ITUEvents

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www.itu.int/go/ITU-R/WRS-18

Graphical Interference Management System

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Content

- **Discover GIMS functionalities**
- **Understand GIMS interactions with other BR Space Software**
- **Case Study:**
  - Create a new filing based on an existing network

Appendix 4

Appendix 4

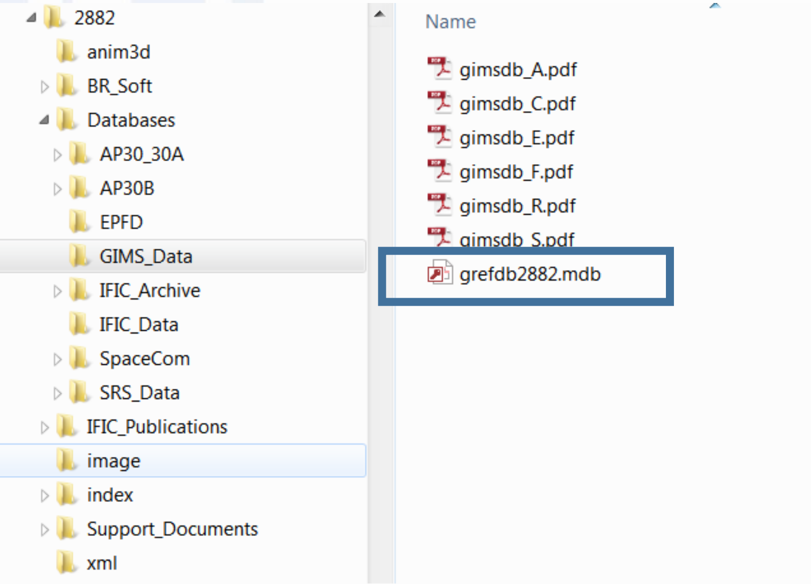
- Alphanumerical data
  - SpaceCap
  - SNS-formatted database
- Graphical data
  - B.3.b, B.3.e, C.11.a
  - GIMS
  - GIMS database

GIMS Database Overview

- **MS Access Database**
  - Protected.
  - Modified via software (GIMS, GIMAPI32.DLL)
  - For read-only access with MS Access: https://www.itu.int/en/ITU-R/software/Documents/gims/tutorial/open_gdb_access.pdf

- **Separate from SRS_ALL, SPS_ALL**

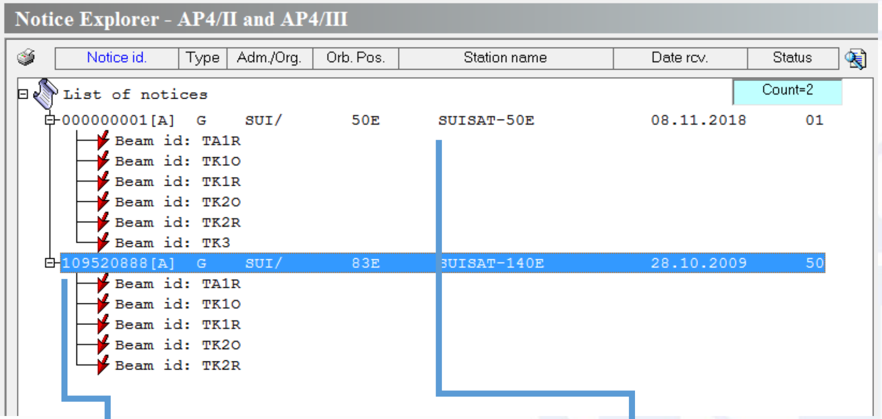
- **All diagram data only on BR IFIC**
  - Read-only


2882
anim3d
BR_Soft
Databases
AP30_30A
AP30B
EPFD
GIMS_Data
IFIC_Archive
IFIC_Data
SpaceCom
SRS_Data
IFIC_Publications
image
index
Support_Documents
xml
Name
gimsdb_A.pdf
gimsdb_C.pdf
gimsdb_E.pdf
gimsdb_F.pdf
gimsdb_R.pdf
gimsdb_S.pdf
grefdb2882.mdb

Case Study

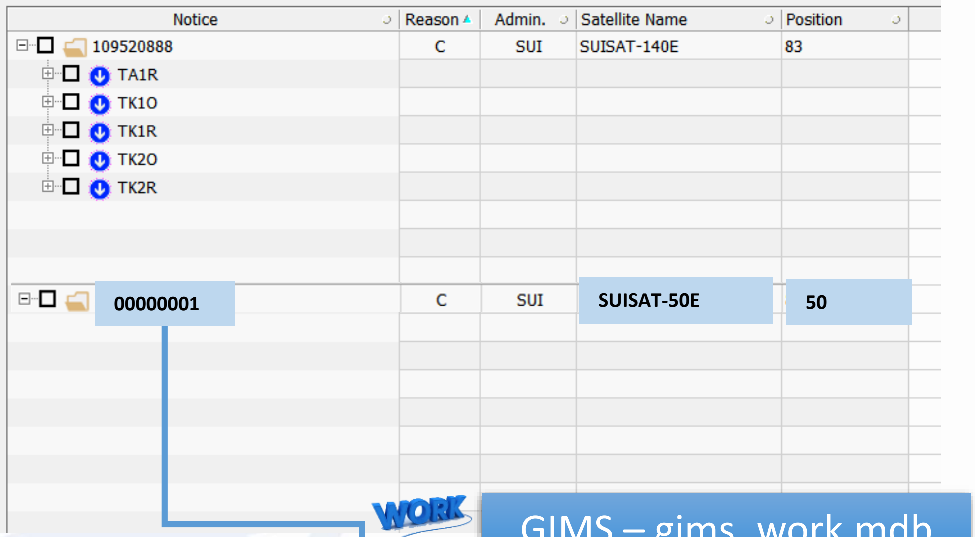
SpaceCap - sns_sample.mdb

GIMS – gims_sample.mdb



Notice Explorer - AP4/II and AP4/III

Notice id.	Type	Adm./Org.	Orb. Pos.	Station name	Date rcv.	Status
List of notices						Count=2
000000001 [A]	G	SUI/	50E	SUISAT-50E	08.11.2018	01
Beam id: TA1R						
Beam id: TK1O						
Beam id: TK1R						
Beam id: TK2O						
Beam id: TK2R						
Beam id: TK3						
109520888 [A]	G	SUI/	83E	SUISAT-140E	28.10.2009	50
Beam id: TA1R						
Beam id: TK1O						
Beam id: TK1R						
Beam id: TK2O						
Beam id: TK2R						



Notice	Reason	Admin.	Satellite Name	Position
☐ 109520888	C	SUI	SUISAT-140E	83
☐ TA1R				
☐ TK1O				
☐ TK1R				
☐ TK2O				
☐ TK2R				
☐ 00000001	C	SUI	SUISAT-50E	50

GIMS – gims_work.mdb

Existing network (109520888)

New network (000000001)

Cloned

New name

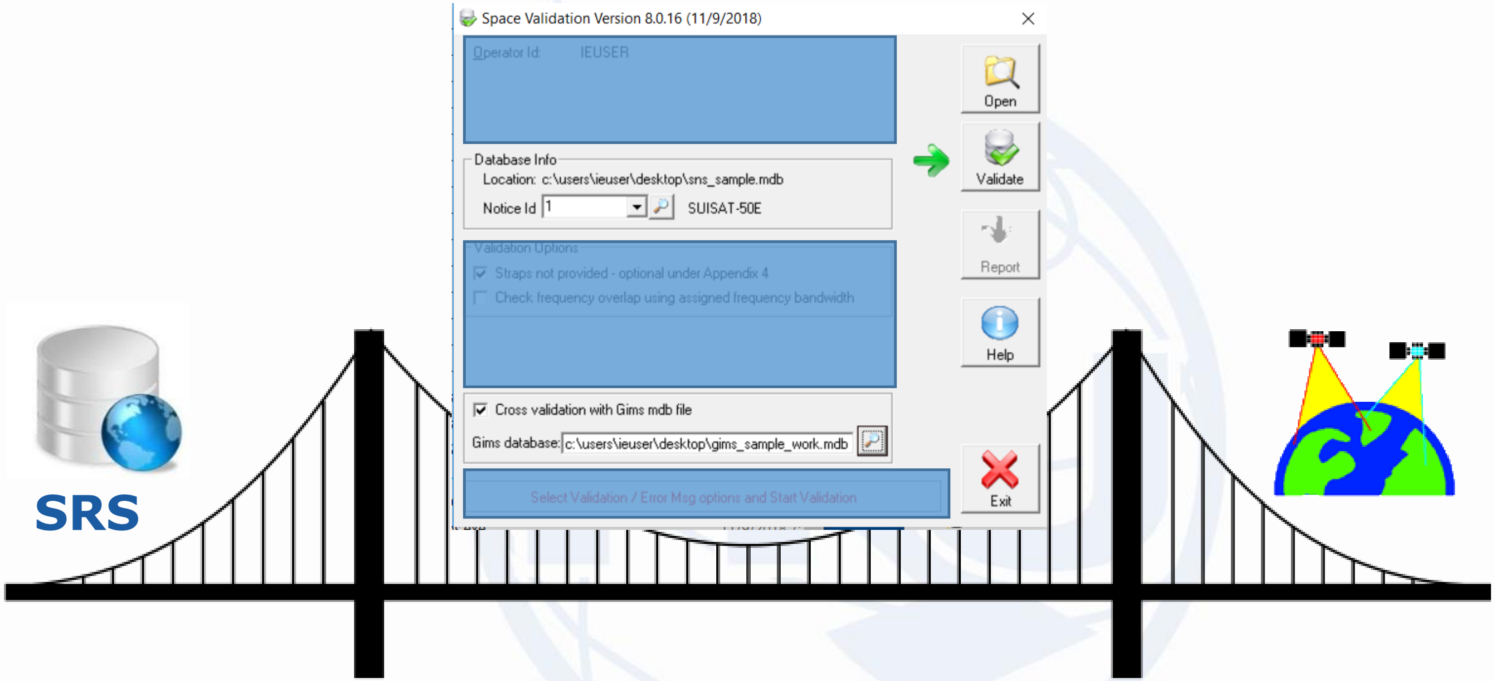
New beam

New orbital position

Our objective

GIMS – gims_final.mdb

SpaceVal Cross-Validation



Space Validation Version 8.0.16 (11/9/2018)

Operator Id: IEUSER

Database Info

Location: c:\users\ieuser\desktop\sns_sample.mdb

Notice Id 1 SUISAT-50E

Validation Options

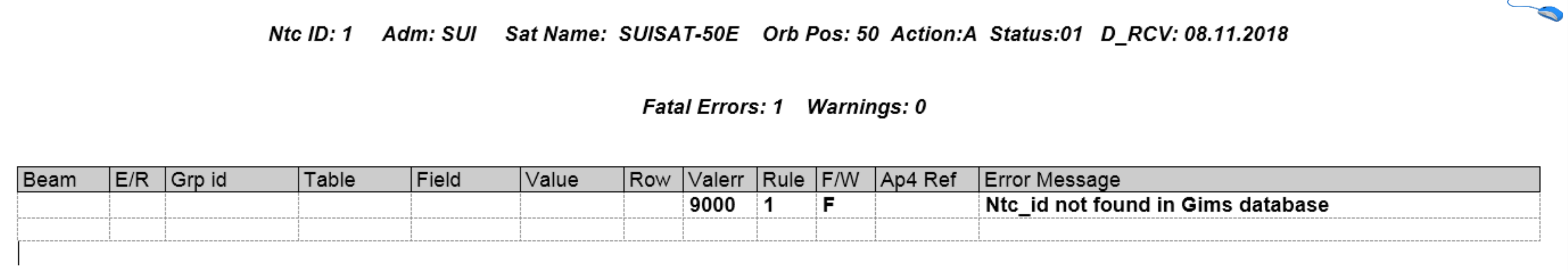
☑ Straps not provided - optional under Appendix 4

☐ Check frequency overlap using assigned frequency bandwidth

☑ Cross validation with Gims mdb file

Gims database: c:\users\ieuser\desktop\gims_sample_work.mdb

Select Validation / Error Msg options and Start Validation

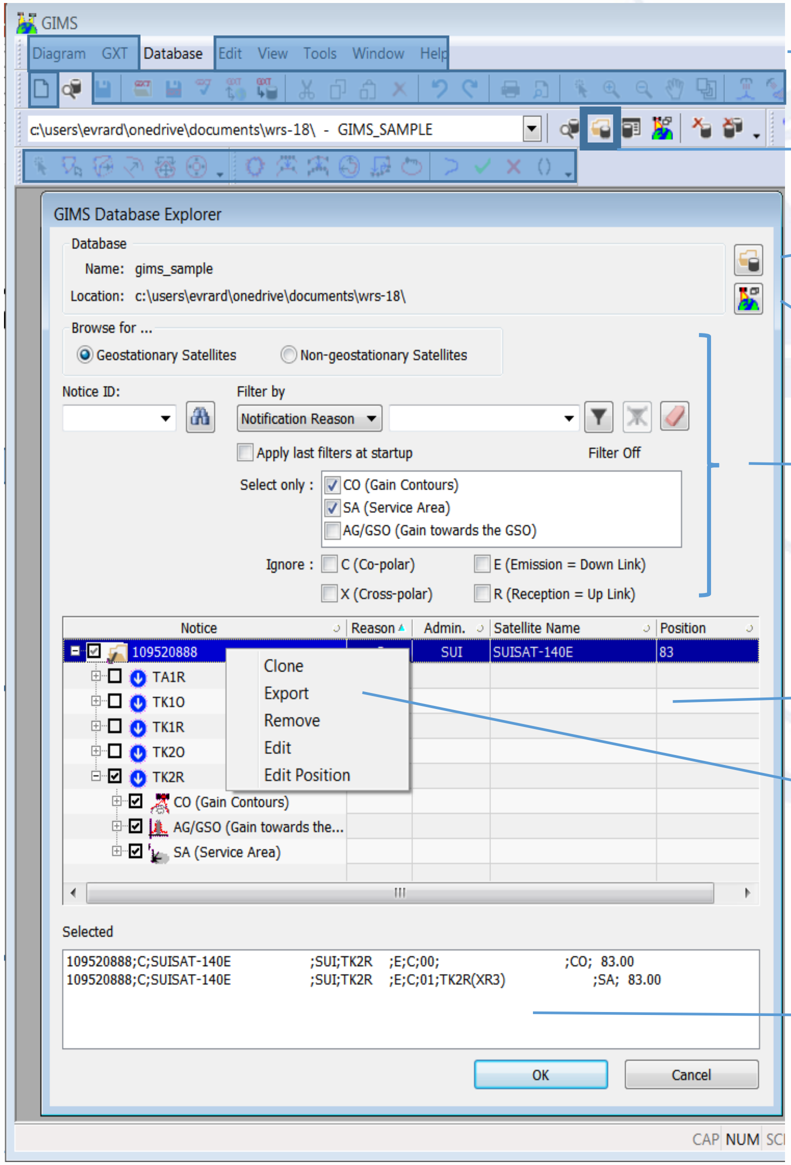


Ntc ID: 1 Adm: SUI Sat Name: SUISAT-50E Orb Pos: 50 Action:A Status:01 D_RCV: 08.11.2018

Fatal Errors: 1 Warnings: 0

Beam	E/R	Grp id	Table	Field	Value	Row	Valerr	Rule	F/W	Ap4 Ref	Error Message
							9000	**1**	**F**		**Ntc_id not found in Gims database**

Database Utilities



c:\users\evrard\onedrive\documents\wrs-18\ - GIMS_SAMPLE

Database
Name: gims_sample
Location: c:\users\evrard\onedrive\documents\wrs-18\

Browse for ...
● Geostationary Satellites ○ Non-geostationary Satellites

Notice ID:
Filter by: Notification Reason
☐ Apply last filters at startup
Filter Off

Select only :
☑ CO (Gain Contours)
☑ SA (Service Area)
☐ AG/GSO (Gain towards the GSO)

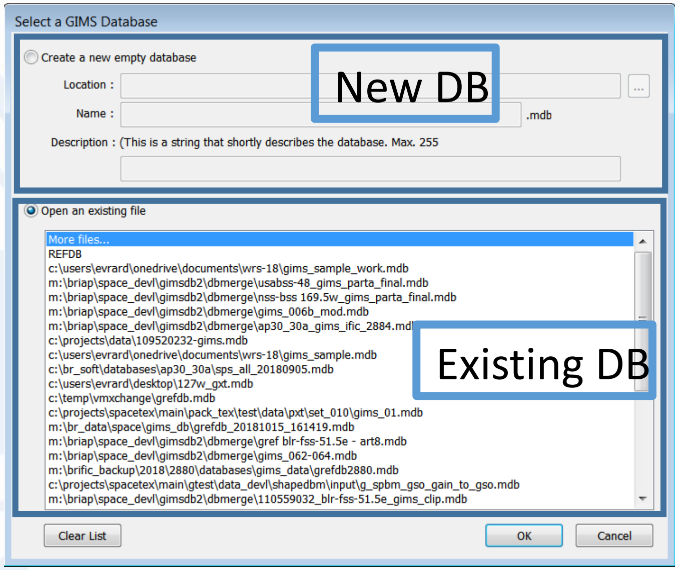
Ignore :
☐ C (Co-polar)
☐ E (Emission = Down Link)
☐ X (Cross-polar)
☐ R (Reception = Up Link)

Notice	Reason	Admin.	Satellite Name	Position
☑ 109520888		SUI	SUISAT-140E	83
☐ TA1R				
☐ TK1O				
☐ TK1R				
☐ TK2O				
☑ TK2R				
☑ CO (Gain Contours)				
☑ AG/GSO (Gain towards the...				
☑ SA (Service Area)				

Selected

```
109520888;C;SUISAT-140E          ;SUI;TK2R   ;E;C;00;                ;CO;  83.00
109520888;C;SUISAT-140E          ;SUI;TK2R   ;E;C;01;TK2R(XR3)          ;SA;  83.00
```

Database Menu / Toolbar



○ Create a new empty database

New DB

Description : (This is a string that shortly describes the database. Max. 255

● Open an existing file

More files...
REFDB
c:\users\evrard\onedrive\documents\wrs-18\gims_sample_work.mdb
m:\briap\space_devl\gimsdb2\dbmerge\usabss-48_gims_parta_final.mdb
m:\briap\space_devl\gimsdb2\dbmerge\nss-bss 169.5w_gims_parta_final.mdb
m:\briap\space_devl\gimsdb2\dbmerge\gims_006b_mod.mdb
m:\briap\space_devl\gimsdb2\dbmerge\ap30_30a_gims_ific_2884.md
c:\projects\data\109520232-gims.mdb
c:\users\evrard\onedrive\documents\wrs-18\gims_sample.mdb
c:\br_soft\databases\ap30_30a\sps_all_20180905.mdb
c:\users\evrard\desktop\127w_gxt.mdb
c:\temp\vmxchange\grefdb.mdb
c:\projects\spacetex\main\pack_tex\test\data\pxt\set_010\gims_01.mdb
m:\br_data\space\gims_db\grefdb_20181015_161419.mdb
m:\briap\space_devl\gimsdb2\dbmerge\gref blr-fss-51.5e - art8.mdb
m:\briap\space_devl\gimsdb2\dbmerge\gims_062-064.mdb
m:\brific_backup\2018\2880\databases\gims_data\grefdb2880.mdb
c:\projects\spacetex\main\gtest\data_devl\shapedbm\input\g_spbm_gso_gain_to_gso.mdb
m:\briap\space_devl\gimsdb2\dbmerge\110559032_blr-fss-51.5e_gims_clip.mdb

Existing DB

Switch database to browse

Open GimsQry

Filtering

Data Tree

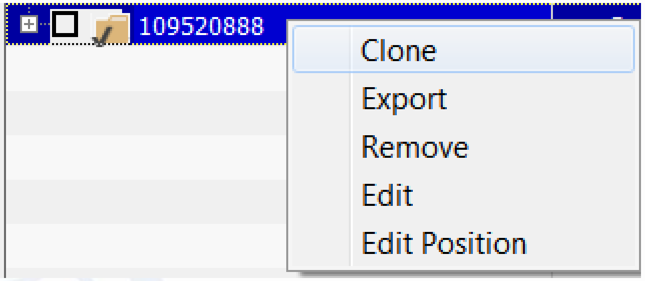
Bulk actions

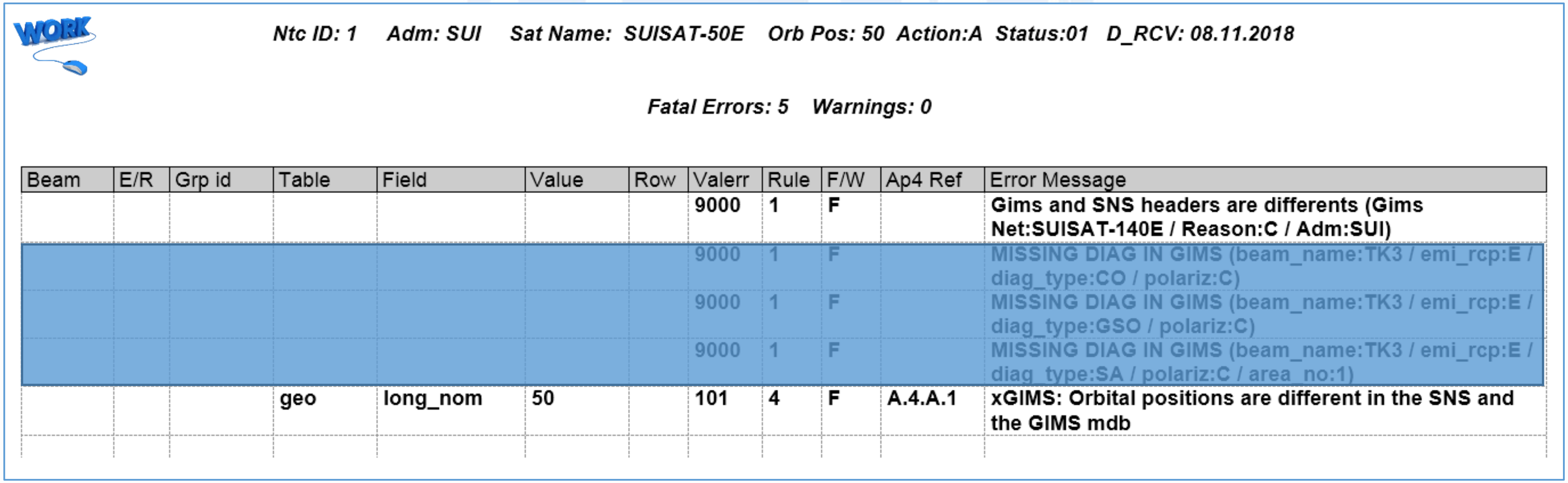
Selected diagrams to act on (show, print...)

Open gims_work.mdb

Clone & Cross-Validate

In gims_work.mdb,
clone 109520888 into 000000001





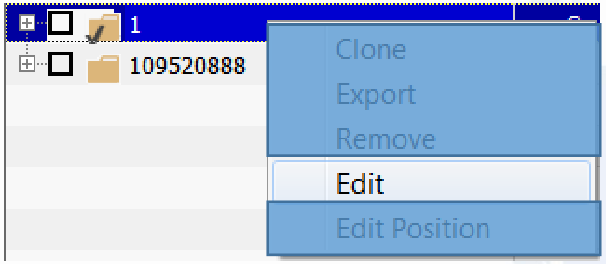
Ntc ID: 1 Adm: SUI Sat Name: SUISAT-50E Orb Pos: 50 Action:A Status:01 D_RCV: 08.11.2018

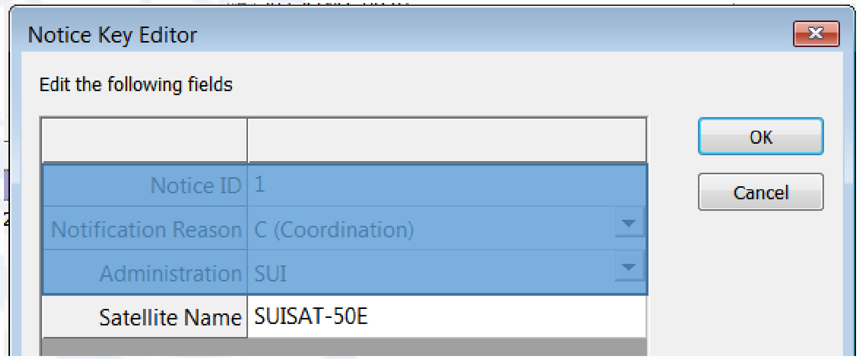
Fatal Errors: 5 Warnings: 0

Beam	E/R	Grp id	Table	Field	Value	Row	Valerr	Rule	F/W	Ap4 Ref	Error Message
							9000	**1**	**F**		**Gims and SNS headers are differents (Gims Net:SUISAT-140E / Reason:C / Adm:SUI)**
							9000	**1**	**F**		**MISSING DIAG IN GIMS (beam_name:TK3 / emi_rcp:E / diag_type:CO / polariz:C)**
							9000	**1**	**F**		**MISSING DIAG IN GIMS (beam_name:TK3 / emi_rcp:E / diag_type:GSO / polariz:C)**
							9000	**1**	**F**		**MISSING DIAG IN GIMS (beam_name:TK3 / emi_rcp:E / diag_type:SA / polariz:C / area_no:1)**
			geo	**long_nom**	**50**		**101**	**4**	**F**	**A.4.A.1**	**xGIMS: Orbital positions are different in the SNS and the GIMS mdb**

Correct Notice Level Data Items

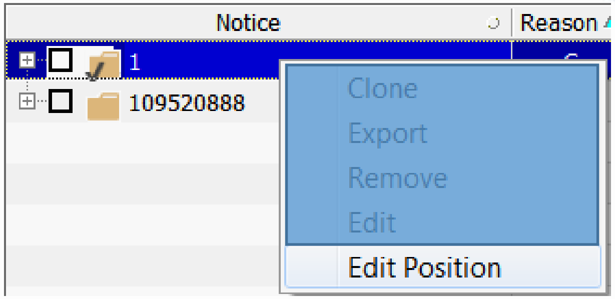
- **Use Edit & Edit Position features in context menu of database explorer**

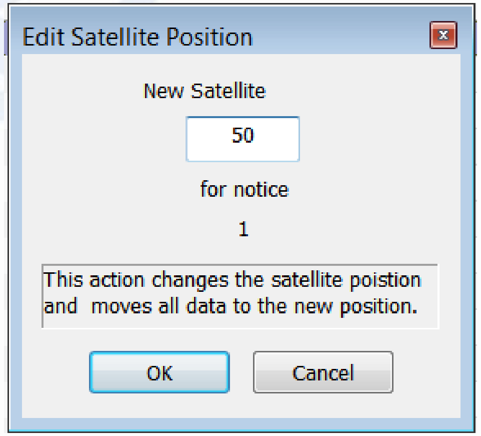

1
109520888
Clone
Export
Remove
Edit
Edit Position


Notice Key Editor
OK
Cancel

Edit the following fields

Notice ID	1
Notification Reason	C (Coordination)
Administration	SUI
Satellite Name	SUISAT-50E


Notice
Reason
1
109520888
Clone
Export
Remove
Edit
Edit Position


Edit Satellite Position
OK
Cancel

New Satellite

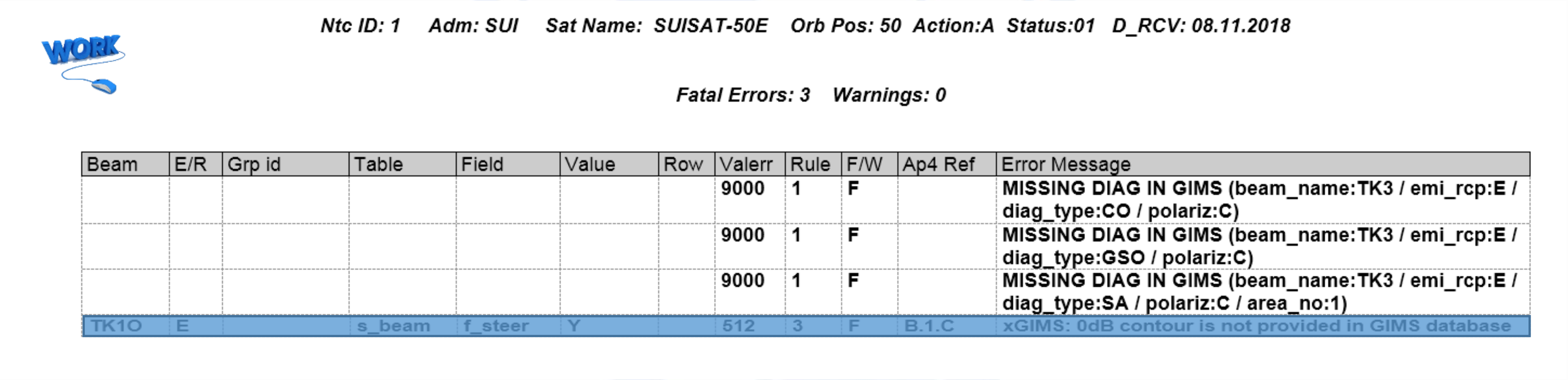
50

for notice

1

This action changes the satellite poistion and moves all data to the new position.

SpaceVal Cross-Validation



Ntc ID: 1   Adm: SUI   Sat Name: SUISAT-50E   Orb Pos: 50 Action:A Status:01   D_RCV: 08.11.2018

Fatal Errors: 3   Warnings: 0

Beam	E/R	Grp id	Table	Field	Value	Row	Valerr	Rule	F/W	Ap4 Ref	Error Message
							9000	1	F		MISSING DIAG IN GIMS (beam_name:TK3 / emi_rcp:E / diag_type:CO / polariz:C)
							9000	1	F		MISSING DIAG IN GIMS (beam_name:TK3 / emi_rcp:E / diag_type:GSO / polariz:C)
							9000	1	F		MISSING DIAG IN GIMS (beam_name:TK3 / emi_rcp:E / diag_type:SA / polariz:C / area_no:1)
TK1O	E		s_beam	f_steer	Y		512	3	F	B.1.C	xGIMS: 0dB contour is not provided in GIMS database

Antenna Gain Contours (CO)

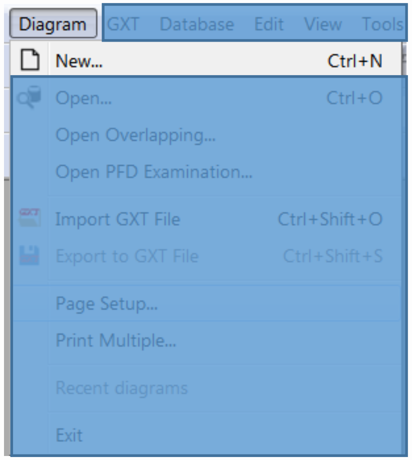
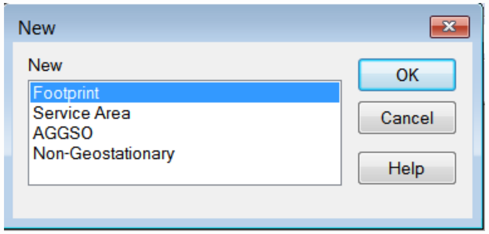
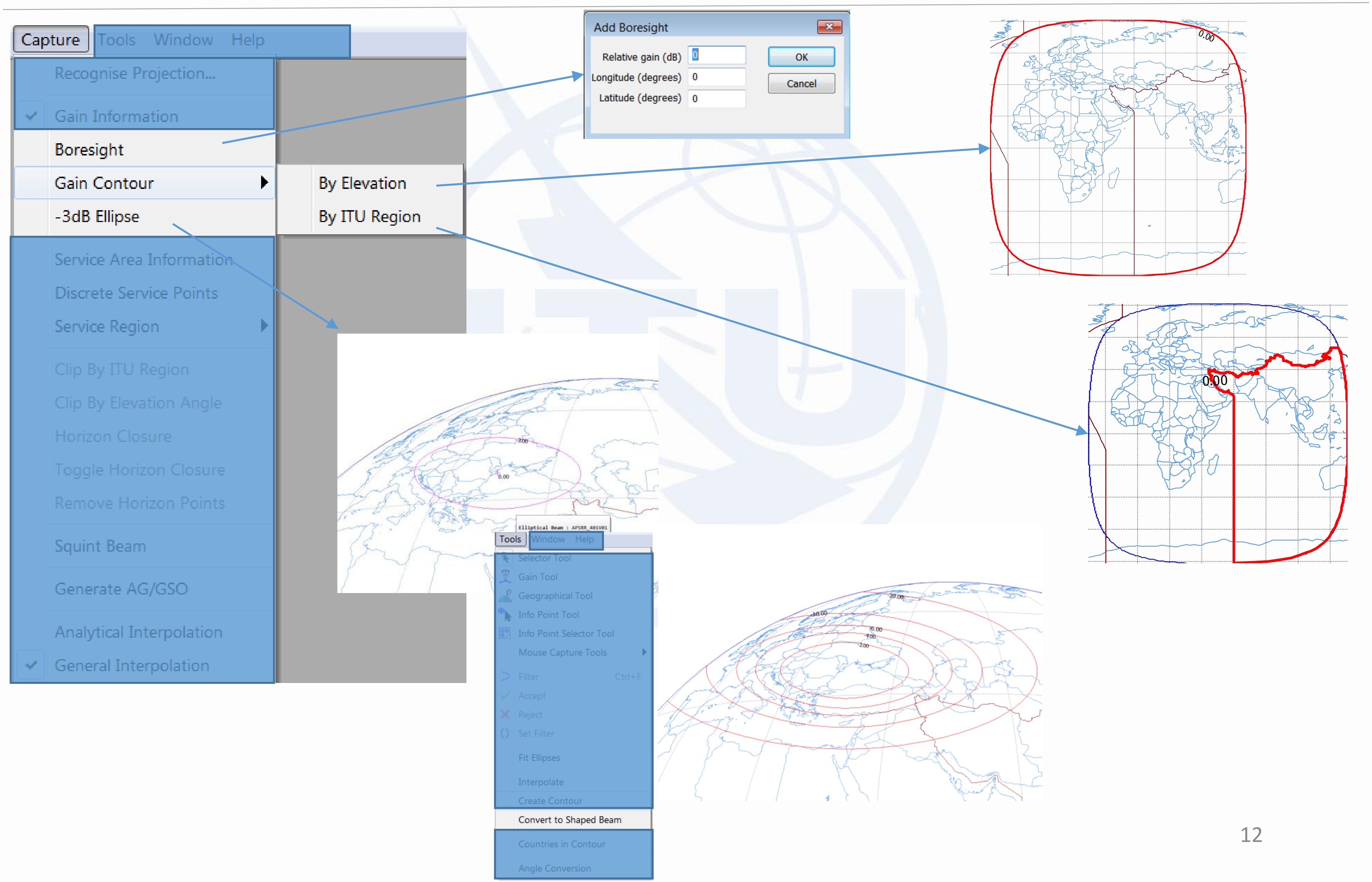


Diagram
GXT
Database
Edit
View
Tools
New... Ctrl+N
Open... Ctrl+O
Open Overlapping...
Open PFD Examination...
Import GXT File Ctrl+Shift+O
Export to GXT File Ctrl+Shift+S
Page Setup...
Print Multiple...
Recent diagrams
Exit


New
New
Footprint
Service Area
AGGSO
Non-Geostationary
OK
Cancel
Help

- ➢ **What for ?**
  - Provide antenna gain
- ➢ **Data Capture**
  - Simple generated contours
  - Use a digitizer
  - Mouse capture tools
  - Modify existing diagram

Simple Generated Contours



Add Boresight

Relative gain (dB): 0

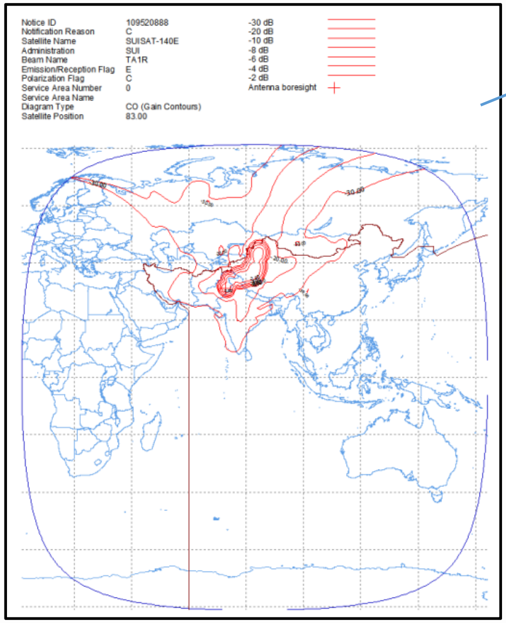
Longitude (degrees): 0

Latitude (degrees): 0

Capture
Tools
Window
Help
Recognise Projection...
Gain Information
Boresight
Gain Contour
-3dB Ellipse
By Elevation
By ITU Region
Service Area Information
Discrete Service Points
Service Region
Clip By ITU Region
Clip By Elevation Angle
Horizon Closure
Toggle Horizon Closure
Remove Horizon Points
Squint Beam
Generate AG/GSO
Analytical Interpolation
General Interpolation
OK
Cancel
0.00
3.00
Elliptical Beam : APSRR_401V01
Selector Tool
Gain Tool
Geographical Tool
Info Point Tool
Info Point Selector Tool
Mouse Capture Tools
Filter
Ctrl+F
Accept
Reject
Set Filter
Fit Ellipses
Interpolate
Create Contour
Convert to Shaped Beam
Countries in Contour
Angle Conversion
20.00
10.00
6.00
4.00
2.00

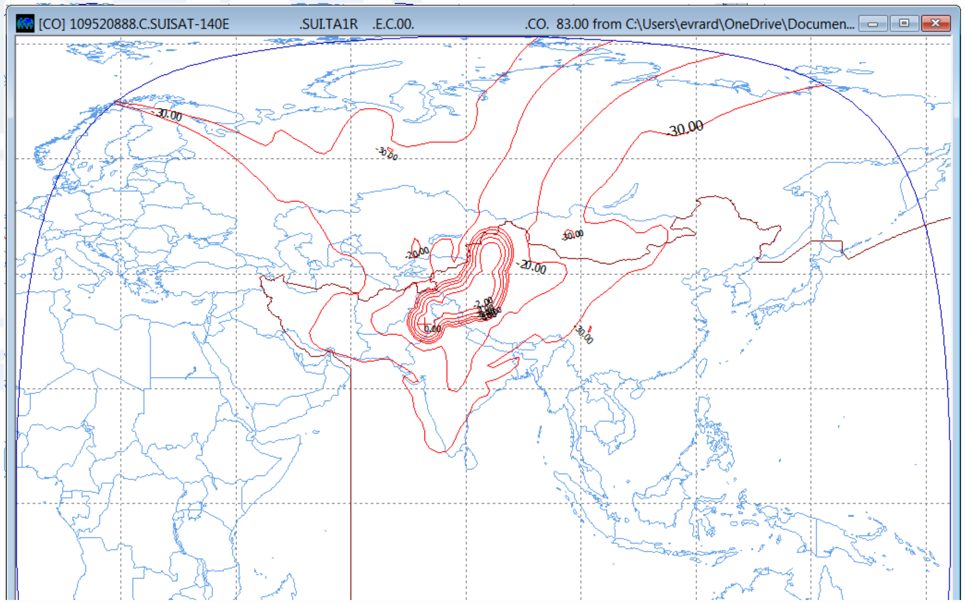
Use a Digitizer

Diagram on paper



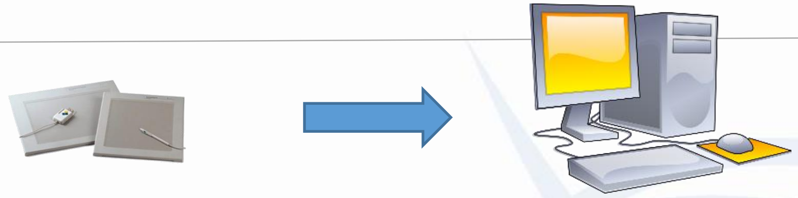
Notice ID	109520888
Notification Reason	C
Satellite Name	SUISAT-140E
Administration	SUI
Beam Name	TA1R
Emission/Reception Flag	E
Polarization Flag	C
Service Area Number	0
Service Area Name	
Diagram Type	CO (Gain Contours)
Satellite Position	83.00

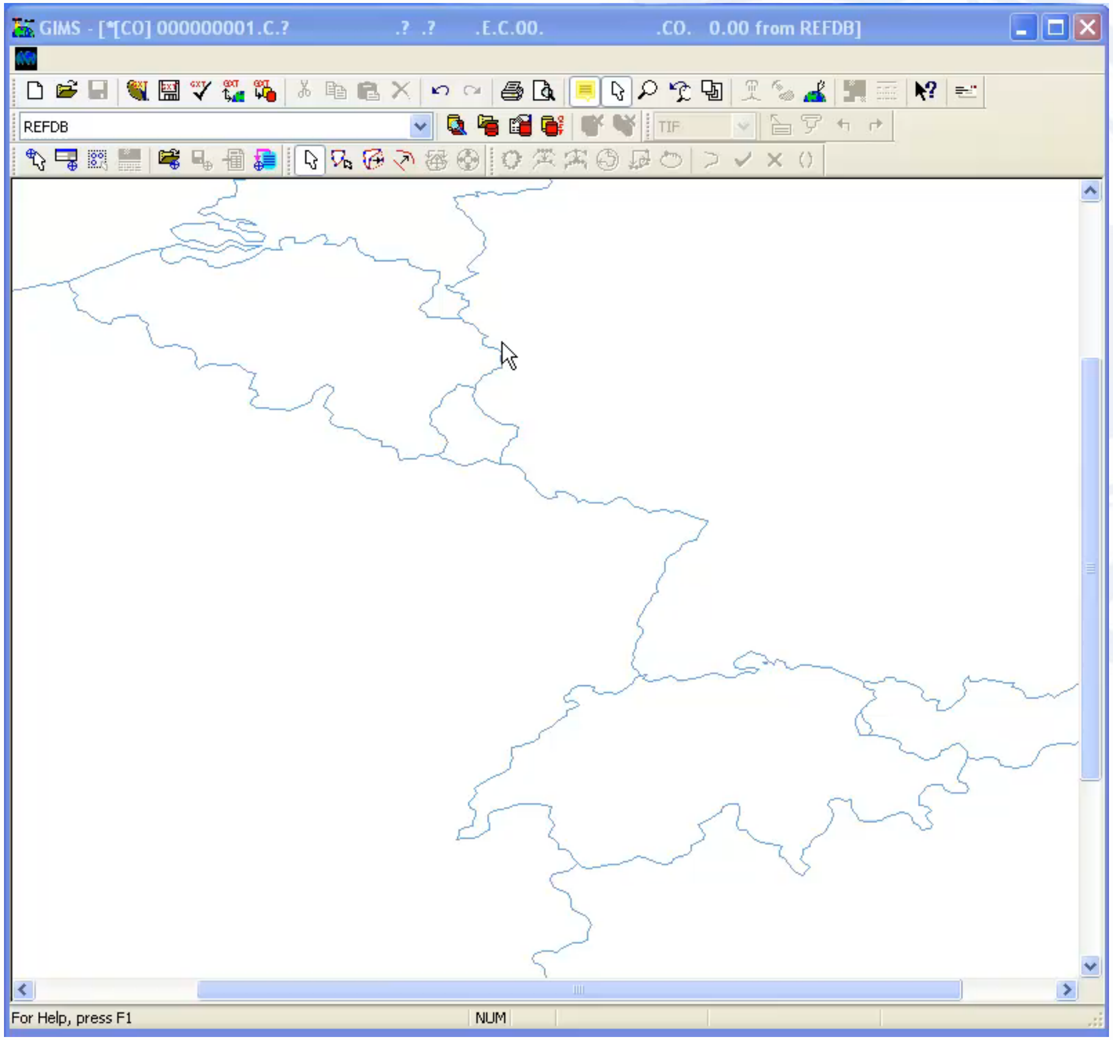
-30 dB	—
-20 dB	—
-10 dB	—
-8 dB	—
-6 dB	—
-4 dB	—
-2 dB	—
Antenna boresight	+



[CO] 109520888.C.SUISAT-140E .SUI.TA1R .E.C.00. .CO. 83.00 from C:\Users\evrard\OneDrive\Documen...

Mouse Capture Tools



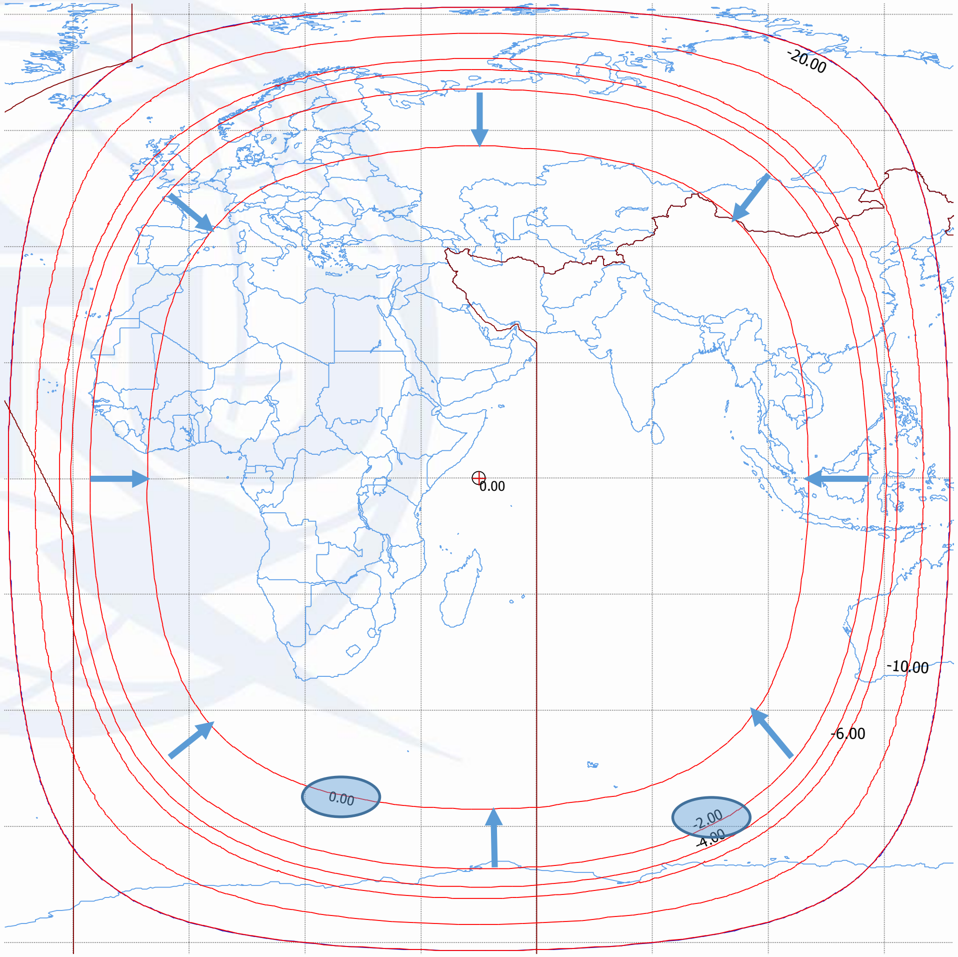

GIMS - [*[CO] 000000001.C.? .? .? .E.C.00. .CO. 0.00 from REFDB]
REFDB
TIF
For Help, press F1
NUM

- Click and create contour
- Drag & add contour points
- Curve contour segments
- Move and rotate contours
- Shrink and expand contours
- New filter toolbar

Steerable Beams Cross Validation

TK1O	E		s_beam	f_steer	Y		512	3	F	B.1.C	xGIMS: 0dB contour is not provided in GIMS database

Shrink and expand contours

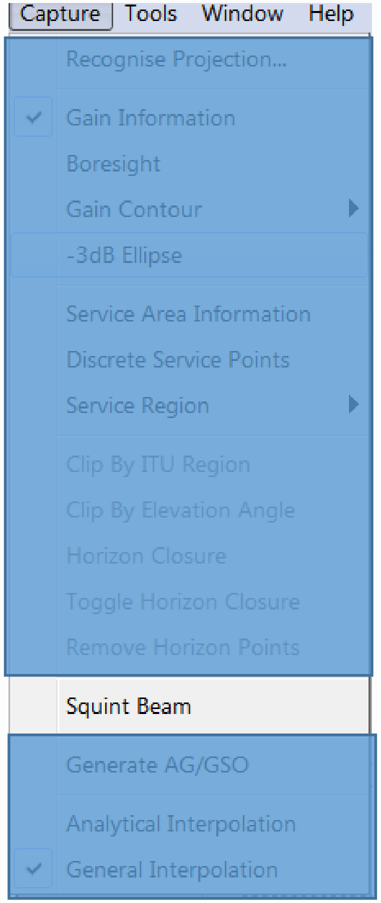


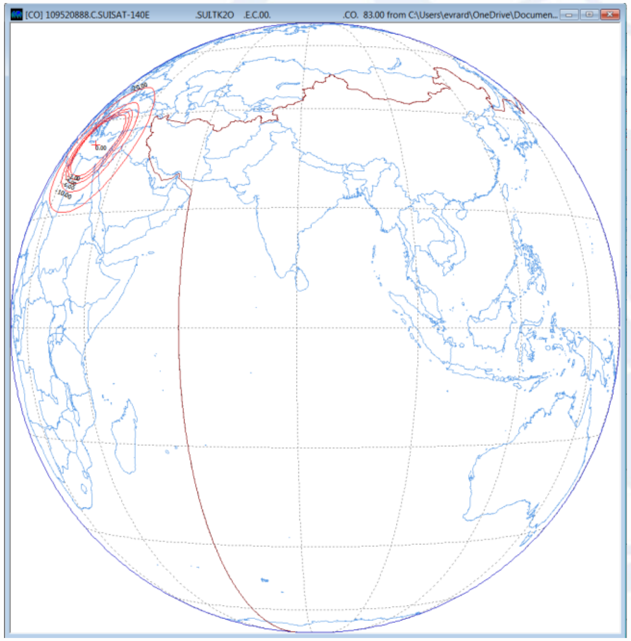
-20.00
0.00
-10.00
-6.00
0.00
-2.00
-4.00

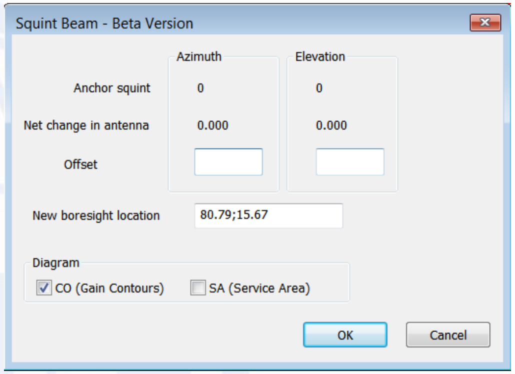
Open the beam TK1O, shrink the -2dB contour, set the gain of the new contour to 0 dB

Modify Existing Diagram

- ➢ **Use mouse tools**
- ➢ **Squint a beam**


Capture
Tools
Window
Help
Recognise Projection...
Gain Information
Boresight
Gain Contour
-3dB Ellipse
Service Area Information
Discrete Service Points
Service Region
Clip By ITU Region
Clip By Elevation Angle
Horizon Closure
Toggle Horizon Closure
Remove Horizon Points
Squint Beam
Generate AG/GSO
Analytical Interpolation
General Interpolation


[CO] 109520888.C.SUISAT-140E SULTK2O E.C.00. .CO. 83.00 from C:\Users\evrard\OneDrive\Documen...

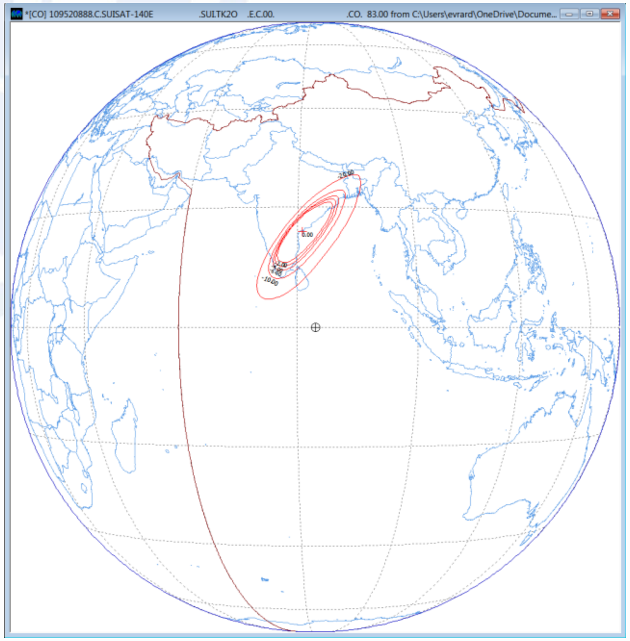

Squint Beam - Beta Version

	Azimuth	Elevation
Anchor squint	0	0
Net change in antenna	0.000	0.000
Offset		

New boresight location: 80.79;15.67

Diagram

☑ CO (Gain Contours) ☐ SA (Service Area)


*[CO] 109520888.C.SUISAT-140E SULTK2O E.C.00. .CO. 83.00 from C:\Users\evrard\OneDrive\Docume...

WORK

Squint the beam of the TK2O so that the boresight is at the location 50;34

Save Diagrams

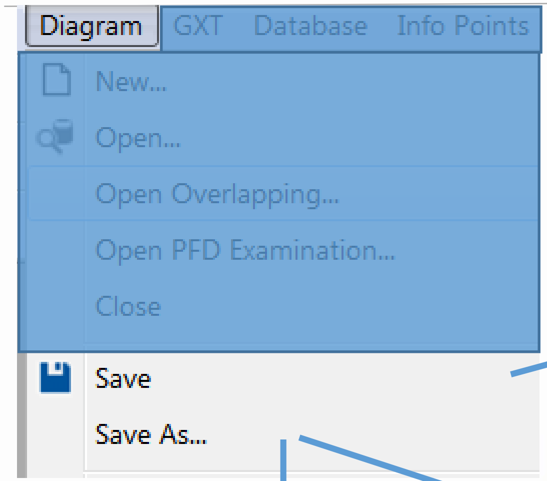


Diagram
GXT
Database
Info Points
New...
Open...
Open Overlapping...
Open PFD Examination...
Close
Save
Save As...

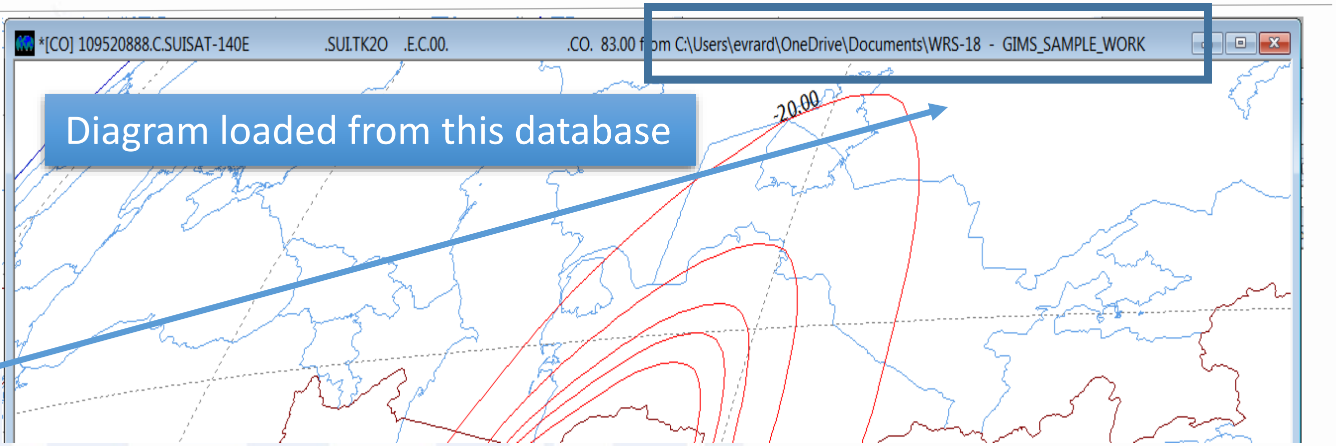

*[CO] 109520888.C.SUISAT-140E .SUI.TK2O .E.C.00. .CO. 83.00 from C:\Users\evrard\OneDrive\Documents\WRS-18 - GIMS_SAMPLE_WORK

Diagram loaded from this database

“ Current” database

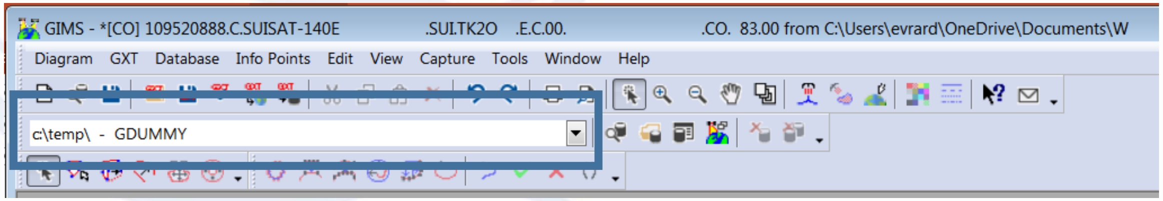

GIMS - *[CO] 109520888.C.SUISAT-140E .SUI.TK2O .E.C.00. .CO. 83.00 from C:\Users\evrard\OneDrive\Documents\W

Diagram
GXT
Database
Info Points
Edit
View
Capture
Tools
Window
Help

c:\temp\ - GDUMMY

Allows Key Editing

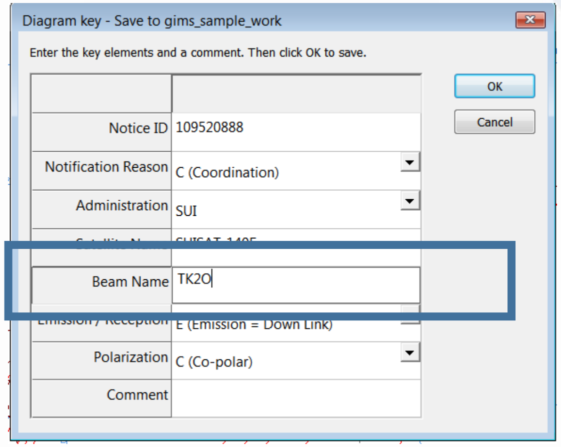


Diagram key - Save to gims_sample_work

Enter the key elements and a comment. Then click OK to save.

Notice ID	109520888
Notification Reason	C (Coordination)
Administration	SUI
Satellite Name	SUISAT-140E
Beam Name	TK2O
Emission / Reception	E (Emission = Down Link)
Polarization	C (Co-polar)
Comment	

WORK

“Save As” TK2O contours with new beam name TK3

“Save” TK1O

Service Area (SA)

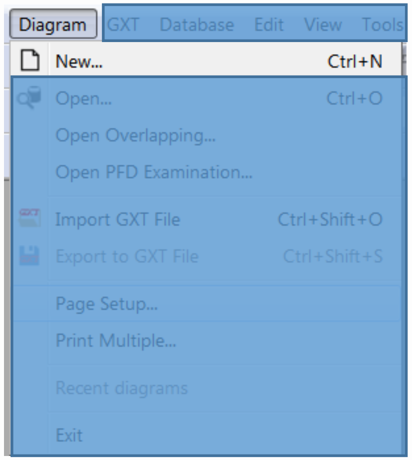
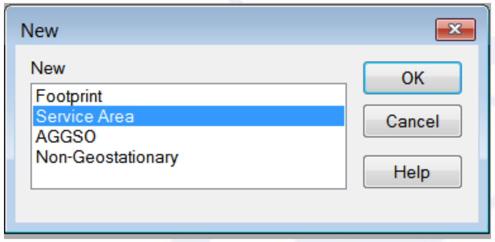


Diagram
GXT
Database
Edit
View
Tools
New... Ctrl+N
Open... Ctrl+O
Open Overlapping...
Open PFD Examination...
Import GXT File Ctrl+Shift+O
Export to GXT File Ctrl+Shift+S
Page Setup...
Print Multiple...
Recent diagrams
Exit


New
New
Footprint
Service Area
AGGSO
Non-Geostationary
OK
Cancel
Help

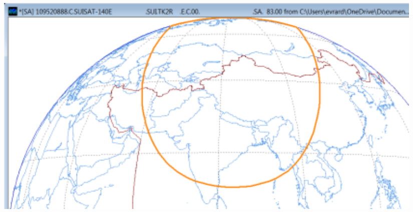
- **What for ?**
  - Define where service is to be provided (protection)
- **Data Capture**
  - Simple generated contours
  - Use a digitizer
  - Mouse capture tools
  - Modify existing diagram

Service Area = { **Service Regions** }

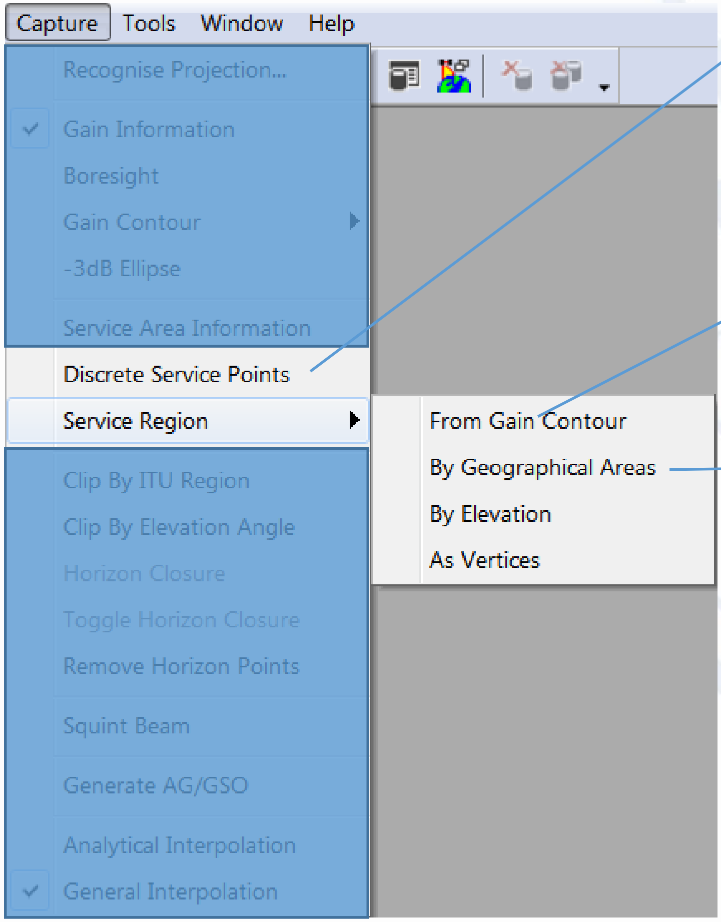
Geographical Areas

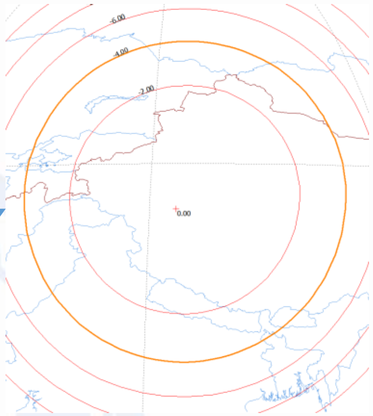
Points

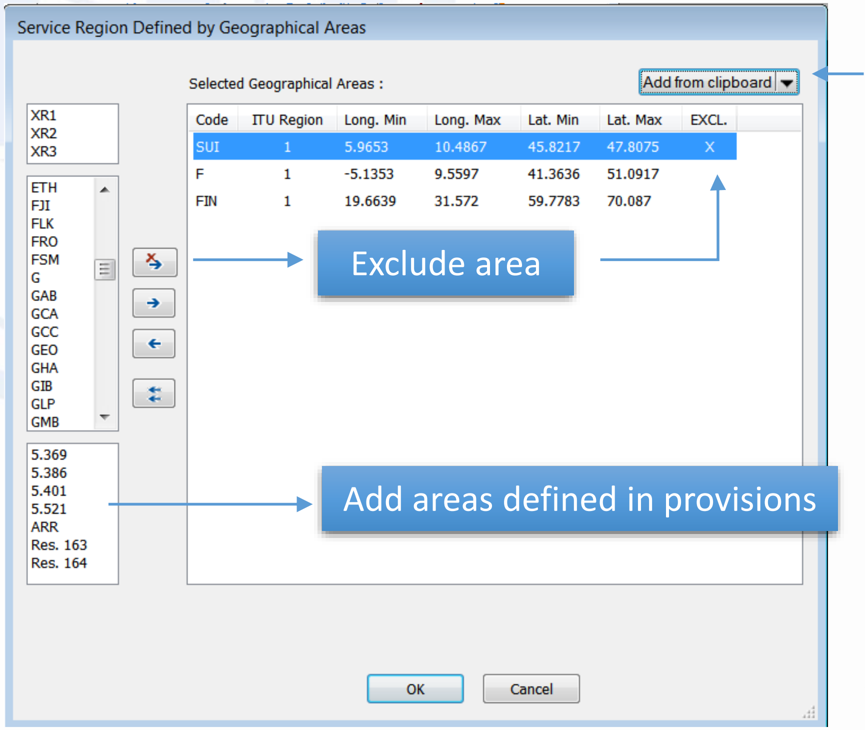
Area



Generated Areas


Capture
Tools
Window
Help
Recognise Projection...
Gain Information
Boresight
Gain Contour
-3dB Ellipse
Service Area Information
Discrete Service Points
Service Region
Clip By ITU Region
Clip By Elevation Angle
Horizon Closure
Toggle Horizon Closure
Remove Horizon Points
Squint Beam
Generate AG/GSO
Analytical Interpolation
General Interpolation
From Gain Contour
By Geographical Areas
By Elevation
As Vertices


-6.00
-4.00
-2.00
0.00


Service Region Defined by Geographical Areas
Add from clipboard
XR1
XR2
XR3
ETH
FJI
FLK
FRO
FSM
G
GAB
GCA
GCC
GEO
GHA
GIB
GLP
GMB
5.369
5.386
5.401
5.521
ARR
Res. 163
Res. 164
OK
Cancel

Selected Geographical Areas :

Code	ITU Region	Long. Min	Long. Max	Lat. Min	Lat. Max	EXCL.
SUI	1	5.9653	10.4867	45.8217	47.8075	X
F	1	-5.1353	9.5597	41.3636	51.0917	
FIN	1	19.6639	31.572	59.7783	70.087	

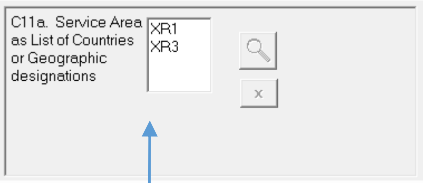
eg.: “F;FIN”

Exclude area

Add areas defined in provisions

Import SA Definition from SRS

SpaceCap “Group” Tab



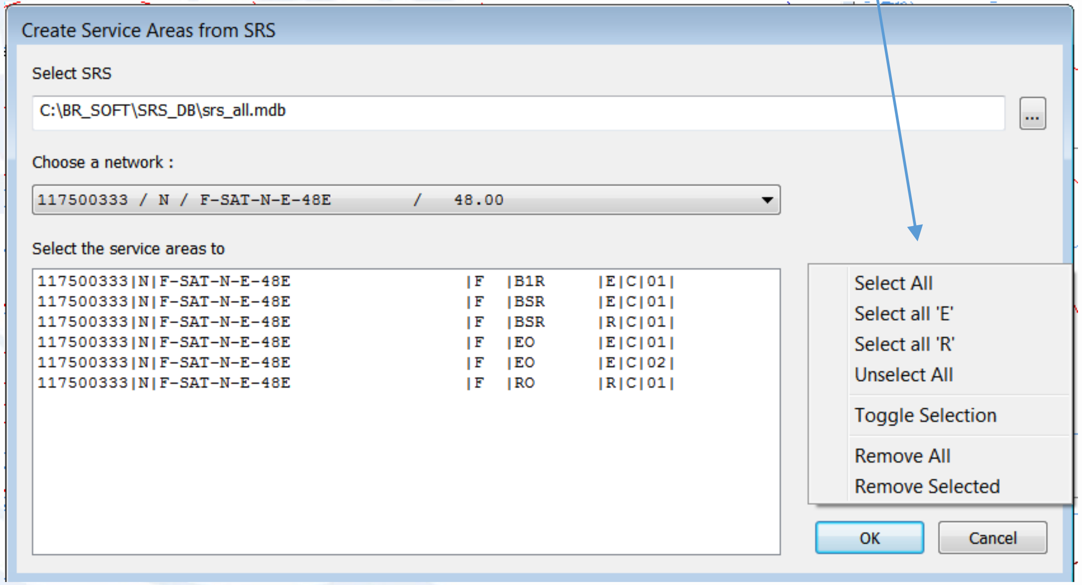
C11a. Service Area as List of Countries or Geographic designations

XR1
XR3

Service area defined by area codes only (country, ITU region, global)

Still required to be in GIMS DB (for TEX software)

Context menu to help select service areas to create



Create Service Areas from SRS

Select SRS: C:\BR_SOFT\SRS_DB\srs_all.mdb

Choose a network : 117500333 / N / F-SAT-N-E-48E / 48.00

Select the service areas to

```
117500333|N|F-SAT-N-E-48E                   |F   |B1R      |E|C|01|
117500333|N|F-SAT-N-E-48E                   |F   |BSR      |E|C|01|
117500333|N|F-SAT-N-E-48E                   |F   |BSR      |R|C|01|
117500333|N|F-SAT-N-E-48E                   |F   |EO       |E|C|01|
117500333|N|F-SAT-N-E-48E                   |F   |EO       |E|C|02|
117500333|N|F-SAT-N-E-48E                   |F   |RO       |R|C|01|
```

...
Select All
Select all 'E'
Select all 'R'
Unselect All
Toggle Selection
Remove All
Remove Selected
OK
Cancel

GIMS import tool
Database | Tools | Create service areas from SRS Database

Save Service Area

Create a service area for the beam TK3 based on the -4dB contour

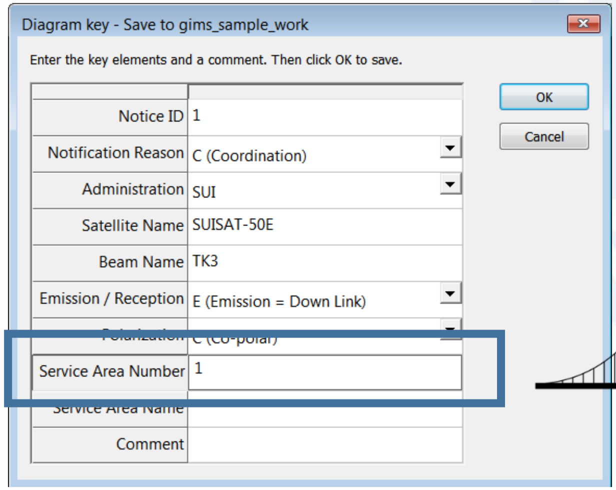
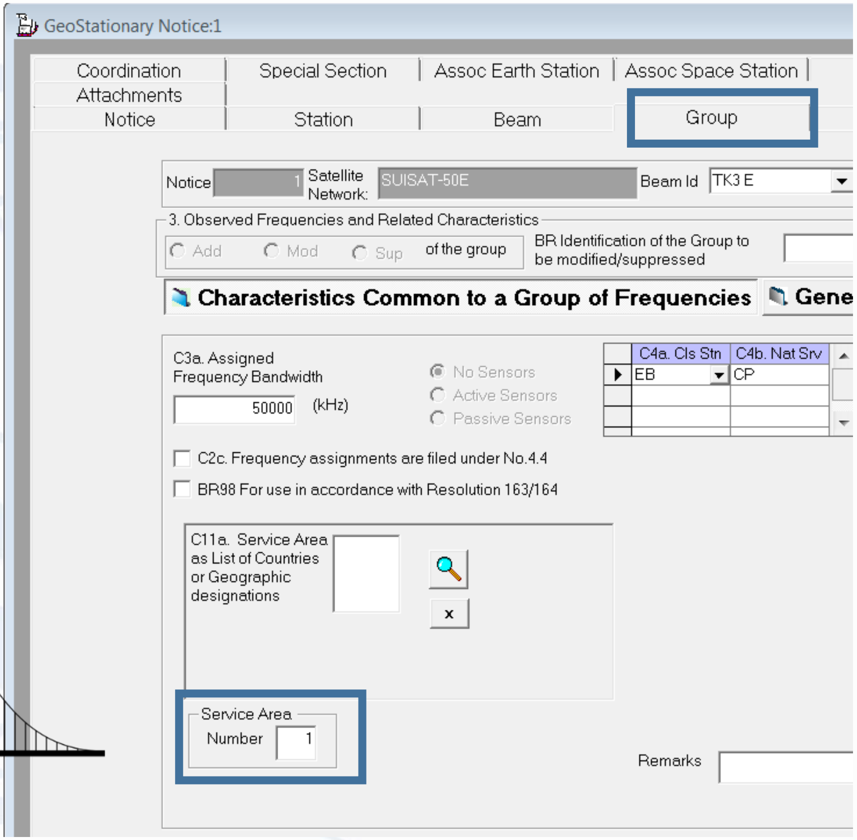


Diagram key - Save to gims_sample_work

Enter the key elements and a comment. Then click OK to save.

Notice ID	1
Notification Reason	C (Coordination)
Administration	SUI
Satellite Name	SUISAT-50E
Beam Name	TK3
Emission / Reception	E (Emission = Down Link)
Polarization	C (Co-polar)
Service Area Number	1
Service Area Name	
Comment	



GeoStationary Notice:1

Coordination
Special Section
Assoc Earth Station
Assoc Space Station
Attachments
Notice
Station
Beam
Group

Notice 1 Satellite Network: SUISAT-50E Beam Id TK3 E

3. Observed Frequencies and Related Characteristics

○ Add ○ Mod ○ Sup of the group

BR Identification of the Group to be modified/suppressed

Characteristics Common to a Group of Frequencies

C3a. Assigned Frequency Bandwidth 50000 (kHz)

● No Sensors
○ Active Sensors
○ Passive Sensors

C4a. Cls Stn	C4b. Nat Srv
EB	CP

☐ C2c. Frequency assignments are filed under No.4.4

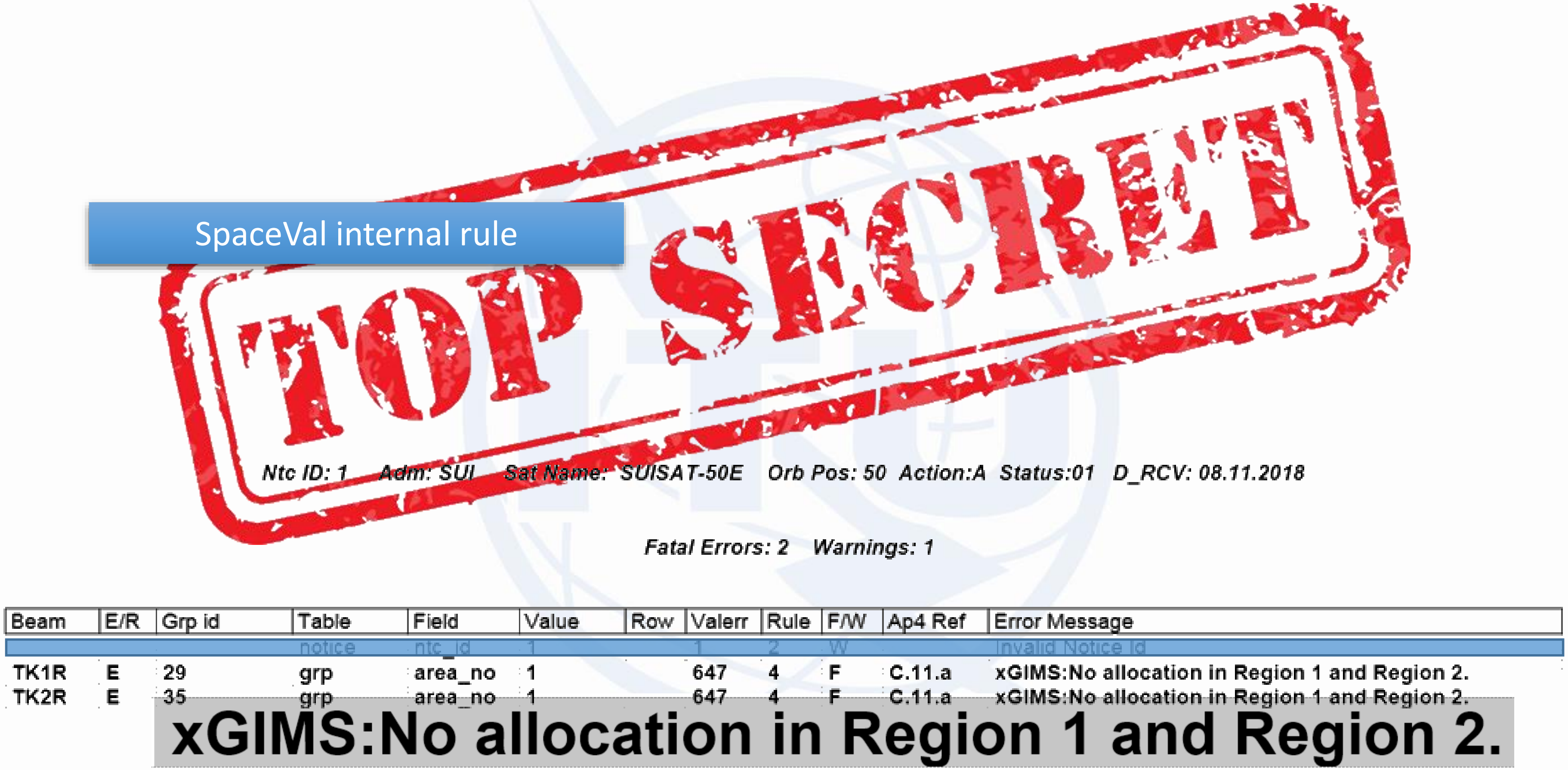
☐ BR98 For use in accordance with Resolution 163/164

C11a. Service Area as List of Countries or Geographic designations

Service Area Number 1

Remarks

GIMS vs Article 5



SpaceVal internal rule

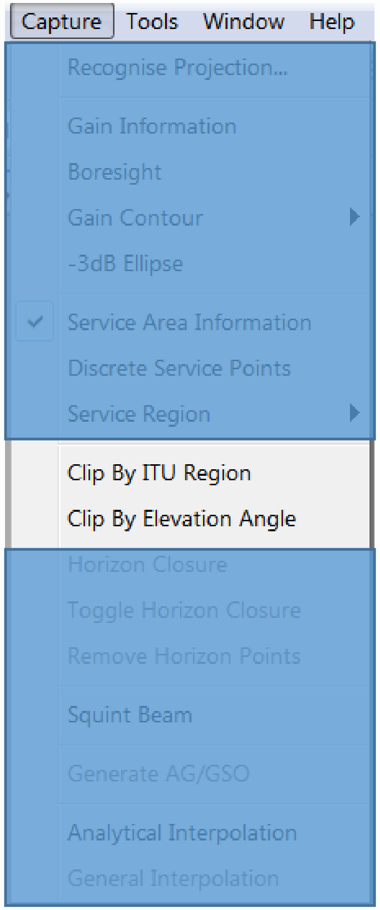
Ntc ID: 1 Adm: SUI Sat Name: SUISAT-50E Orb Pos: 50 Action:A Status:01 D_RCV: 08.11.2018

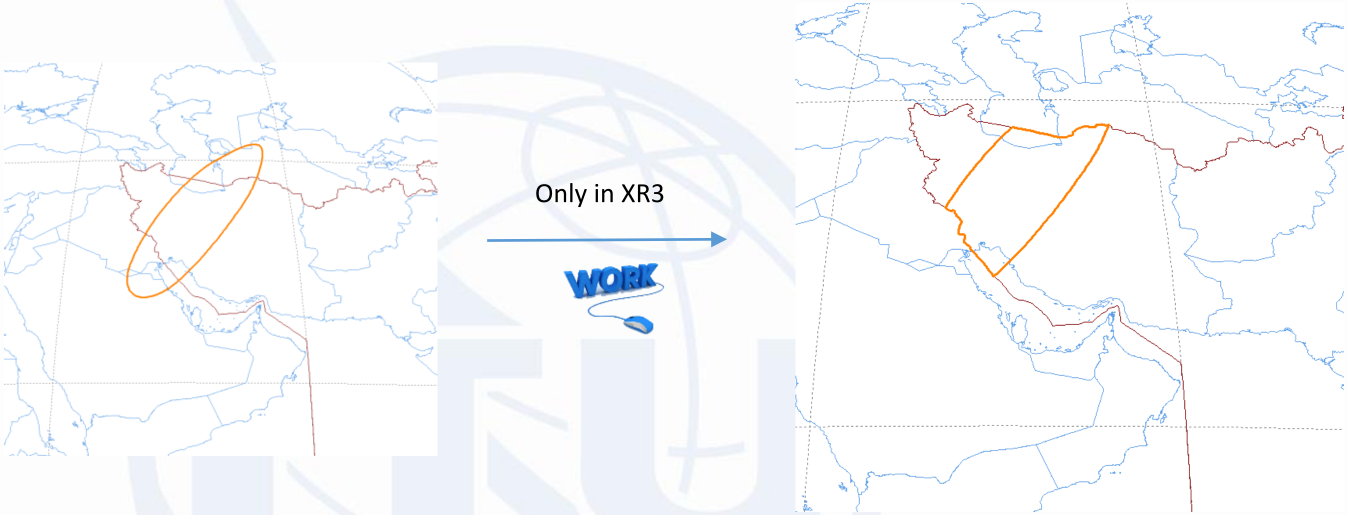
Fatal Errors: 2 Warnings: 1

Beam	E/R	Grp id	Table	Field	Value	Row	Valerr	Rule	F/W	Ap4 Ref	Error Message
			notice	ntc_id	1		1	2	W		Invalid Notice Id
TK1R	E	29	grp	area_no	1		647	4	F	C.11.a	xGIMS:No allocation in Region 1 and Region 2.
TK2R	E	35	grp	area_no	1		647	4	F	C.11.a	xGIMS:No allocation in Region 1 and Region 2.

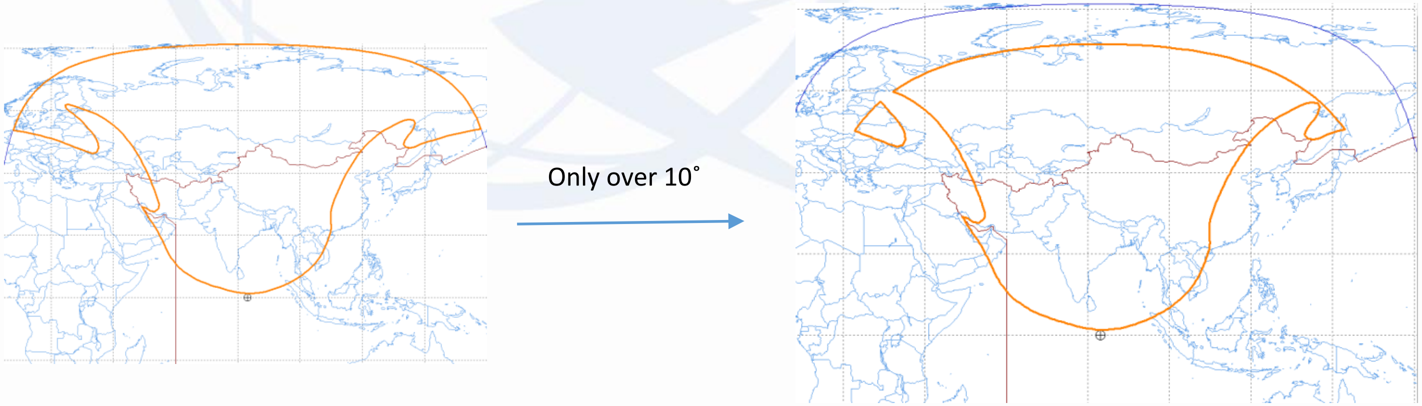
xGIMS:No allocation in Region 1 and Region 2.

Limit Coverage


Capture
Tools
Window
Help
Recognise Projection...
Gain Information
Boresight
Gain Contour
-3dB Ellipse
Service Area Information
Discrete Service Points
Service Region
Clip By ITU Region
Clip By Elevation Angle
Horizon Closure
Toggle Horizon Closure
Remove Horizon Points
Squint Beam
Generate AG/GSO
Analytical Interpolation
General Interpolation

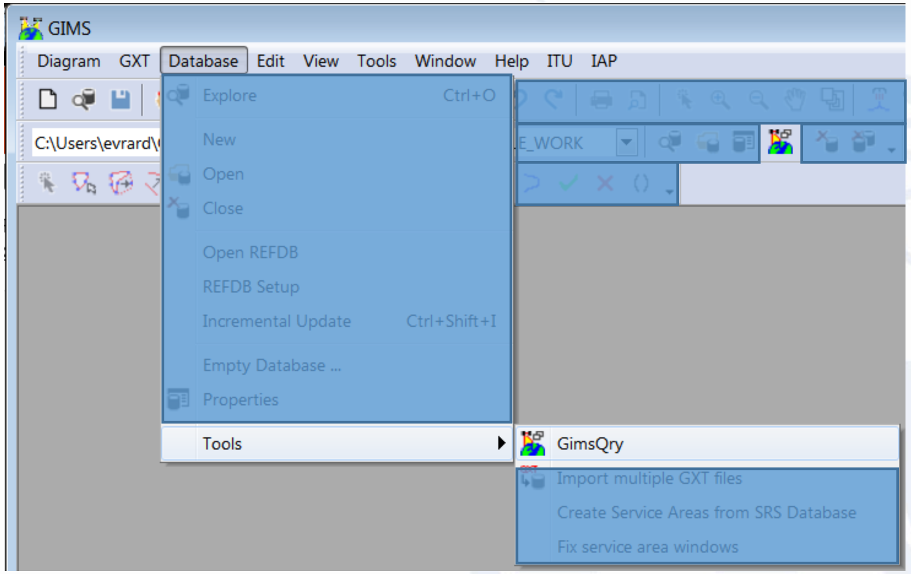


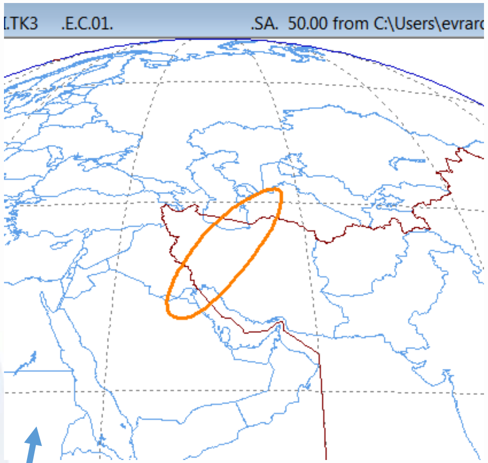
Only in XR3

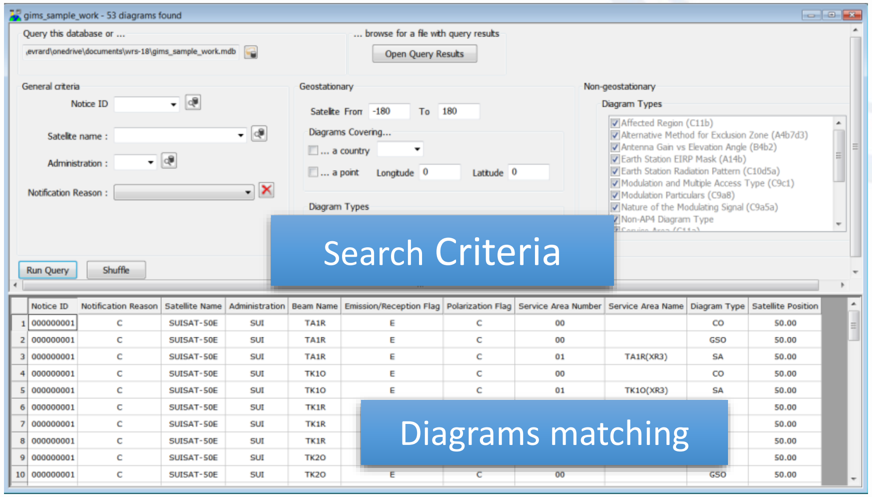


Only over 10°

GimsQry


GIMS
Diagram GXT Database Edit View Tools Window Help ITU IAP
C:\Users\evrard\
E_WORK
Explore Ctrl+O
New
Open
Close
Open REFDB
REFDB Setup
Incremental Update Ctrl+Shift+I
Empty Database ...
Properties
Tools
GimsQry
Import multiple GXT files
Create Service Areas from SRS Database
Fix service area windows


.TK3 .E.C.01. .SA. 50.00 from C:\Users\evrar


gims_sample_work - 53 diagrams found
Query this database or ...
... browse for a file with query results
Open Query Results
General criteria
Notice ID
Satellite name :
Administration :
Notification Reason :
Geostationary
Diagrams Covering...
Diagram Types
Non-geostationary
Diagram Types
Run Query
Shuffle

Query this database or ...

,evrard\onedrive\documents\wrs-18\gims_sample_work.mdb

Satellite From -180 To 180

☐ ... a country

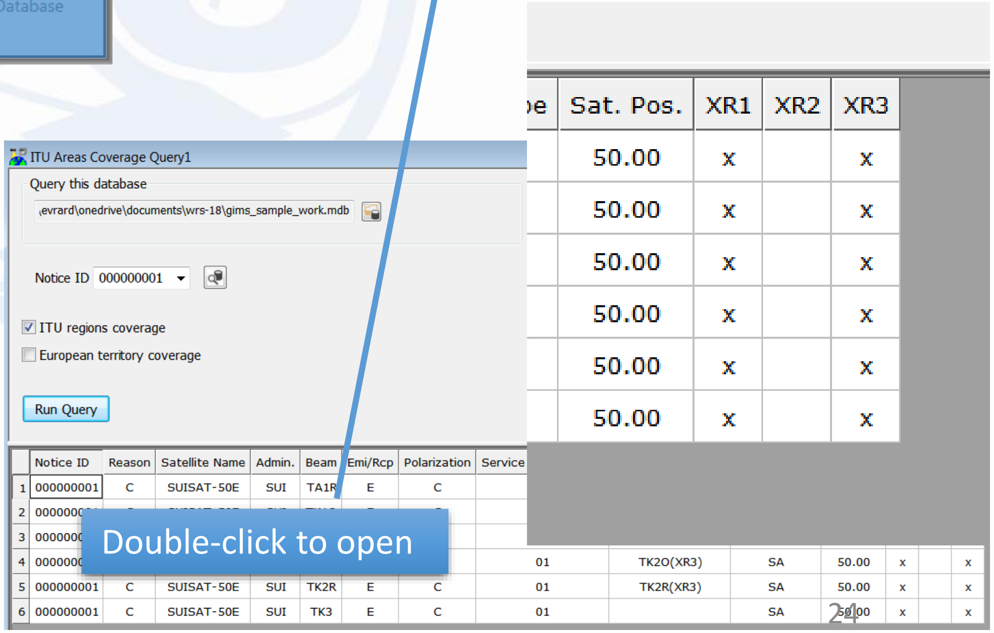
☐ ... a point Longitude 0 Latitude 0

- ☑ Affected Region (C11b)
- ☑ Alternative Method for Exclusion Zone (A4b7d3)
- ☑ Antenna Gain vs Elevation Angle (B4b2)
- ☑ Earth Station EIRP Mask (A14b)
- ☑ Earth Station Radiation Pattern (C10d5a)
- ☑ Modulation and Multiple Access Type (C9c1)
- ☑ Modulation Particulars (C9a8)
- ☑ Nature of the Modulating Signal (C9a5a)
- ☑ Non-AP4 Diagram Type

Search Criteria

	Notice ID	Notification Reason	Satellite Name	Administration	Beam Name	Emission/Reception Flag	Polarization Flag	Service Area Number	Service Area Name	Diagram Type	Satellite Position
1	000000001	C	SUISAT-50E	SUI	TA1R	E	C	00		CO	50.00
2	000000001	C	SUISAT-50E	SUI	TA1R	E	C	00		GSO	50.00
3	000000001	C	SUISAT-50E	SUI	TA1R	E	C	01	TA1R(XR3)	SA	50.00
4	000000001	C	SUISAT-50E	SUI	TK1O	E	C	00		CO	50.00
5	000000001	C	SUISAT-50E	SUI	TK1O	E	C	01	TK1O(XR3)	SA	50.00
6	000000001	C	SUISAT-50E	SUI	TK1R						50.00
7	000000001	C	SUISAT-50E	SUI	TK1R						50.00
8	000000001	C	SUISAT-50E	SUI	TK1R						50.00
9	000000001	C	SUISAT-50E	SUI	TK2O						50.00
10	000000001	C	SUISAT-50E	SUI	TK2O	E	C	00		GSO	50.00

Diagrams matching


ITU Areas Coverage Query1
Query this database
Notice ID
Run Query

,evrard\onedrive\documents\wrs-18\gims_sample_work.mdb

Notice ID 000000001

☑ ITU regions coverage

☐ European territory coverage

Sat. Pos.	XR1	XR2	XR3
50.00	x		x
50.00	x		x
50.00	x		x
50.00	x		x
50.00	x		x
50.00	x		x

	Notice ID	Reason	Satellite Name	Admin.	Beam	Emi/Rcp	Polarization	Service						
1	000000001	C	SUISAT-50E	SUI	TA1R	E	C							
2	000000													
3	000000													
4	000000							01	TK2O(XR3)	SA	50.00	x		x
5	000000001	C	SUISAT-50E	SUI	TK2R	E	C	01	TK2R(XR3)	SA	50.00	x		x
6	000000001	C	SUISAT-50E	SUI	TK3	E	C	01		SA	50.00	x		x

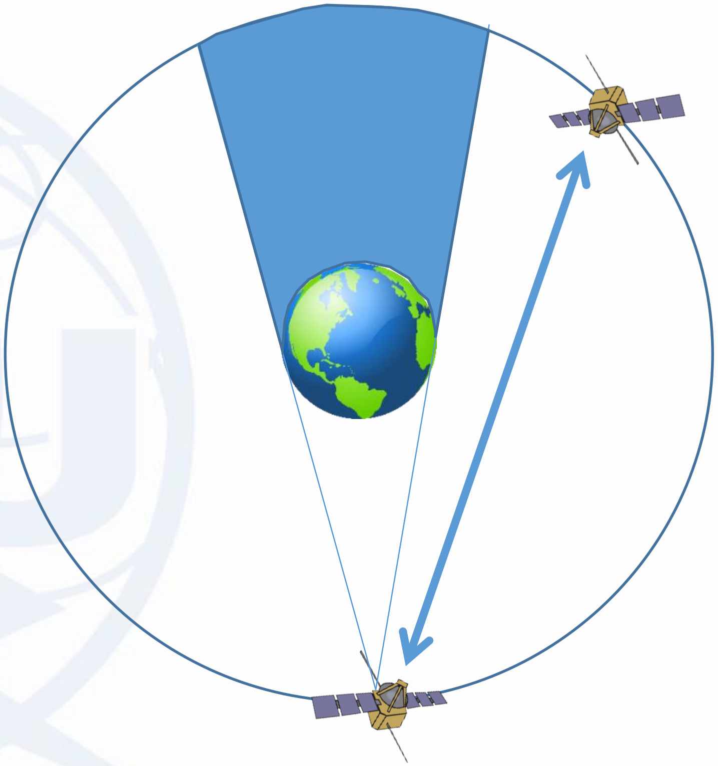
Double-click to open

Antenna Gain towards GSO (GSO)

What for ?

- Used for AP8 ($^{\Delta T}/_{T}$) calculation
- Only required for bi-directional bands

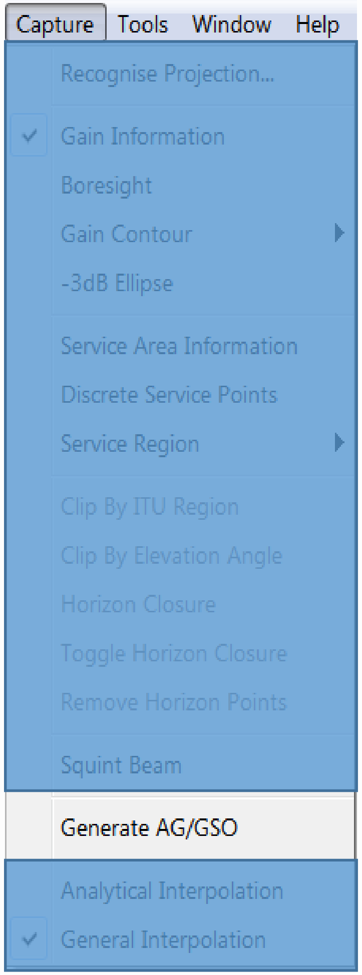
  (see Appendix 4 of C:\BR_SOFT\SpaceVal_V8\VR8Ap42e.pdf)

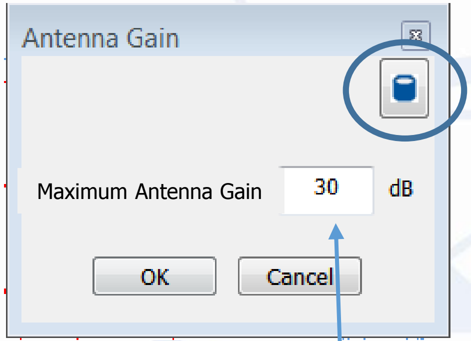


Capture

- Simple generated contours
- Use a digitizer
- Mouse capture tools
- Modify existing diagram

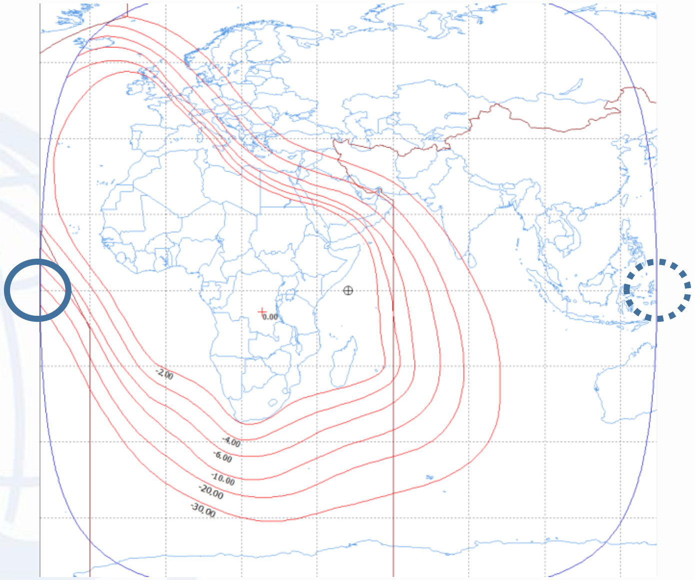
Generate AG/GSO

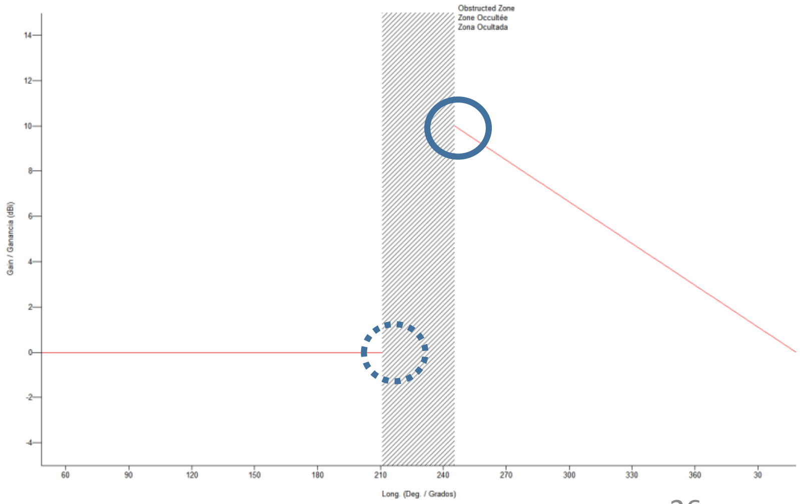

Capture
Tools
Window
Help
Recognise Projection...
Gain Information
Boresight
Gain Contour
-3dB Ellipse
Service Area Information
Discrete Service Points
Service Region
Clip By ITU Region
Clip By Elevation Angle
Horizon Closure
Toggle Horizon Closure
Remove Horizon Points
Squint Beam
Generate AG/GSO
Analytical Interpolation
General Interpolation


Antenna Gain
OK
Cancel

Maximum Antenna Gain 30 dB

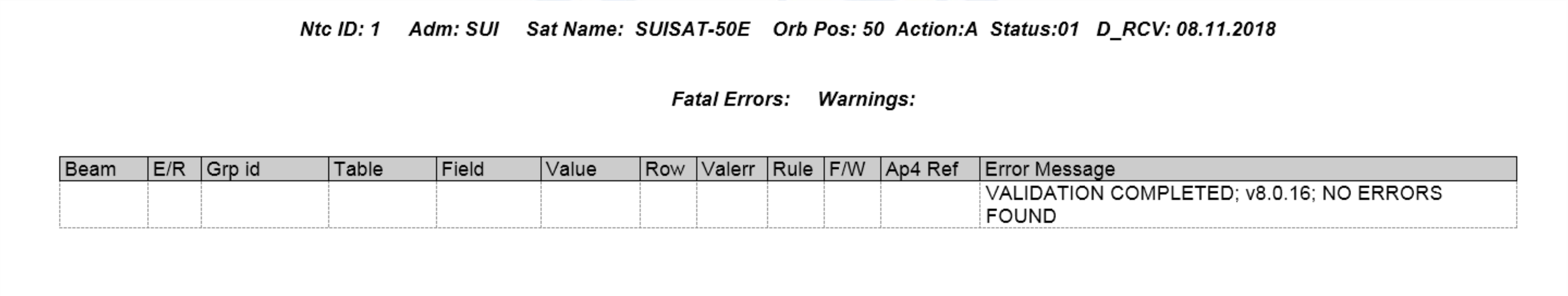
SRS


0.00
-2.00
-4.00
-6.00
-10.00
-20.00
-30.00



Generate an AG/GSO diagram for beam TK3
Then save.

SpaceVal Cross-Validation



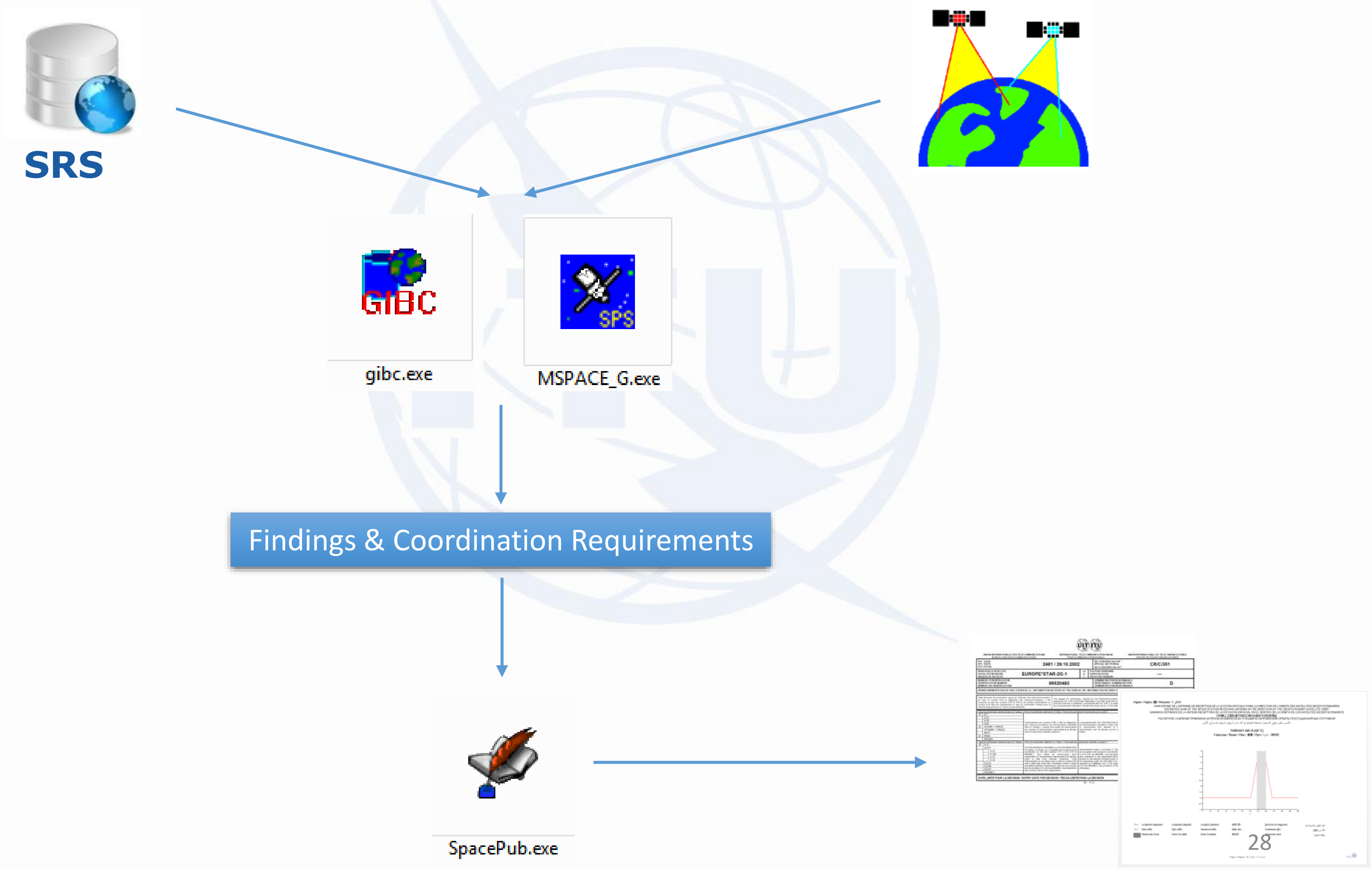
Ntc ID: 1   Adm: SUI   Sat Name: SUISAT-50E   Orb Pos: 50 Action:A Status:01   D_RCV: 08.11.2018

Fatal Errors: Warnings:

Beam	E/R	Grp id	Table	Field	Value	Row	Valerr	Rule	F/W	Ap4 Ref	Error Message
											VALIDATION COMPLETED; v8.0.16; NO ERRORS FOUND

Diagrams ready to be used

GIMS Data Usage



SRS

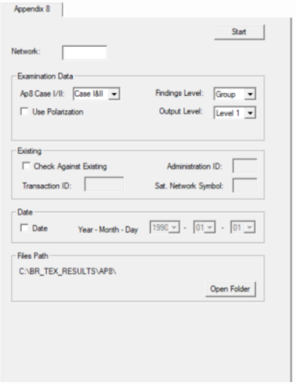
gibc.exe

MSPACE_G.exe

Findings & Coordination Requirements

SpacePub.exe

GIBC


Appendix 8
Start
Open Folder

Network:

Examination Data

Ap8 Case I/II: Case I&II

Findings Level: Group

☐ Use Polarization

Output Level: Level 1

Existing

☐ Check Against Existing

Administration ID:

Transaction ID:

Sat. Network Symbol:

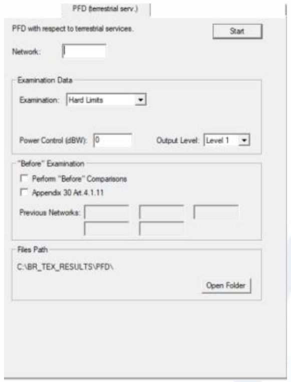
Date

☐ Date

Year - Month - Day: 1990 - 01 - 01

Files Path

C:\BR_TEX_RESULTS\AP8\


PFD (terrestrial serv.)
Start
Open Folder

PFD with respect to terrestrial services.

Network:

Examination Data

Examination: Hard Limits

Power Control (dBW): 0

Output Level: Level 1

"Before" Examination

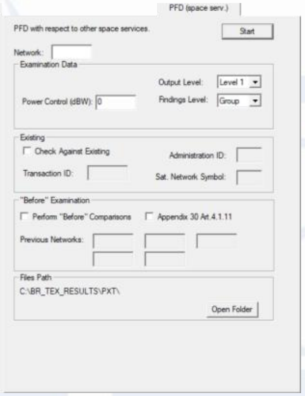
☐ Perform "Before" Comparisons

☐ Appendix 30 Art.4.1.11

Previous Networks:

Files Path

C:\BR_TEX_RESULTS\PFD\


PFD (space serv.)
Start
Open Folder

PFD with respect to other space services.

Network:

Examination Data

Output Level: Level 1

Power Control (dBW): 0

Findings Level: Group

Existing

☐ Check Against Existing

Administration ID:

Transaction ID:

Sat. Network Symbol:

"Before" Examination

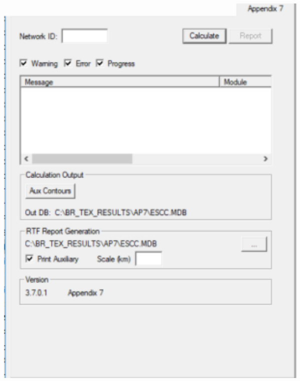
☐ Perform "Before" Comparisons

☐ Appendix 30 Art.4.1.11

Previous Networks:

Files Path

C:\BR_TEX_RESULTS\PXT\


Appendix 7
Calculate
Report
Message
Module
Aux Contours
...

Network ID:

☑ Warning ☑ Error ☑ Progress

Calculation Output

Out DB: C:\BR_TEX_RESULTS\AP7\ESCC.MDB

RTF Report Generation

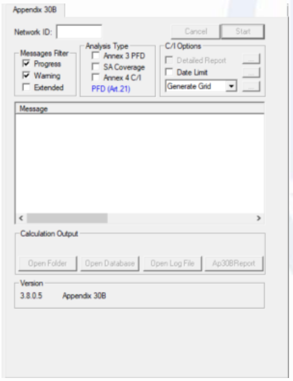
C:\BR_TEX_RESULTS\AP7\ESCC.MDB

☑ Print Auxiliary

Scale (km):

Version

3.7.0.1 Appendix 7


Appendix 30B
Cancel
Start
Message
Open Folder
Open Database
Open Log File
Ap30BReport

Network ID:

Messages Filter

☑ Progress

☑ Warning

☐ Extended

Analysis Type

☐ Annex 3 PFD

☐ SA Coverage

☐ Annex 4 C/I

PFD (Art.21)

C/I Options

☐ Detailed Report

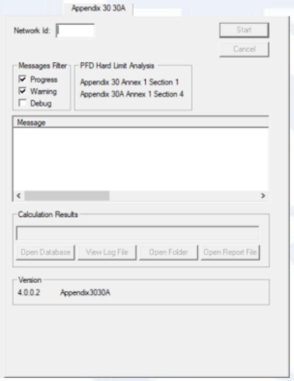
☐ Date Limit

Generate Grid

Calculation Output

Version

3.8.0.5 Appendix 30B


Appendix 30 30A
Start
Cancel
Message
Open Database
View Log File
Open Folder
Open Report File

Network Id:

Messages Filter

☑ Progress

☑ Warning

☐ Debug

PFD Hard Limit Analysis

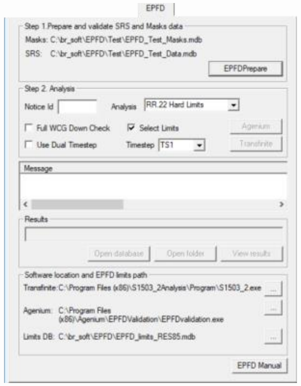
Appendix 30 Annex 1 Section 1

Appendix 30A Annex 1 Section 4

Calculation Results

Version

4.0.0.2 Appendix3030A


EPFD
EPFDPrepare
Agenium
Transfinite
Message
Open database
Open folder
View results
...
EPFD Manual

Step 1.Prepare and validate SRS and Masks data

Masks: C:\br_soft\EPFD\Test\EPFD_Test_Masks.mdb

SRS: C:\br_soft\EPFD\Test\EPFD_Test_Data.mdb

Step 2. Analysis

Notice Id

Analysis: RR 22 Hard Limits

☐ Full WCG Down Check

☑ Select Limits

☐ Use Dual Timestep

Timestep: TS1

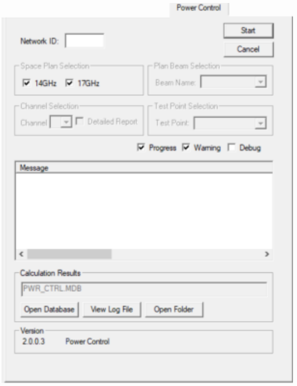
Results

Software location and EPFD limits path

Transfinite: C:\Program Files (x86)\S1503_2\Analysis\Program\S1503_2.exe

Agenium: C:\Program Files (x86)\Agenium\EPFDValidation\EPFDvalidation.exe

Limits DB: C:\br_soft\EPFD\EPFD_limits_RES85.mdb


Power Control
Start
Cancel
Message
Open Database
View Log File
Open Folder

Network ID:

Space Plan Selection

☑ 14GHz ☑ 17GHz

Plan Beam Selection

Beam Name:

Channel Selection

Channel: ☐ Detailed Report

Test Point Selection

Test Point:

☑ Progress ☑ Warning ☐ Debug

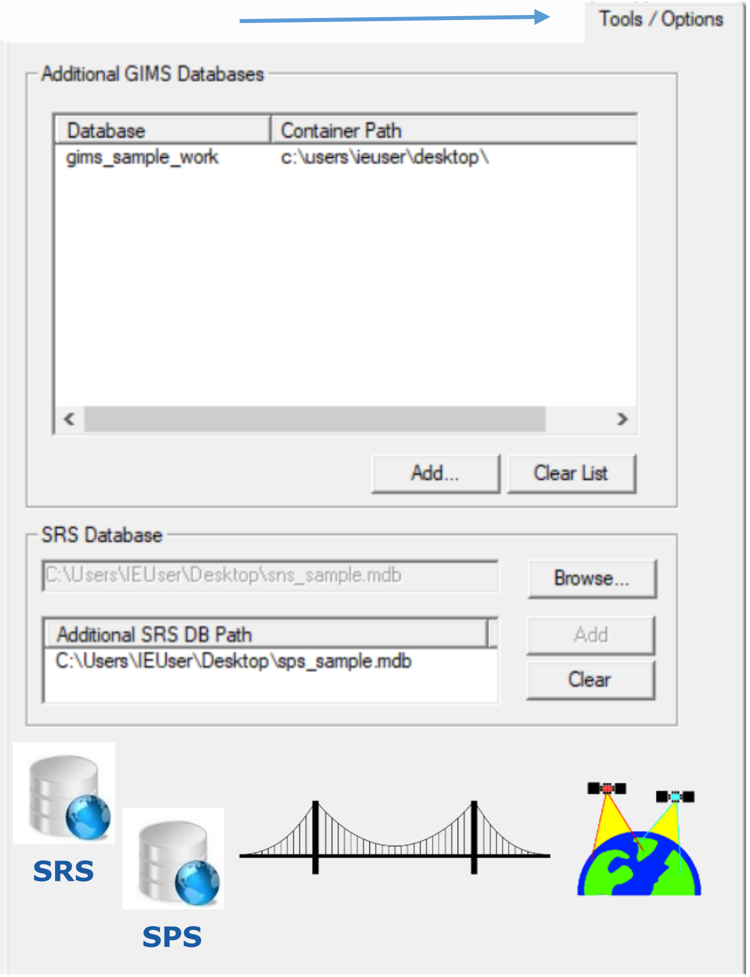
Calculation Results

PWR_CTRL.MDB

Version

2.0.0.3 Power Control

Technical Examinations Center


Tools / Options
Add...
Clear List
Browse...
Add
Clear
SRS
SPS

Additional GIMS Databases

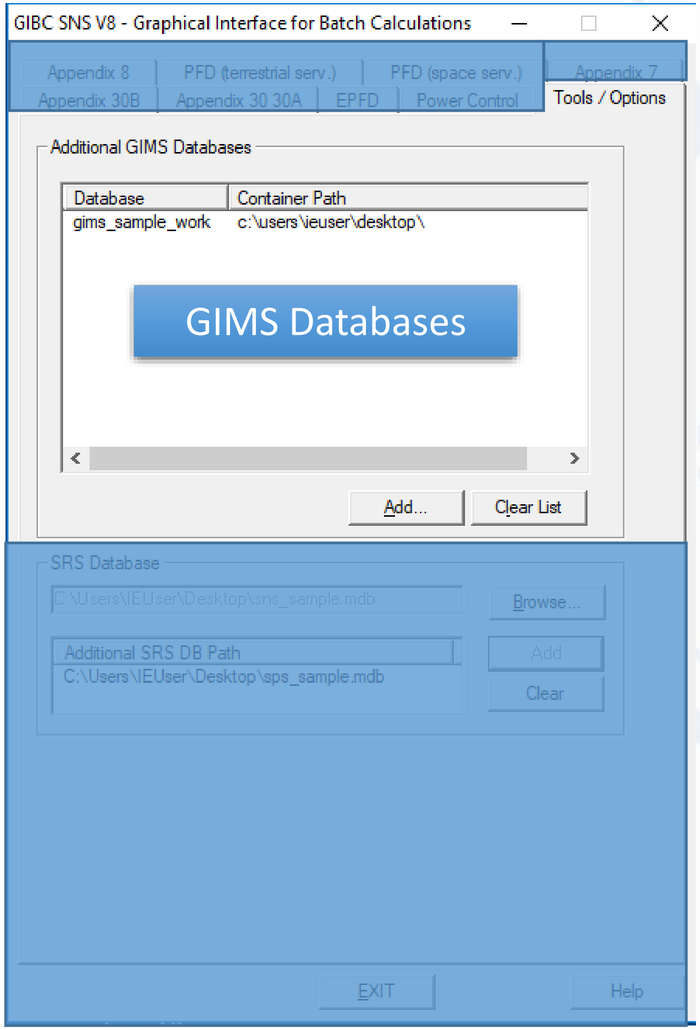
Database	Container Path
gims_sample_work	c:\users\ieuser\desktop\

SRS Database

C:\Users\IEUser\Desktop\srs_sample.mdb

Additional SRS DB Path
C:\Users\IEUser\Desktop\sps_sample.mdb

GIBC & GIMS Database Issue


GIBC SNS V8 - Graphical Interface for Batch Calculations
Appendix 8
PFD (terrestrial serv.)
PFD (space serv.)
Appendix 7
Appendix 30B
Appendix 30 30A
EPFD
Power Control
Tools / Options
Add...
Clear List
Browse...
Add
Clear
EXIT
Help

Additional GIMS Databases

Database	Container Path
gims_sample_work	c:\users\ieuser\desktop\

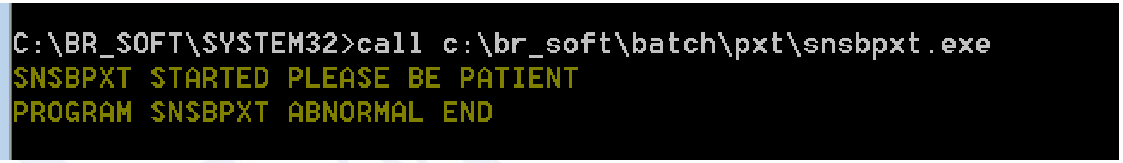
GIMS Databases

SRS Database

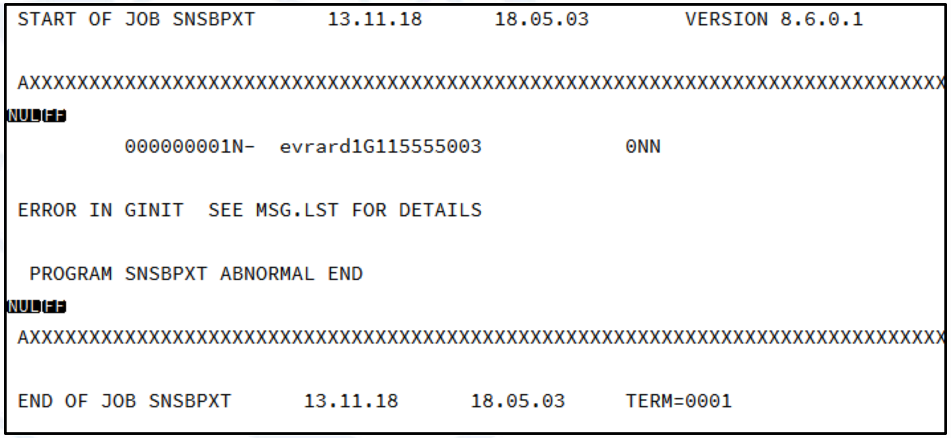
C:\Users\IEUser\Desktop\sns_sample.mdb

Additional SRS DB Path

C:\Users\IEUser\Desktop\sps_sample.mdb

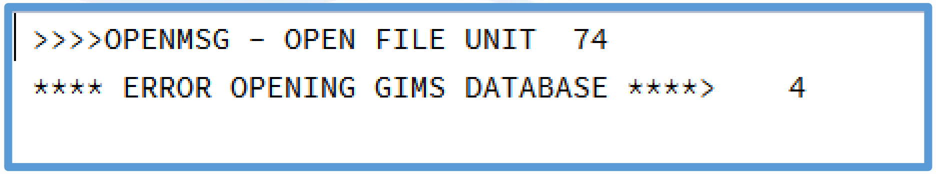


```
C:\BR_SOFT\SYSTEM32>call c:\br_soft\batch\pxt\snsbpxt.exe
SNSBPXT STARTED PLEASE BE PATIENT
PROGRAM SNSBPXT ABNORMAL END
```



```
START OF JOB SNSBPXT      13.11.18      18.05.03        VERSION 8.6.0.1

AXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
NULFF
         000000001N-  evrard1G115555003           0NN

ERROR IN GINIT  SEE MSG.LST FOR DETAILS

 PROGRAM SNSBPXT ABNORMAL END
NULFF
AXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

END OF JOB SNSBPXT      13.11.18      18.05.03     TERM=0001
```

PXT.LST

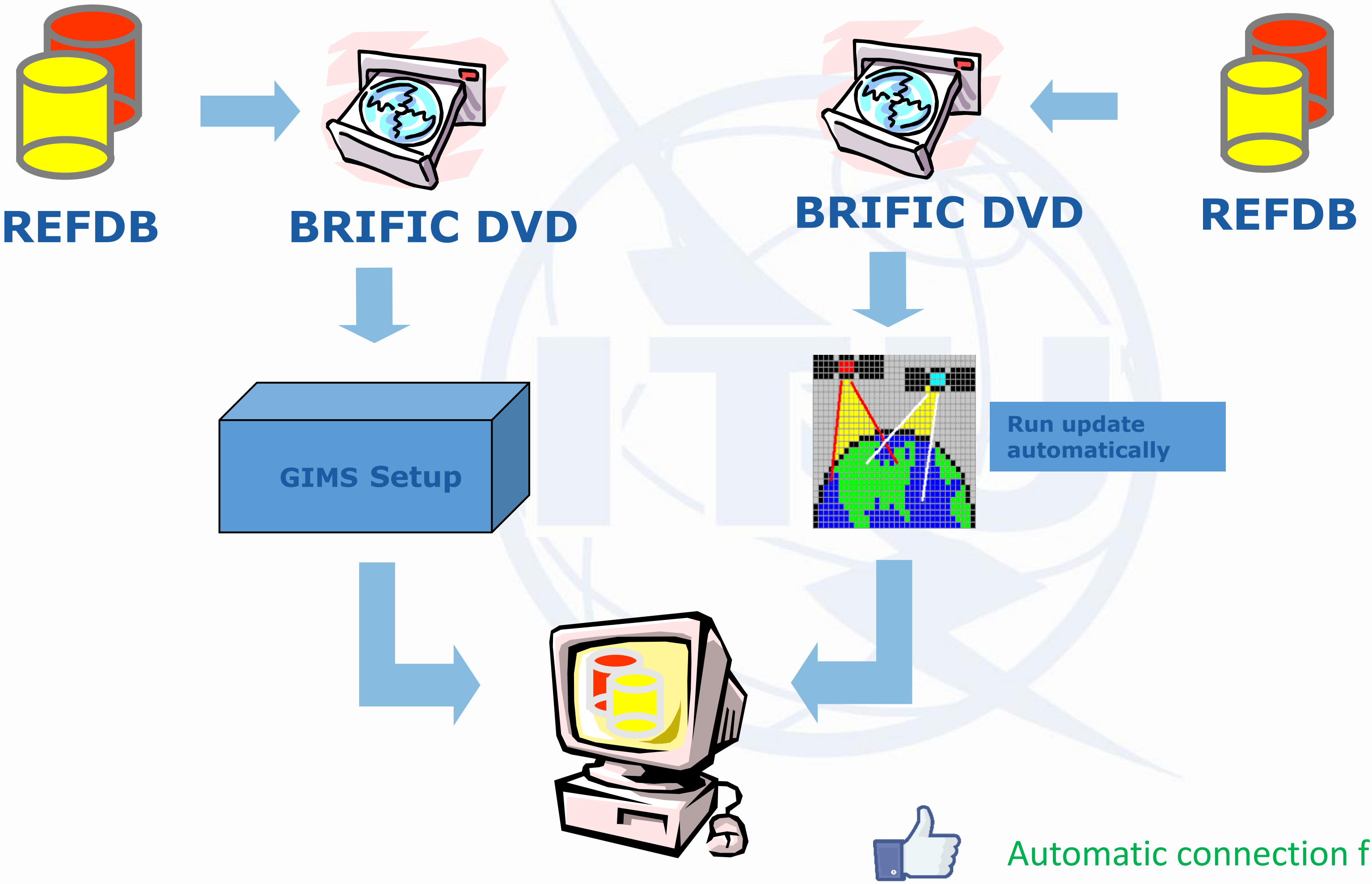


```
>>>>OPENMSG - OPEN FILE UNIT  74
**** ERROR OPENING GIMS DATABASE ****>     4
```

MSG.LST

Analyse 000000001 with “PFD (space serv.)“

GIMS Database : REFDB



REFDB

BRIFIC DVD

BRIFIC DVD

REFDB

GIMS Setup

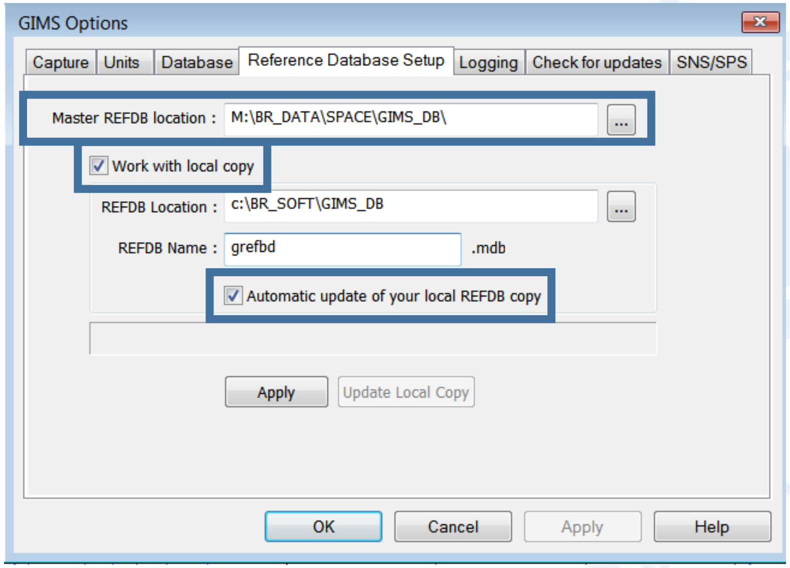
Run update automatically

👍 Automatic connection from all software

👎 REFDB must be defined

GIMS Database : REFDB Setup

Menu : **Database | REFDB Setup**


GIMS Options
Capture
Units
Database
Reference Database Setup
Logging
Check for updates
SNS/SPS
...
Apply
Update Local Copy
OK
Cancel
Apply
Help

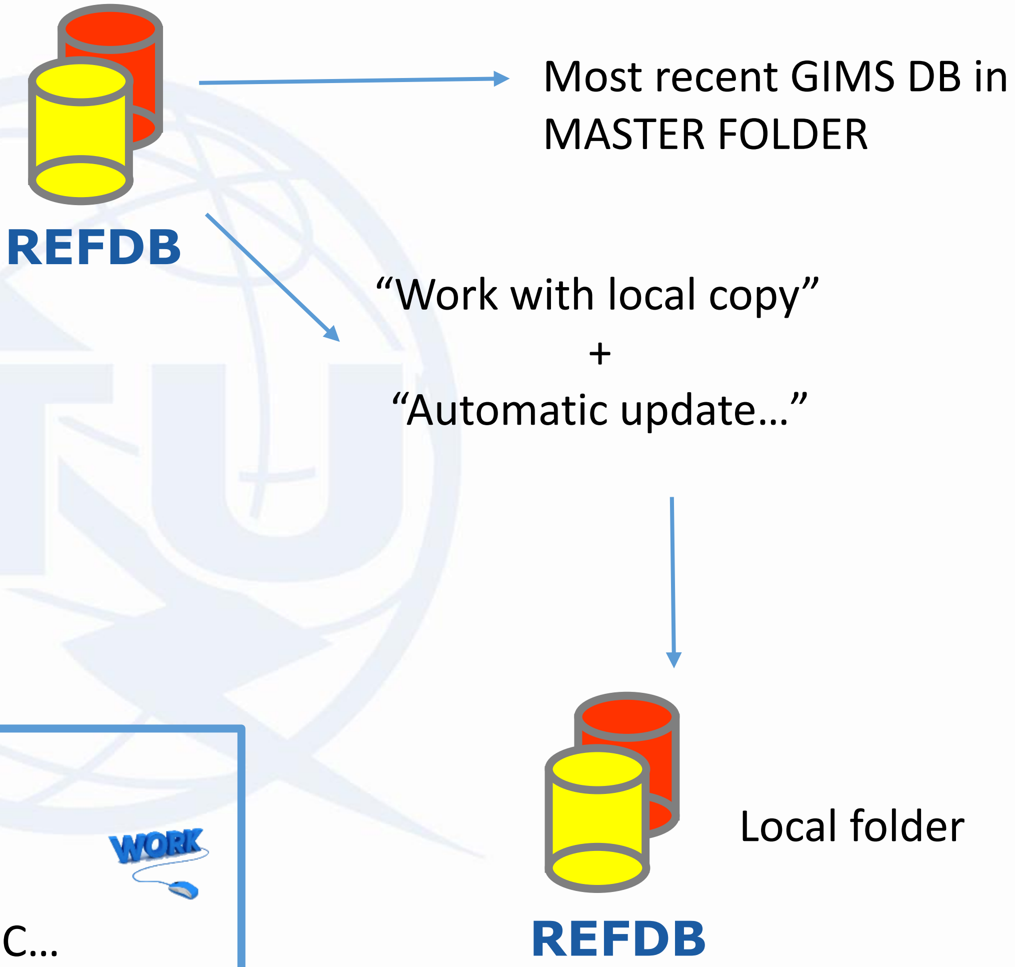
Master REFDB location : M:\BR_DATA\SPACE\GIMS_DB\

☑ Work with local copy

REFDB Location : c:\BR_SOFT\GIMS_DB

REFDB Name : grefbd .mdb

☑ Automatic update of your local REFDB copy



REFDB

Most recent GIMS DB in MASTER FOLDER

“Work with local copy”
+
“Automatic update…”

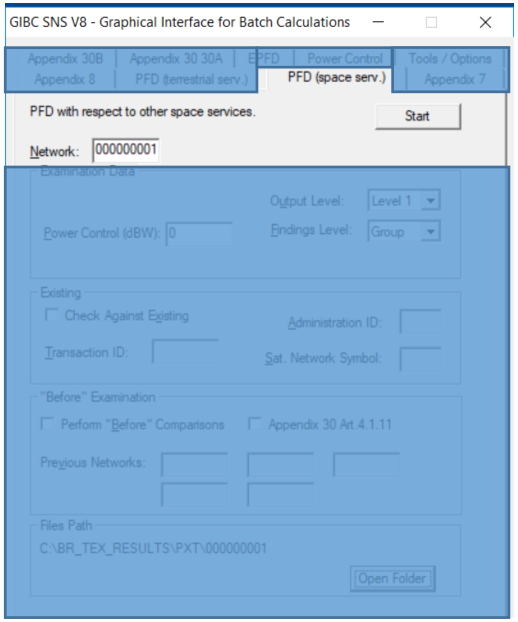
Local folder

REFDB

Simple Setup

- Do **not** work with local copy
- Set up a master folder on your PC…
- … with an empty GIMS DB
- Always use “Additional GIMS Database”

GIBC & GIMS Database Issue Solved


GIBC SNS V8 - Graphical Interface for Batch Calculations
Appendix 30B
Appendix 30 30A
EPFD
Power Control
Tools / Options
Appendix 8
PFD (terrestrial serv.)
PFD (space serv.)
Appendix 7
Start
Examination Data
Existing
☐ Check Against Existing
"Before" Examination
☐ Perform "Before" Comparisons
☐ Appendix 30 Art.4.1.11
Previous Networks:
Files Path
Open Folder

PFD with respect to other space services.

Network: 000000001

Output Level: Level 1

Power Control (dBW): 0

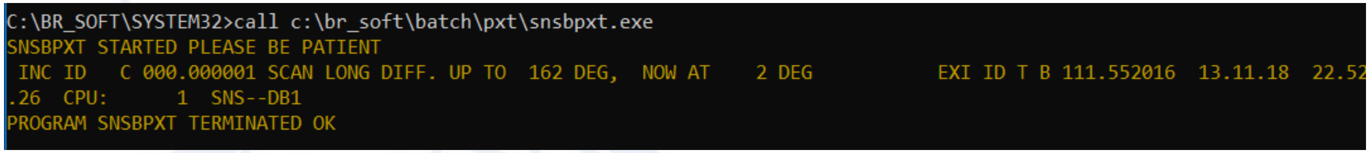
Findings Level: Group

Administration ID:

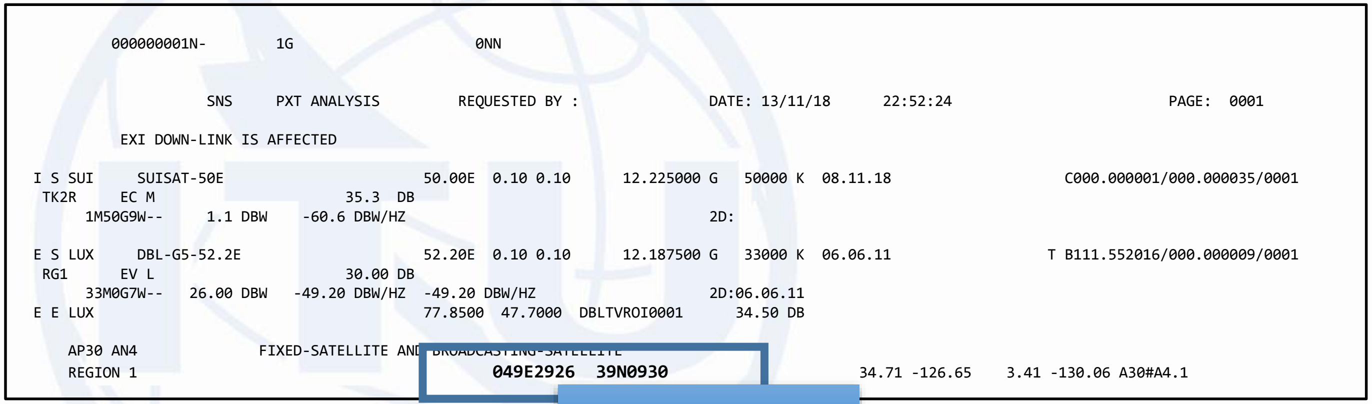
Transaction ID:

Sat. Network Symbol:

C:\BR_TEX_RESULTS\PXT\000000001



```
C:\BR_SOFT\SYSTEM32>call c:\br_soft\batch\pxt\snsbpxt.exe
SNSBPXT STARTED PLEASE BE PATIENT
 INC ID    C 000.000001 SCAN LONG DIFF. UP TO  162 DEG,  NOW AT    2 DEG          EXI ID T B 111.552016  13.11.18  22.52
.26  CPU:       1  SNS--DB1
PROGRAM SNSBPXT TERMINATED OK
```

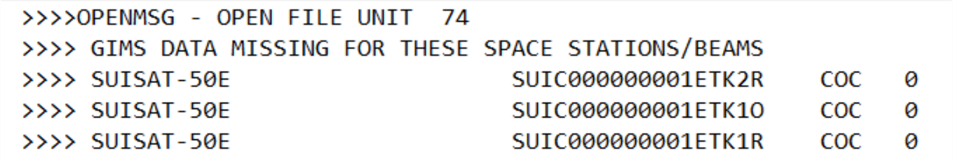


```
            000000001N-       1G                      0NN


                       SNS     PXT ANALYSIS         REQUESTED BY :              DATE: 13/11/18      22:52:24                    PAGE:  0001

             EXI DOWN-LINK IS AFFECTED

   I S SUI     SUISAT-50E                          50.00E  0.10 0.10      12.225000 G   50000 K  08.11.18               C000.000001/000.000035/0001
    TK2R     EC M                       35.3  DB
         1M50G9W--     1.1 DBW    -60.6 DBW/HZ                                 2D:

   E S LUX     DBL-G5-52.2E                        52.20E  0.10 0.10      12.187500 G   33000 K  06.06.11              T B111.552016/000.000009/0001
    RG1      EV L                       30.00 DB
         33M0G7W--    26.00 DBW   -49.20 DBW/HZ  -49.20 DBW/HZ                 2D:06.06.11
   E E LUX                                         77.8500  47.7000  DBLTVROI0001      34.50 DB

       AP30 AN4             FIXED-SATELLITE AND BROADCASTING-SATELLITE
       REGION 1                                        049E2926  39N0930                     34.71 -126.65    3.41 -130.06 A30#A4.1
```

Excess location

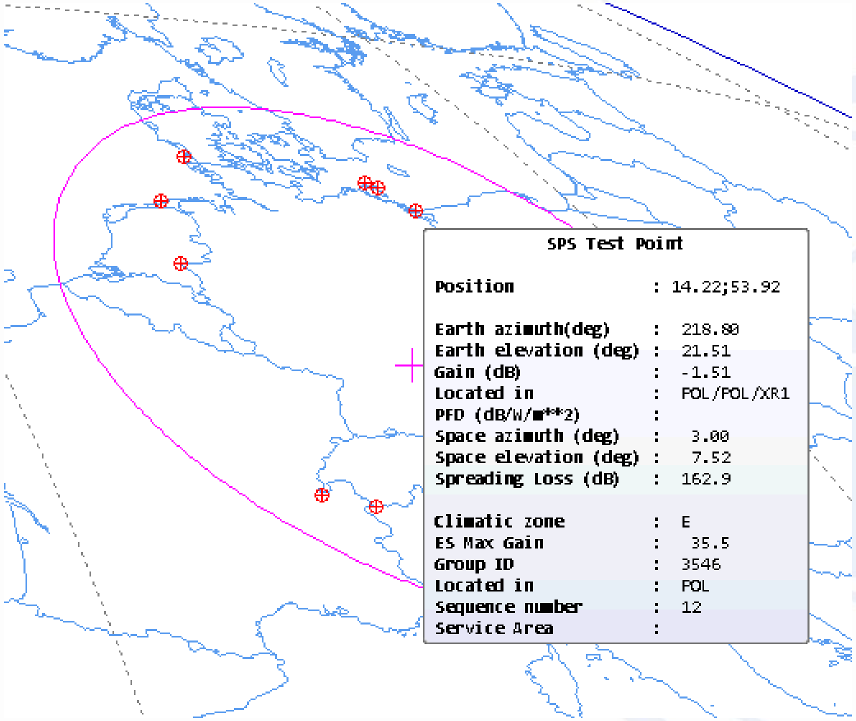
Error messages if forgot to add GIMS DB

Always check for “GIMS DATA MISSING” in MSG.LST (for PFD Space, PFD Terrestrial, AP8)



```
>>>>OPENMSG - OPEN FILE UNIT  74
>>>> GIMS DATA MISSING FOR THESE SPACE STATIONS/BEAMS
>>>> SUISAT-50E                 SUIC000000001ETK2R    COC   0
>>>> SUISAT-50E                 SUIC000000001ETK1O    COC   0
>>>> SUISAT-50E                 SUIC000000001ETK1R    COC   0
```

Information Points



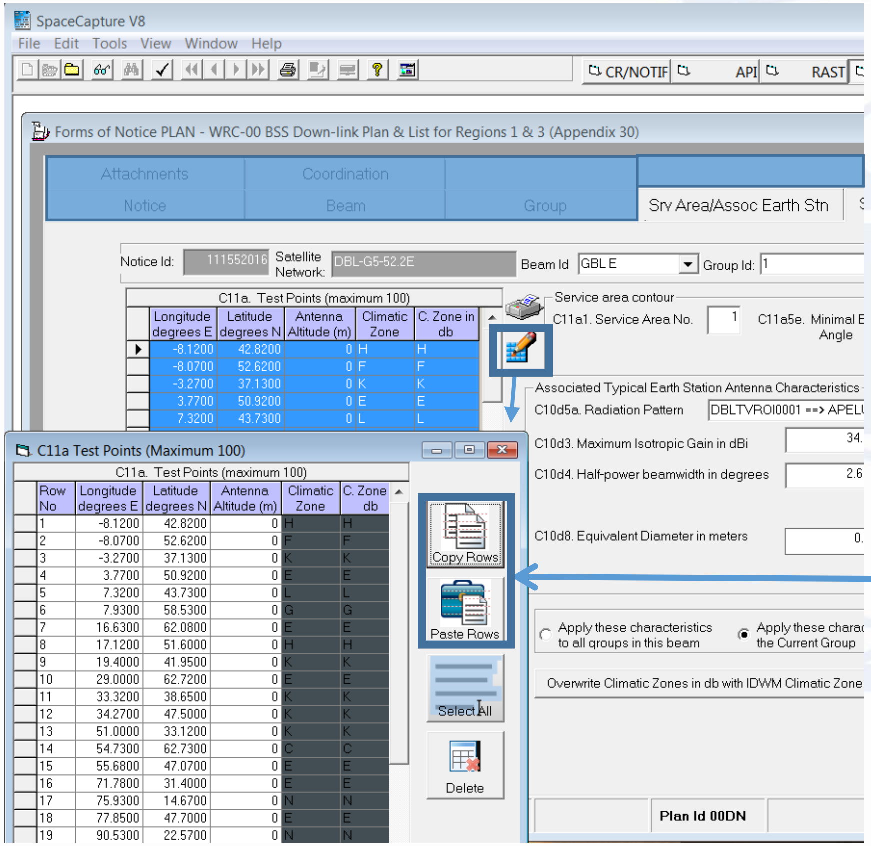
```
SPS Test Point

Position                  : 14.22;53.92

Earth azimuth(deg)        :  218.80
Earth elevation (deg)     :  21.51
Gain (dB)                 :  -1.51
Located in                :  POL/POL/XR1
PFD (dB/W/m**2)           :
Space azimuth (deg)       :   3.00
Space elevation (deg)     :   7.52
Spreading Loss (dB)       :  162.9

Climatic zone             :  E
ES Max Gain               :   35.5
Group ID                  :  3546
Located in                :  POL
Sequence number           :  12
Service Area              :
```

- Click on map
- Enter characteristics
- Test points from SPS database
- AP30BReport
- Copy/paste from many formats
- Save to file
- Export to spreadsheet
- Load from file

Copy / Paste coordinates of PFD excess
From .LST file

Information Points & SpaceCap

SpaceCap
Plan (AP30,30A,30B)


SpaceCapture V8
File Edit Tools View Window Help
CR/NOTIF
API
RAST
Attachments
Coordination
Notice
Beam
Group
Srv Area/Assoc Earth Stn
Copy Rows
Paste Rows
Select All
Delete

Forms of Notice PLAN - WRC-00 BSS Down-link Plan & List for Regions 1 & 3 (Appendix 30)

Notice Id: 111552016 Satellite Network: DBL-G5-52.2E Beam Id GBL E Group Id: 1

C11a. Test Points (maximum 100)

Longitude degrees E	Latitude degrees N	Antenna Altitude (m)	Climatic Zone	C. Zone in db
-8.1200	42.8200	0	H	H
-8.0700	52.6200	0	F	F
-3.2700	37.1300	0	K	K
3.7700	50.9200	0	E	E
7.3200	43.7300	0	L	L

Service area contour

C11a1. Service Area No. 1

C11a5e. Minimal E Angle

Associated Typical Earth Station Antenna Characteristics

C10d5a. Radiation Pattern DBLTVROI0001 ==> APELI

C10d3. Maximum Isotropic Gain in dBi 34.

C10d4. Half-power beamwidth in degrees 2.6

C10d8. Equivalent Diameter in meters 0.

○ Apply these characteristics to all groups in this beam

● Apply these charac the Current Group

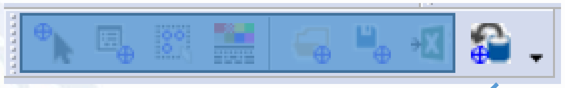
Overwrite Climatic Zones in db with IDWM Climatic Zone

Plan Id 00DN

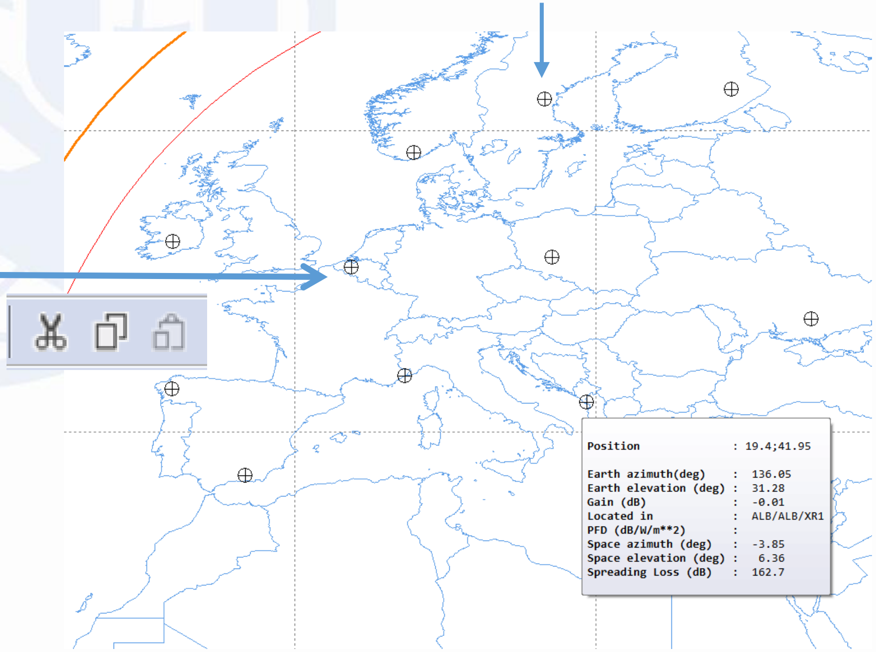
C11a Test Points (Maximum 100)

C11a. Test Points (maximum 100)

Row No	Longitude degrees E	Latitude degrees N	Antenna Altitude (m)	Climatic Zone	C. Zone db
1	-8.1200	42.8200	0	H	H
2	-8.0700	52.6200	0	F	F
3	-3.2700	37.1300	0	K	K
4	3.7700	50.9200	0	E	E
5	7.3200	43.7300	0	L	L
6	7.9300	58.5300	0	G	G
7	16.6300	62.0800	0	E	E
8	17.1200	51.6000	0	H	H
9	19.4000	41.9500	0	K	K
10	29.0000	62.7200	0	E	E
11	33.3200	38.6500	0	K	K
12	34.2700	47.5000	0	K	K
13	51.0000	33.1200	0	K	K
14	54.7300	62.7300	0	C	C
15	55.6800	47.0700	0	E	E
16	71.7800	31.4000	0	E	E
17	75.9300	14.6700	0	N	N
18	77.8500	47.7000	0	E	E
19	90.5300	22.5700	0	N	N

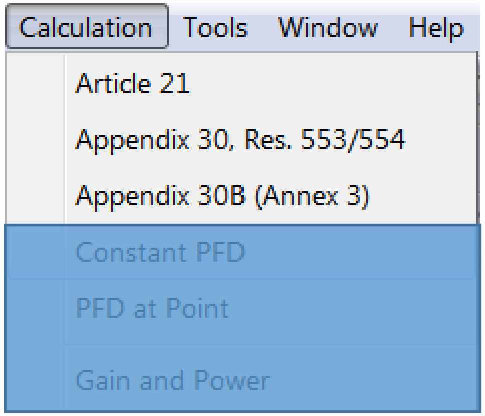


SPS



```
Position                 : 19.4;41.95

Earth azimuth(deg)       :  136.05
Earth elevation (deg)    :  31.28
Gain (dB)                :  -0.01
Located in               :  ALB/ALB/XR1
PFD (dB/W/m**2)          :
Space azimuth (deg)      :  -3.85
Space elevation (deg)    :   6.36
Spreading Loss (dB)      :  162.7
```

Interactive PFD


Calculation
Tools
Window
Help
Article 21
Appendix 30, Res. 553/554
Appendix 30B (Annex 3)
Constant PFD
PFD at Point
Gain and Power

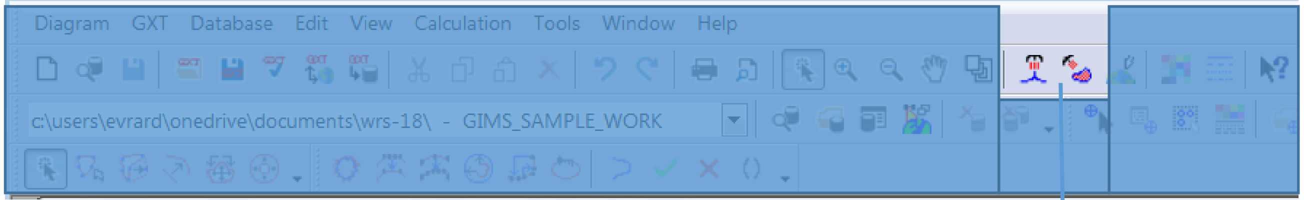


Diagram
GXT
Database
Edit
View
Calculation
Tools
Window
Help

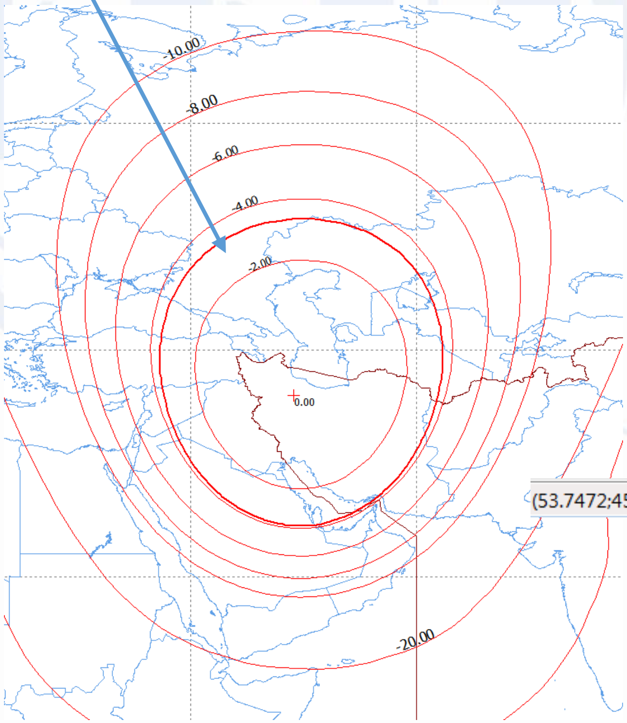
c:\users\evrard\onedrive\documents\wrs-18\ - GIMS_SAMPLE_WORK

Gain & PFD Tool

Click on map

Result on Status Bar

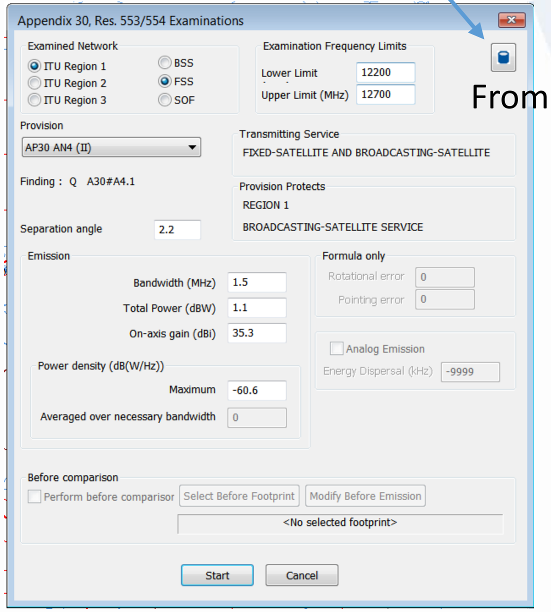
Excess area


-10.00
-8.00
-6.00
-4.00
-2.00
0.00
-20.00

(53.7472;45.3102) PFD: Value =-127.94 Limit=-128.67 dB(W/m**2) in 27MHz

(55.8573;38.3282) gain = -1.38

Set up parameters



Appendix 30, Res. 553/554 Examinations

Examined Network
● ITU Region 1
○ ITU Region 2
○ ITU Region 3
○ BSS
● FSS
○ SOF

Examination Frequency Limits
Lower Limit: 12200
Upper Limit (MHz): 12700

Provision: AP30 AN4 (II)

Transmitting Service: FIXED-SATELLITE AND BROADCASTING-SATELLITE

Finding : Q A30#A4.1

Provision Protects: REGION 1
BROADCASTING-SATELLITE SERVICE

Separation angle: 2.2

Emission
Bandwidth (MHz): 1.5
Total Power (dBW): 1.1
On-axis gain (dBi): 35.3

Power density (dB(W/Hz))
Maximum: -60.6
Averaged over necessary bandwidth: 0

Formula only
Rotational error: 0
Pointing error: 0

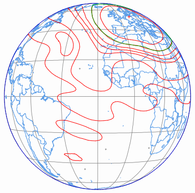
☐ Analog Emission
Energy Dispersal (kHz): -9999

Before comparison
☐ Perform before comparisor
<No selected footprint>

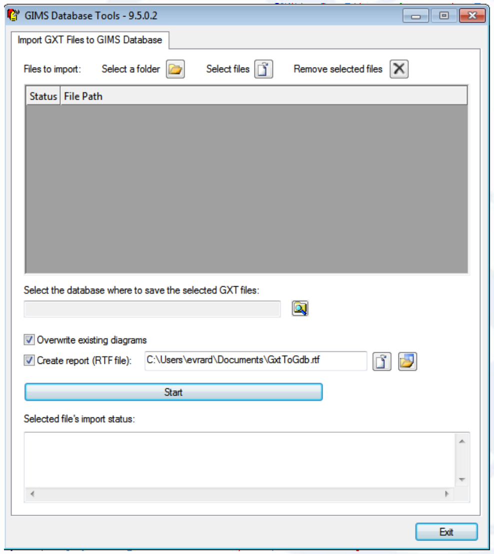
Select Before Footprint
Modify Before Emission
Start
Cancel

From SRS

GXT File



Database | Tools | Import multiple GXT files



GIMS Database Tools - 9.5.0.2

Import GXT Files to GIMS Database

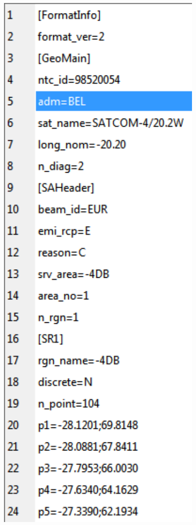
Files to import: Select a folder · Select files · Remove selected files

Status	File Path

Select the database where to save the selected GXT files:

☑ Overwrite existing diagrams

☑ Create report (RTF file): C:\Users\evrard\Documents\GxtToGdb.rtf



```
[FormatInfo]
format_ver=2
[GeoMain]
ntc_id=98520054
adm=BEL
sat_name=SATCOM-4/20.2W
long_nom=-20.20
n_diag=2
[SAHeader]
beam_id=EUR
emi_rcp=E
reason=C
srv_area=-4DB
area_no=1
n_rgn=1
[SR1]
rgn_name=-4DB
discrete=N
n_point=104
p1=-28.1201;69.8148
p2=-28.0881;67.8411
p3=-27.7953;66.0030
p4=-27.6340;64.1629
p5=-27.3390;62.1934
```

GXT File Format in Preface

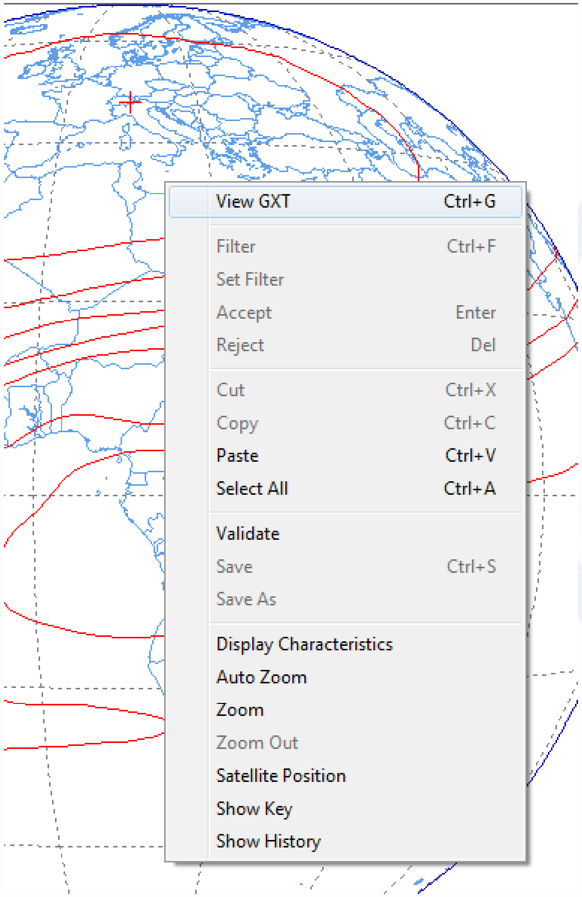
SpaceVal_V6.ico

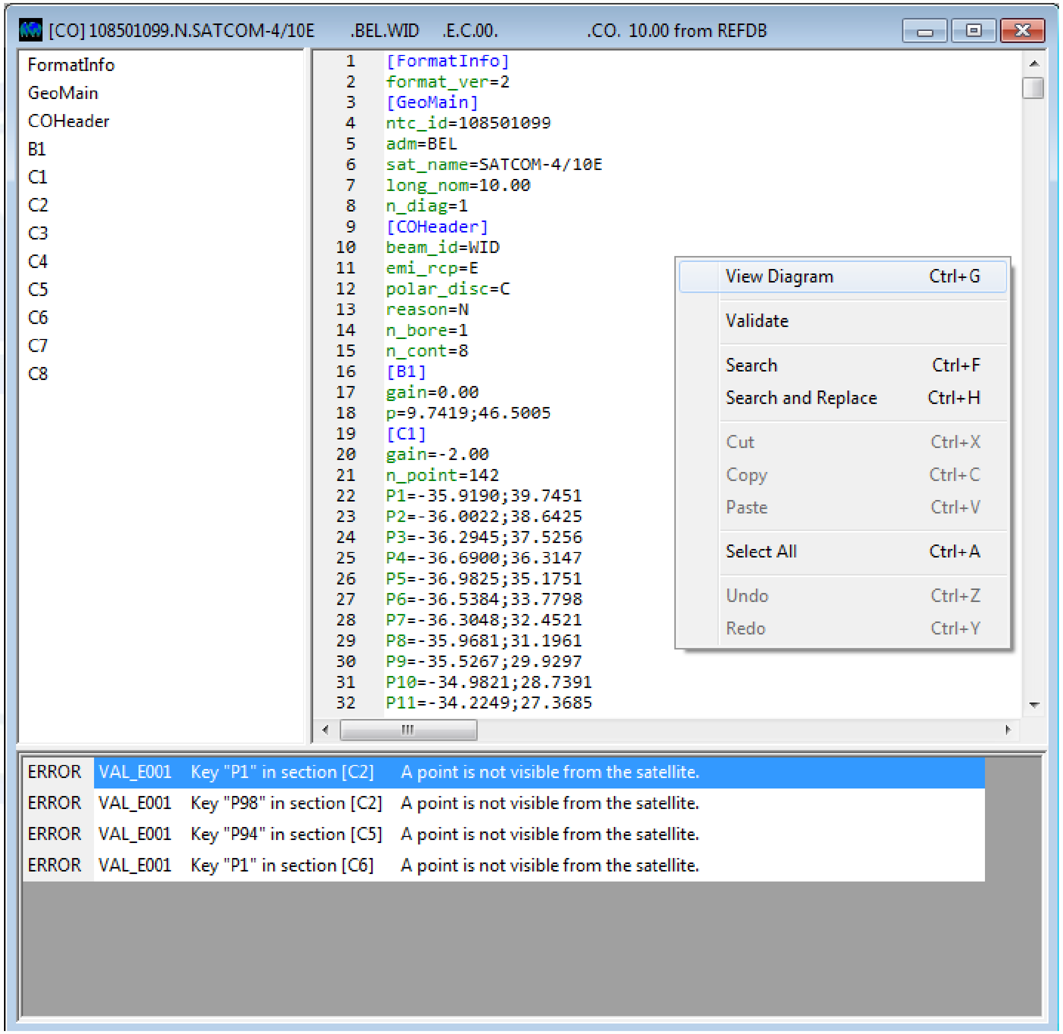
SRS

January 1st, 2013

GXT | Batch Export : Convert several diagrams to GXT files

GXT Editor & Validation


View GXT Ctrl+G
Filter Ctrl+F
Set Filter
Accept Enter
Reject Del
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Select All Ctrl+A
Validate
Save Ctrl+S
Save As
Display Characteristics
Auto Zoom
Zoom
Zoom Out
Satellite Position
Show Key
Show History

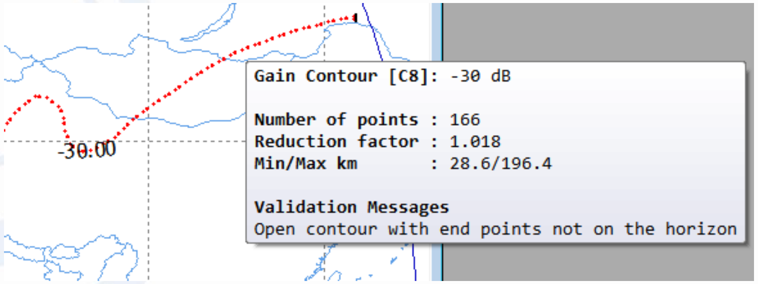

[CO] 108501099.N.SATCOM-4/10E .BEL.WID .E.C.00. .CO. 10.00 from REFDB
FormatInfo
GeoMain
COHeader
B1
C1
C2
C3
C4
C5
C6
C7
C8
View Diagram Ctrl+G
Validate
Search Ctrl+F
Search and Replace Ctrl+H
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Select All Ctrl+A
Undo Ctrl+Z
Redo Ctrl+Y

```
[FormatInfo]
format_ver=2
[GeoMain]
ntc_id=108501099
adm=BEL
sat_name=SATCOM-4/10E
long_nom=10.00
n_diag=1
[COHeader]
beam_id=WID
emi_rcp=E
polar_disc=C
reason=N
n_bore=1
n_cont=8
[B1]
gain=0.00
p=9.7419;46.5005
[C1]
gain=-2.00
n_point=142
P1=-35.9190;39.7451
P2=-36.0022;38.6425
P3=-36.2945;37.5256
P4=-36.6900;36.3147
P5=-36.9825;35.1751
P6=-36.5384;33.7798
P7=-36.3048;32.4521
P8=-35.9681;31.1961
P9=-35.5267;29.9297
P10=-34.9821;28.7391
P11=-34.2249;27.3685
```

```
ERROR  VAL_E001  Key "P1" in section [C2]   A point is not visible from the satellite.
ERROR  VAL_E001  Key "P98" in section [C2]  A point is not visible from the satellite.
ERROR  VAL_E001  Key "P94" in section [C5]  A point is not visible from the satellite.
ERROR  VAL_E001  Key "P1" in section [C6]   A point is not visible from the satellite.
```

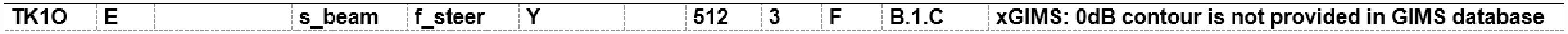
GIMS Validation

- **Integrated and invoked before diagram is saved**
  - Diagrams in GIMS DB are valid
- **Ensure correctness of diagrams**
  - No looping/crossing gain contours
  - Visibility of points
- **Ensure gain can be calculated**



```
Gain Contour [C8]: -30 dB

Number of points : 166
Reduction factor : 1.018
Min/Max km       : 28.6/196.4

Validation Messages
Open contour with end points not on the horizon
```

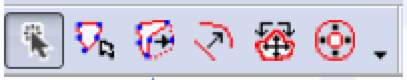
- **Rules evolution**
  - *Old diagrams might not pass but considered valid when saved without modification*
- **Warning in GIMS – Fatal in SpaceVal**



TK1O	E		s_beam	f_steer	Y		512	3	F	B.1.C	xGIMS: 0dB contour is not provided in GIMS database

GIMS Validation : Correction

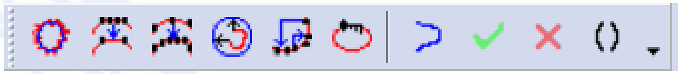
Mouse Capture Tools



Contour point edition

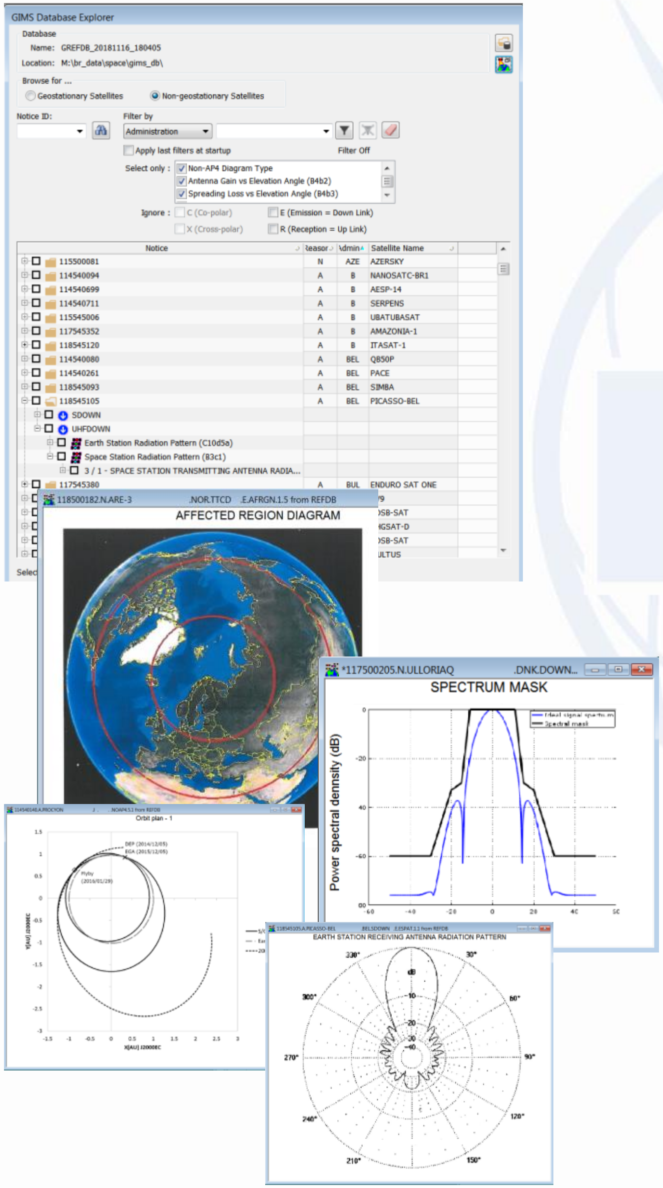
Remove points in GXT view

Filter Tools



- Smooth and add/remove points
- Remove close points
- Add points
- Extend
- Reorganize
- Close /Open

NGSO Diagrams


GIMS Database Explorer
118500182.N.ARE-3 .NOR.TTCD .E.AFRGN.1.5 from REFDB
AFFECTED REGION DIAGRAM
*117500205.N.ULLORIAQ .DNK.DOWN...
SPECTRUM MASK
Power spectral density (dB)
Orbit plan - 1
EARTH STATION RECEIVING ANTENNA RADIATION PATTERN

Database
Name: GREFDB_20181116_180405
Location: M:\br_data\space\gims_db\

Browse for ...
○ Geostationary Satellites ● Non-geostationary Satellites

Notice ID:
Filter by: Administration
☐ Apply last filters at startup
Filter Off

Select only :
☑ Non-AP4 Diagram Type
☑ Antenna Gain vs Elevation Angle (B4b2)
☑ Spreading Loss vs Elevation Angle (B4b3)

Ignore :
☐ C (Co-polar)
☐ E (Emission = Down Link)
☐ X (Cross-polar)
☐ R (Reception = Up Link)

Notice	Reason	Admin	Satellite Name
115500081	N	AZE	AZERSKY
114540094	A	B	NANOSATC-BR1
114540699	A	B	AESP-14
114540711	A	B	SERPENS
115545006	A	B	UBATUBASAT
117545352	A	B	AMAZONIA-1
118545120	A	B	ITASAT-1
114540080	A	BEL	QB50P
114540261	A	BEL	PACE
118545093	A	BEL	SIMBA
118545105	A	BEL	PICASSO-BEL
SDOWN			
UHFDOWN			
Earth Station Radiation Pattern (C10d5a)			
Space Station Radiation Pattern (B3c1)			
3 / 1 - SPACE STATION TRANSMITTING ANTENNA RADIA...			
117545380	A	BUL	ENDURO SAT ONE

- **Stored as pictures**
- **NGSO Publication Automation**
- **Most popular**
  - Space Station Radiation Pattern (B3c1)
    Earth Station Radiation Pattern (C10d5a)
    Antenna Gain vs Elevation Angle (B4b2)
    Service Area (C11a)
    Spreading Loss vs Elevation Angle (B4b3)
    Spectrum Mask Diagram (C9c2)
    Non-AP4 Diagram Type
    Modulation and Multiple Access Type (C9c1)
    Affected Region (C11b)
- **Any others would be scanned and included**
  - Alternative Method for Exclusion Zone (A4b7d3)
    Space Station EIRP Mask (A14a)
    Earth Station EIRP Mask (A14b)
    Space Station PFD Mask (A14c)
    Nature of the Modulating Signal (C9a5a)
    Modulation Particulars (C9a8)

Batch Printing

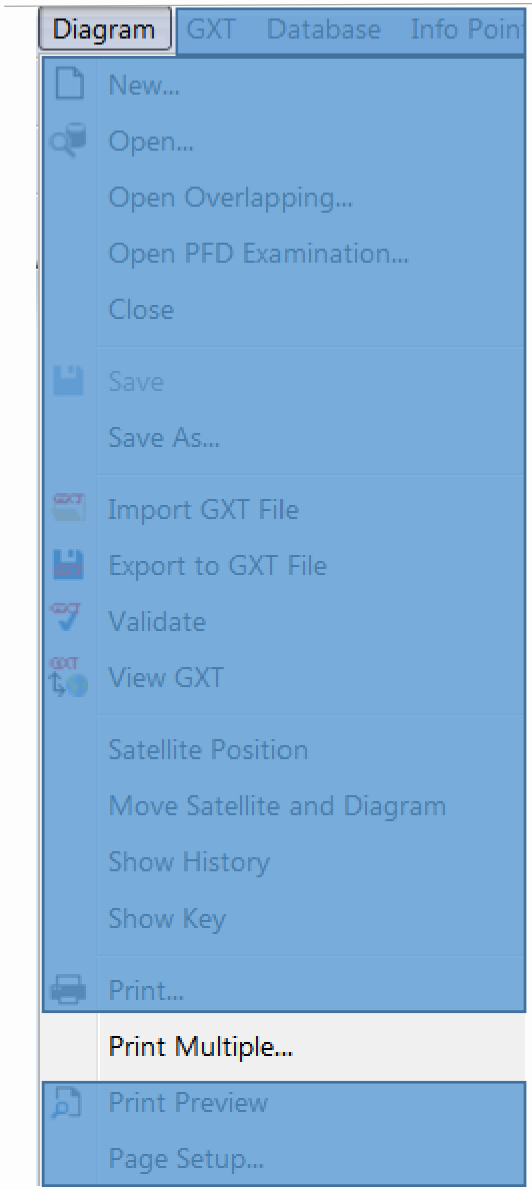
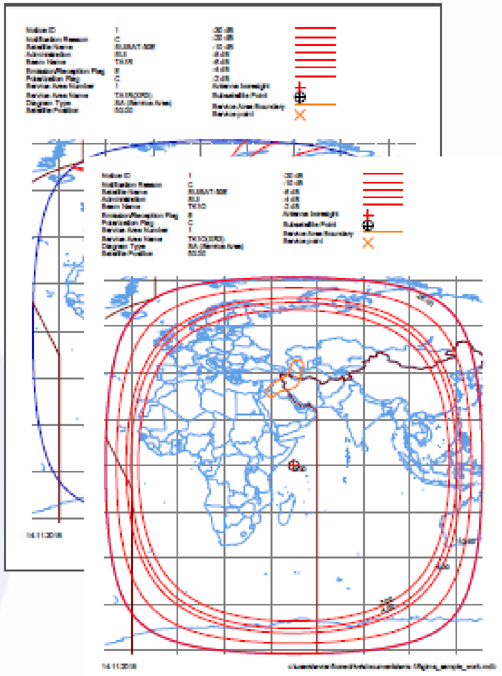


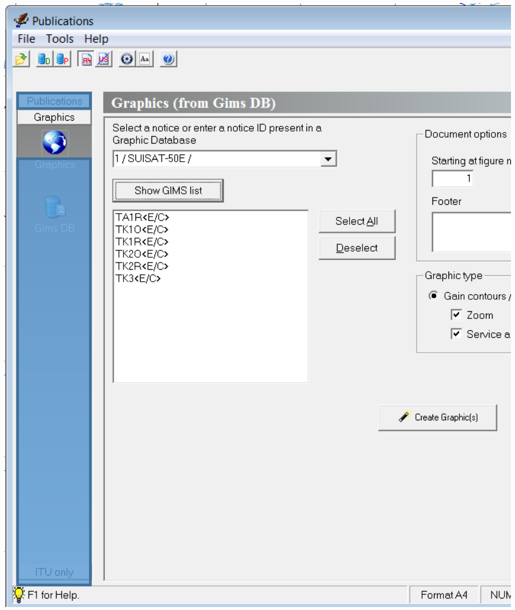
Diagram
GXT
Database
Info Point
New...
Open...
Open Overlapping...
Open PFD Examination...
Close
Save
Save As...
Import GXT File
Export to GXT File
Validate
View GXT
Satellite Position
Move Satellite and Diagram
Show History
Show Key
Print...
Print Multiple...
Print Preview
Page Setup...

Choose
with
Database Explorer



Edit |Copy Picture → Word, Apache OpenOffice, LibreOffice

GIMS & SpacePub


Publications
File Tools Help
Publications
Graphics
Gims DB
ITU only
Show GIMS list
Select All
Deselect
Create Graphic(s)
F1 for Help.
Format A4
NUM

Graphics (from Gims DB)

Select a notice or enter a notice ID present in a Graphic Database

1 / SUISAT-50E /

TA1R<E/C>
TK1O<E/C>
TK1R<E/C>
TK2O<E/C>
TK2R<E/C>
TK3<E/C>

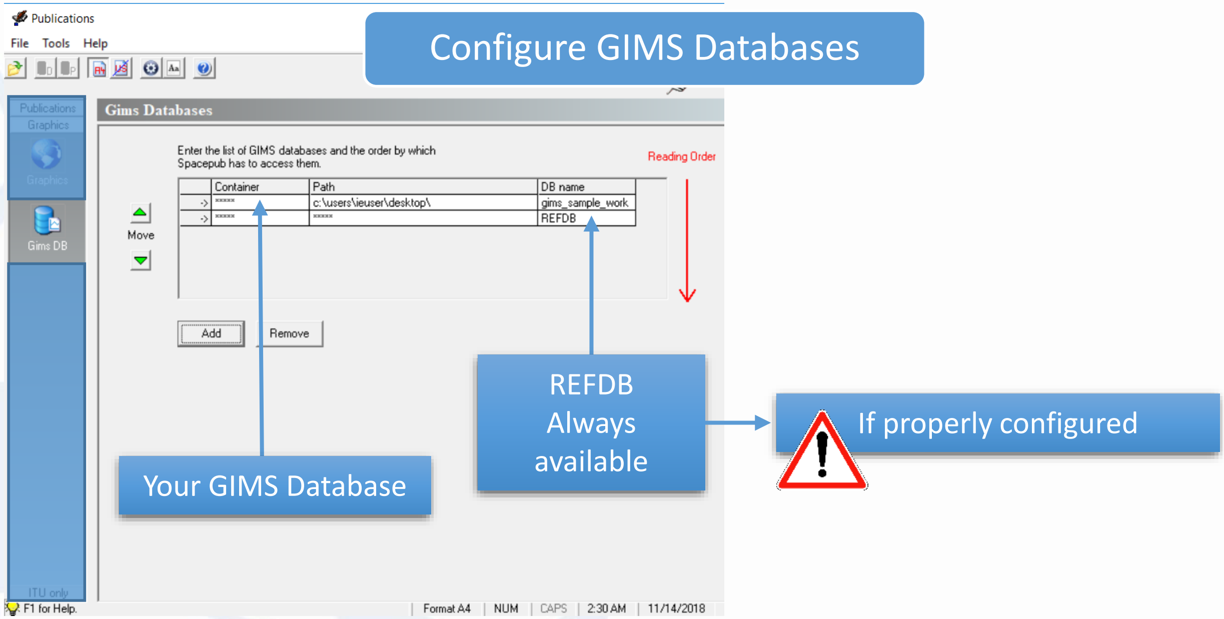
Document options

Starting at figure n
1

Footer

Graphic type

● Gain contours /
☑ Zoom
☑ Service a


Publications
File Tools Help
Publications
Graphics
Gims DB
ITU only
Move
Add
Remove
Reading Order
F1 for Help.
Format A4
NUM
CAPS
2:30 AM
11/14/2018

Gims Databases

Enter the list of GIMS databases and the order by which Spacepub has to access them.

Container	Path	DB name
*****	c:\users\ieuser\desktop\	gims_sample_work
*****	*****	REFDB

Configure GIMS Databases

Your GIMS Database

REFDB
Always
available

If properly configured

Graphics Tab

- Print selected diagrams

Publications Tab

- Option to include graphics

Resulting RTF document

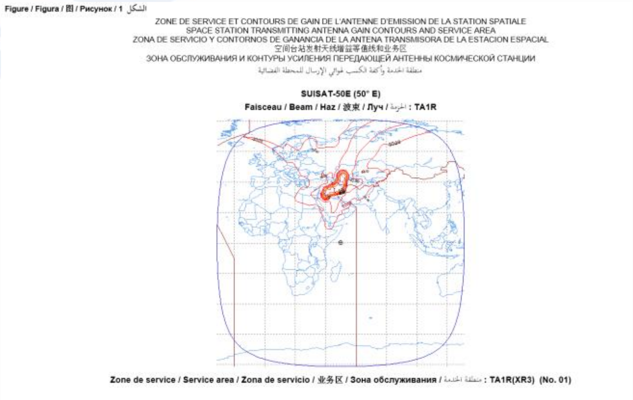


Figure / Figura / 图 / Рисунок / 1 الشكل

ZONE DE SERVICE ET CONTOURS DE GAIN DE L'ANTENNE D'EMISSION DE LA STATION SPATIALE
SPACE STATION TRANSMITTING ANTENNA GAIN CONTOURS AND SERVICE AREA
ZONA DE SERVICIO Y CONTORNOS DE GANANCIA DE LA ANTENA TRANSMISORA DE LA ESTACION ESPACIAL
空间台站发射天线增益等值线和业务区
ЗОНА ОБСЛУЖИВАНИЯ И КОНТУРЫ УСИЛЕНИЯ ПЕРЕДАЮЩЕЙ АНТЕННЫ КОСМИЧЕСКОЙ СТАНЦИИ
منطقة الخدمة وأكفة الكسب لهوائي الإرسال للمحطة الفضائية

SUISAT-50E (50° E)

Faisceau / Beam / Haz / 波束 / Луч / الحزمة : TA1R

Zone de service / Service area / Zona de servicio / 业务区 / Зона обслуживания / منطقة الخدمة : TA1R(XR3) (No. 01)

Programming with GIMS Data

Gimapi32.dll

- Browse REFDB
- Browse personal DBs
- Import/Export GXT files
- Save into personal DBs
- Display information points

Shapedbm.dll

- Calculate gain

On IFIC DVD

- Documentation
- Code samples

Works from most languages on Windows

- C, C++, Fortran, Visual Basic, C#...

32-bit only

Help

- **Download**
  - https://www.itu.int/en/ITU-R/software/Pages/gims.aspx
- **Videos - Demos**
  - https://www.itu.int/en/ITU-R/software/Pages/gims_tutorial.aspx
- **Contact**
  - brsas@itu.int