	Grp. Id. Aff. Dn	Grp. Id. Inf. Up	Grp. Id. Inf. Dn	Inf. Notice Id	Inf. Sat. Name	Station Type	Point Longitude	Point Latitude	C/I	C/I Ref
MCO	105559005	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
MCO	105559005	MCO-FSS-40.5W	-40.5	13/10-11	295	0	196	0	112559999	NSS-FSS-G2 40.5W	P	7.4	43.67	24.058	3
MCO	105559005	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.
MCO	105559005	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.
MCO	105559005	MCO-FSS-40.5W	-40.5	6/4	297	298	0	0	0		P	7.4	43.67	-16.313	2
MCO	105559005	MCO-FSS-40.5W	-40.5	13/10-11	0	296	0	181	112559999	NSS-FSS-G2 40.5W	P	7.4	43.67	-8.972	24.
MCO	105559005	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.
MCO	105559005	MCO-FSS-40.5W	-40.5	13/10	295	296	0	0	0		P	7.4	43.67	-8.976	19.



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	999.99	2.3
HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	1.98	46.21	32.293	999.99	2.3
HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	2.83	26.45	32.172	999.99	2.3
HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	6.02	52.8	32.303	999.99	2.3
HOL	112559999	NSS-FSS-G2 40.5W	-40.5	6/4	193	163	6.45	9.23	28.803	999.99	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 ?

International Telecommunication Union