

Installing and Running the Spectrum Utilization Study Software (SUSS) Programs

by: Donald Draper Campbell¹
FCC / OET / ECD / TAB

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General Introduction

The Federal Communications Commission publishes on its web site extracts of its licensing databases. A table of contents, description of these extracts and download information can be found on the Commission's web site. Each data set is composed of extracts of the various tables contained in the associated licensing system. These individual files are exported as pipe delimited ASCII files in the Microsoft format, i.e., the end of line is character string "LfCr" which are then zipped up into a single file for posting on the Commission's web site.

I have written a series of programs in Microsoft Visual BASIC (Professional) version 6.0 (32-bit) using the MS Jet engine DAO 3.6 (i.e., ACCESS) as an SQL database. In order to reduce the time required to process the data, it has been found that these programs should run on a Workstation which has three independent hard drives installed because of the very large amount of reading and writing of data required. The raw data should be loaded on drive "D" and the output written to drive "E". Using this method, the read / write functions are on separate drives and controller cards.

Because of the interdependency of the SUSS programs, the programs must be run in the order listed below. One of the programs, "Build Geographic Area Index Database", needs only be run once, at the time of installing the SUSS program-set. The other programs need to be run each time you download a new data set.

The SUSS programs can be downloaded from the web site www.fcc.gov/oet/info/software/suss/.

¹ The author can be contacted via e-mail at donald.campbell@fcc.gov or by telephone at 202-418-2405, 7:30 am to 4:00 pm, eastern time.

I would suggest creating a directory in which all the SUSS programs will reside. The programs files are over 10 MB each in size. The extracts from the various Commission licensing systems can be download from web site www.fcc.gov/oet/info/database/fadb.html. It should be noted that many of these date sets are over 100 MB in size.

Data Conversion Notes

1. In some cases, assignments have been made from ‘band edge to band edge’ or ‘channel edge to channel edge’. The program attempts to expand this type of assignment to individual carrier assignments whenever possible. The “Freq” table contains three frequency entries: “FreqC” (carrier frequency), “FreqL” (lower band/channel edge frequency) and “FreqU” (upper band/channel edge frequency). In all cases, the original lower and upper band/channel edge is retained.
2. In the conversion process all liner dimensions have been converted to metric values, *i.e.*, ground elevation, antenna height about ground *etc.*
3. In the case of stations licensed under Part 74 – Subpart D “Remote Pickup Broadcast Stations; Subpart E “Aural Broadcast Auxiliary Stations” and Subpart F “Television Broadcast Auxiliary Stations, the area of operation is not always defined as a distance (in kilometers) around a specified point (Lat/Lon) but in terms of a descriptive geographical location, *i.e.*, “20 kilometers around New York City”. This latter description does not permit the geographic plotting of the station location/area of operation. These Part 74 facilities are required to identify the “parent” stations under which they function via parent’s “Facility ID Number” or as a last resort, the parent’s “call sign”. In order to accomplish this task, “CnvUls” accesses the Media Bureau’s “Consolidated Database System (CDBS) to create a “parent” location record.

MFF Data Base structure

The MFF data base consist of both a temporary and a permanent set of tables and databases.

Running Order

Because several of the convert programs rely on files generated by other programs, you will need to run the programs in the following order.

Antenna Site Database – required by all
Build Geographic Area Index Database – required by all but only need to be created once.
Convert Tower Data – required by all but only need to be created once.
Convert CDBS
Convert COALS
Convert IBFS
Convert ULS – CnvUls uses table created by CnvCdbS

Antenna Site Database

(AntSiteDb)

All the “convert” programs use a common antenna site data set. This requires the creating of a database which consists of “Registrations” files of the “Antenna Structure Registration” data set (see, “<http://wireless.fcc.gov/uls/index.htm?job=transaction&page=weekly>” or “<ftp://wireless.fcc.gov/pub/uls/complete/>”) and the creation of “AntSiteDb’s A, B, C & D” tables using the program “Antenna Site Database” (“AntSiteDb”). The setup program and associated files, program documentation, database file structure and source code are all contained in the zipped file "antsitedb.zip"

Setting up the program

- Launch the program “AntSiteDb”
- Left click on “Setup”
- Left click on “Modify File Location”
- Select source of raw ASR data and output files.
- Left click on “Exit” to exit program

Running the program

- Launch the program “AntSiteDb”
- Left click on “Of Raw ASR Database”
- Left click on “Of Tower Databases: A, B, C & D”
- Left click on “Update / Populate ASR Database”
- Left click on “Exit” to exit program

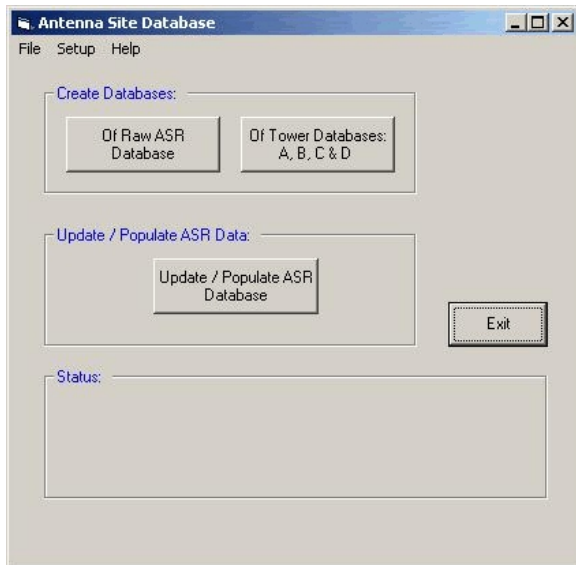


Figure 1 – AntSiteDb.jpg



Figure 2 – AntSiteDb_1.JPG

Convert Tower Data

(CnvTwrData)

Convert Tower Data (CnvTwrData) program is used to create a supplemental data set of antenna structures based on data found on the web. Many of the major commercial antenna tower companies along with the major cellular and PCS operators publish on the web information their antenna site locations in the hopes of renting antenna space to other users. These tower data sets include towers over 200 feet height or in the glide slope path of an airport that are required to have a FAA analysis performed and registered in the Commissions' "Antenna Structure Registration".

Currently, this programs only handles the following nine data sets: American Telephone and Telegraph (AT&T / Cingular); American Tower Corporation; Crown Castle International; Global Tower Partners; KGI Wireless; SBA Towers (owned and managed); Sprint/Nextel; and Vanguard Wireless. Information on how to gather and import these data sets can be found in Appexdix A.

Build Geographic Area Index Database

(BldGAInd)

(BldGAInd) is used to build a FIPS database using the flat ASCII file “fips_area_perimeter_data.dat”. This database is needed to run the MffTools program. This database contains data that relates the FIPS code with the textual name of the State and County it represents. The setup program and associated files, program documentation, database file structure and source code are all contained in the zipped file "bldgaind.zip".

Setting up the program

- Launch the program “BldGAInd”
- Left click on “Step”
- Left click on “Modify File Location”
- Use the <<“FIPS State County Area data set” Browse> button to select the input data source file.
- Use the <<“Output MDB File” Browse> button to select and name the output file name.
- Left click on “Exit” to exit program

Running the program

- Launch the program “BldGAInd”
- Left click <Initialize Database>
- Then left click <Load FIPS Data>
- Left click on “Exit” to exit program

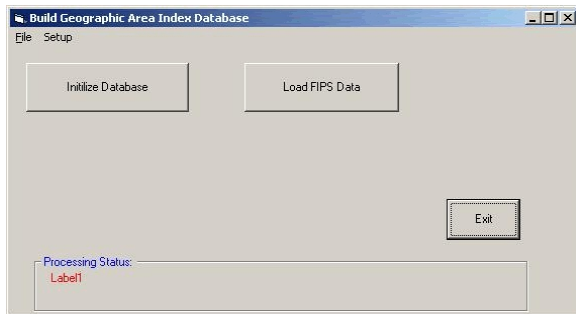


Figure 3 – BldGAInd.jpg

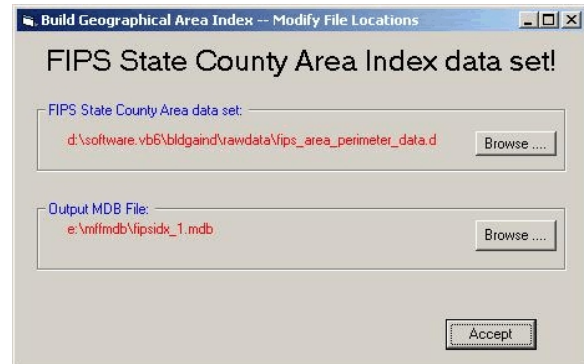


Figure 4 – BldGAInd_1.jpg

Note: The file “fips_area_perimeter_data.dat” can be found in the ‘SourceCode’ directory of the zipped file ‘bldgaind.zip’

Convert CDBS

(CnvCdb)

This program, *CnvCdb*, converts bulk assignment data (licensed and applications) extracted from Federal Communication Commission’s Media Bureau’s (MB) Consolidated Database System into a relational radio assignment data base system — OET’s Master Frequency File (MFF) database system. The MFF database has been structured to optimize the conducting of spectrum management studies. The “Consolidated Database System” (CDBS) is used to license the following services:

Radio Service	Frequency Range (MHz)
AM Broadcast Stations (47 CFR Part 73 Subpart A)	.530 to 1.600
FM Broadcast Stations (47 CFR Part 73 Subpart B)	88 to 108
Noncommercial FM Broadcast Stations (47 CFR Part 73 Subpart C)	88 to 92
TV Broadcast Stations (47 CFR Part 73 Subpart E)	54 to 72, 76 to 88 174 to 216, 470 to 806
Low Power FM Broadcast Stations (47 CFR Part 73 Subpart G)	88 to 108
Low Power TV, TV Translator and TV Booster Stations (47 CFR 74 Subpart G)	54 to 72, 76 to 88 174 to 216, 470 to 806
FM Broadcast Translator Stations and FM Broadcast Booster Stations (47 CFR 74 Subpart L)	88 to 108

On a daily bases, the FCC publishes bulk extracts of the Consolidated Database System (CDBS) on the FCC Web Site. This extracts consists of a series of flat ASCII file using the pipe character “|” as the field delimiter and the string “^|” as the record terminator. These files are zipped together and uploaded on the web.

Installing *CnvCdb*

- Create a permanent directory to host the program *CnvCdb* (i.e., “c:\Program Files\Fcc\CnvCdb\”) as well as a temporary directory into which you unzip the file *CnvCdb.zip*.
- UnZip the file *CnvCdb.zip* in the temporary directory. Then double click on the “setup” file and follow the program installation instructions.

Create Input and Output Data Directories

- Create a directory to store raw CDBS data.
- Create a directory to house the assignment MS Access database created by the *CnvCdb* program.

- It is suggested that these two directories be placed on different controllers and hard drives on your computer to speed up the conversion process, i.e., on drives “D” and “E”

Acquiring Raw Data

- Download the zipped CDBS file set to the appropriate directory location.
- Unzip the files.

Running the Program

Launch the program *CnvCdb*s.

- Upon startup, the program will test to see if the file “CnvCdbs.ini” exists. If not, the program will create the “ini” file and fill it with default values.

Define the location of the input and output files.

- To do this, left click on <Setup> on the Menu Bar. This causes a drop down menu to appear.
- Left click on the <Modify File Location> option on the drop down menu. This causes window to open. Click on the <Browse> button to edit the location of the input and output path and file names.
- Left click on the <Accept> command button to accept your selections.

Run the Program.

- Click on the < Initialize Database and Process Raw Data> command button. This action will create an Access database shell in the directory previously selected to store the output file and create the output database

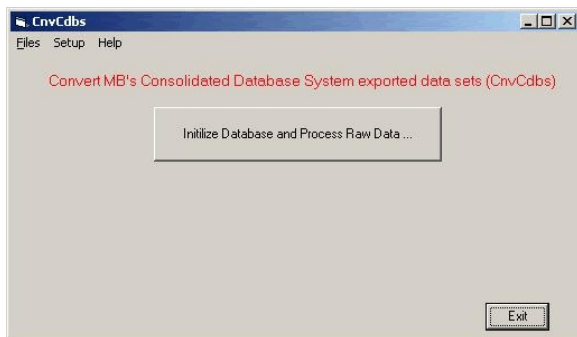


Figure 5 – CnvCdbs.jpg



Figure 6 – CnvCdbs_1.jpg

Convert COALS

(CnvCoals)

Introduction

This program, *CnvCoals*, converts bulk assignment data (licensed and applications) extracted from Federal Communication Commission’s Media Bureau’s (MB) Cable Operation and Licensing System into a relational radio assignment data base system — OET’s Master Frequency File (MFF) database system. The MFF database has been structured to optimize the conducting of spectrum management studies.

The “Cable Operations and Licensing System” (COALS) is used to license the following services and administer the:

Administrative Functions / Radio Service	Frequency Range (MHz)
Multichannel Video and Cable Television Service (47 CFR Parts 76)	
Cumulative Leakage Index (CLI)	108 to 400
Aeronautical Frequency Processing (AFP)	108 to 400
Cable Television Relay Service (47 CFR Parts 78)	1990 to 2110, 2450 to 2500 5925 to 6425, 6425 to 6525 6875 to 7125, 12,700 to 13,250 17,700 to 18,140 18140 to 18580 19,260 to 19,700 38,600 to 40,00

On a daily bases, the FCC publishes bulk extracts of the Cable Operation and Licensing System (COALS) on the FCC Web Site. This extracts consists of a series of flat ASCII file using the pipe character “|” as the field delimiter and the string “|^” as the record terminator. These files are zipped together and placed on the web.

Installing *CnvCoals*

- Create a permanent directory to host the program *CnvCoals* (i.e., “c:\Program Files\Fcc\CnvCoals”) as well as a temporary directory in which you unzip the file *CnvCoals.zip*.
- UnZip the file **CnvCoals.zip** in a temporary directory. Then double click on the “setup” file and follow the program installation instructions.

Create Input and Output Data Directories

- Create a directory to house raw COALS data.
- Create a directory to store the assignment MS Access database created by the CnvCoals program.
- It is suggested that these two directories be placed on different controllers and hard drives on your computer to speed up the conversion process, i.e., on drives “D” and “E”

Acquiring Raw Data

- Download the zipped COALS file set to the appropriate directory location.
- Unzip the files.

Running the Program

Launch the program *CnvCoals*.

- Upon startup, the program will test to see if the file “CnvCoals.ini” exists. If not, the program will create the “ini” file and fill it with default values.

Define the location of the input and output files.

- To do this, left click on <Setup> on the Menu Bar. This causes a drop down menu to appear. Left click
- on the <Modify File Location> option on the drop down menu. This causes window to open. Click on the <Browse> button to edit the location of the input and output path and file names.
- Left click on the <Accept> command button to accept your selections.

Run the Program.

- Click on the < Initialize Database and Process Raw Data ...> command button. This action will create an Access database shell in the directory previously selected to store the output file and begin the data conversion process.

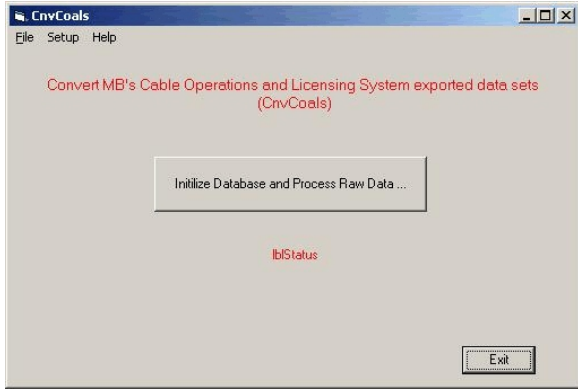


Figure 7 – CnvCoals.jpg

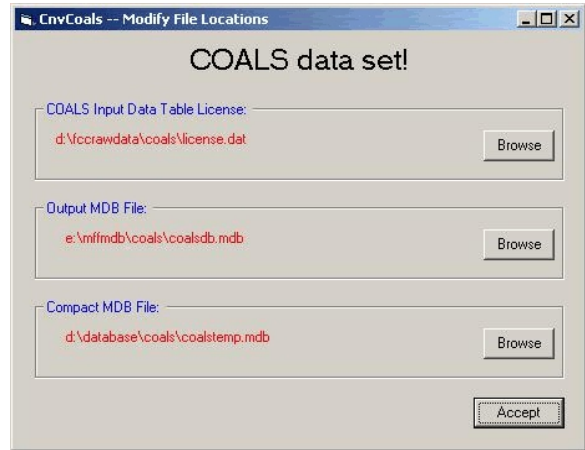


Figure 8 – CnvCoals_1.jpg

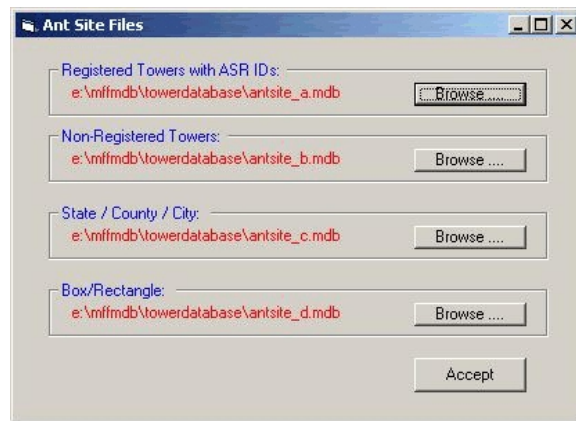


Figure 9 – CnvCoals_2.jpg

Convert IBFS

(CnvIbfs)

Introduction

The International Bureau Electronic Filing System (IBFS) processes applications for 13 service areas:

Radio Service / Functions	Frequency Range (MHz)
International Public Fixed Radio (IPF) (47 CFR Parts 23)	
Earth Stations (SES) (47 CFR Parts 25)	
Space Stations (SAT)	
International HF Broadcast (47 CFR Parts 73)	
. . . . (47 CFR Parts 74)	
Section 214 Authorizations (ITC)	
Submarine Cable Landing licenses (SCL)	
Recognized Operating Agency (ROA)	
Foreign Carrier Notification (FCN)	
Accounting Rate Changes (ARC)	
Data Network Identification Codes (DNIC)	
International Signaling Point Codes (ISPC)	
Section 325-C Authorizations (325)	
International Special Project (ISP)	

This program, *CnvIbfs*, converts data extracted from International Bureau Filing System (IBFS) into a relational data base system — OET’s Master Frequency File (MFF) database system. The MFF database has been structured to optimize the conducting of spectrum management studies.

One a daily basis, the FCC publishes all non-administrative and internal tracking system tables associated with IBFS on the Commission’s Web Site. The underlying database management system for this licensing system is Sybase. These tables are exported from the licensing system using the Sybase BCP function which creates a series of flat ASCII file using the pipe character “|” as the field delimiter and the character string “|^\\n” as the record terminator.

Installing *CnvIbfs*

- Create a permanent directory to host the program *CnvIbfs* (i.e., “c:\Program Files\Fcc\CnvIbfs\”) as well as a temporary directory in which you unzip the file *CnvIbfs.zip*.
- UnZip the file *CnvIbfs.zip* in a temporary directory. Then double click on the “setup” file and following the program installation instructions.

Create Input and Output Data Directories

- Create a directory to store various tables that comprise IBFS and another directory for the assignment data base to be created by this program.
- It is suggested that these two directories be place on different controllers and hard drives on your computer to speed up the conversion process, i.e., on drives “D” and “E”

Acquiring Raw Data

- Download the zipped COALS file set to the appropriate directory location.
- Unzip the files.

Running the Program

Launch the program *CnvIbfs*.

- Upon startup, the program will test to see if the file “CnvIbfs.ini” exists. If not, the program will create the “ini” file and fill it with default values. The program then test to see if the files referenced in “CnvIbfs.ini” exist. If not, a window will be displaced so that you can enter the correct path name information.

Define the location of the input and output files.

- To do this, left click on <Setup> on the Menu Bar. This causes a drop down menu to appear. Left click on the <Modify File Location> option on the drop down menu. “Modify File Location” widow to be displayed.
- To define the location where the “CnvIbfs.dat” file is located, left click on the “Input Data Table of Contents” <Browse> command button. This will cause a “File Location” dialog box to appear. Select the desired path and file name.
- To define the path and filename of the MFF data base to be created, left click on the “Output MDB File” <Browse> command button. This will cause a “File Location” dialog box to appear. Select the desired path and file name.
- Left click on the <Accept> command button to accept your selections.

Run the Program.

- Click on the < Initialize Database and Process Raw Data > command button. This action will create an Access database shell in the directory previously selected to store the output file and create the output database

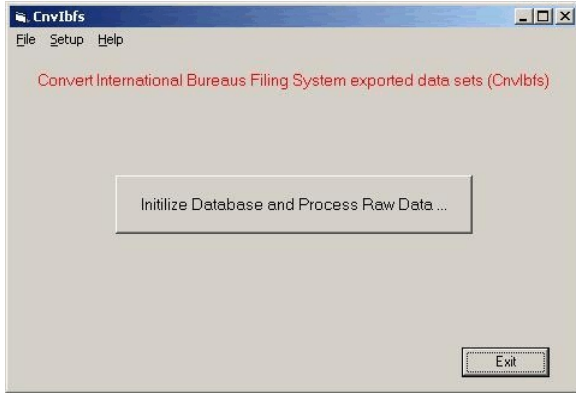


Figure 10 – CnvIbfs.jpg

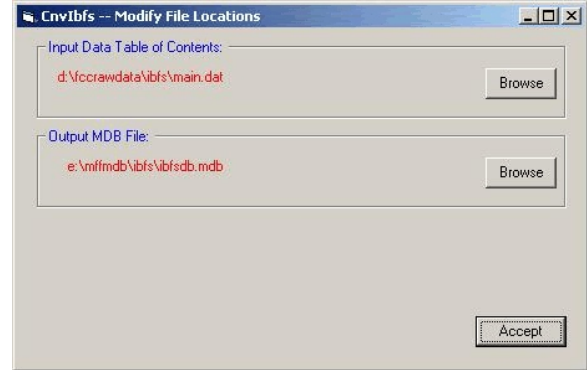


Figure 11 – CnvIbfs_1.jpg

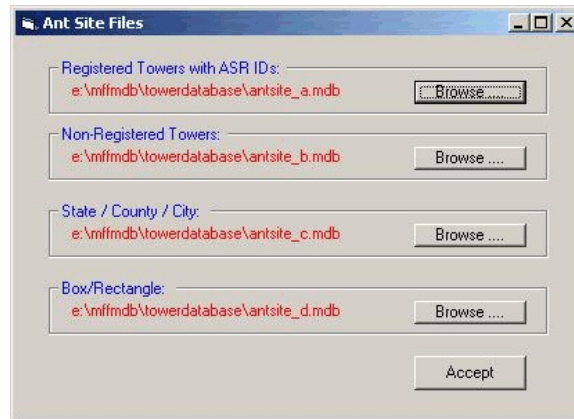


Figure 12 – CnvIbfs_2.jpg

Convert ULS

(CnvULs)

Introduction

This program, *CnvULs*, converts bulk assignment data (licensed and applications) extracted from Federal Communication Commission's Wireless Telecommunication Bureau's (WTB) Universal Licensing System into a relational radio assignment data base system — OET's Master Frequency File (MFF) database system. The MFF database has been structured to optimize the conducting of spectrum management studies.

On a weekly bases, the FCC publishes bulk extracts (licensed and applications) of the Universal Licensing System (ULS) by radio group on the FCC Web Sites –

<http://wireless.fcc.gov/uls/index.htm?job=transaction&page=weekly>

or

<ftp://wireless.fcc.gov/pub/uls/complete>

The “Universal Licensing System” (ULS) is used to license following radio services and actions: Aircraft (47 CFR Part 87), Amateur Radio (47 CFR Part 97), Antenna Structure Registration (47 CFR Part 17), Assignments and Transfers, Cellular (47 CFR Part 22), General Mobile Radio Service (GMRS) (47 CFR Part 95, Subpart A), Land Mobile Services (47 CFR Parts 21, 22 and 90), Market-based Services, Microwave (47 CFR Parts 74 and 101), Paging (47 CFR Part 22), and Personal Communications Service (47 CFR Part 24).

Extract Group	Radio Service	Zipped File Name
Aircraft - 47 CFR Part 87	AC Aircraft Stations	l_aircr.zip
Amateur	HA Amateur Radio Services HV Vanity	l_amat.zip
BRS & EBS (Formerly known as MDS/ITFS)	BR Broadband Radio Service ED Educational Broadband Service MD Multipoint Distribution Service (MDS and MMDS) VX Instructional Television Fixed Service	l_mdsitfs.zip
Cellular – 47 CFR Part 22	CL Cellular	l_cell.zip
Comm. Radio and Restricted Radiotelephone - FRC	CM Commercial Operator RR Restricted Operator	l_frc.zip
General Mobile Radio Service (GMRS)	ZA General Mobile Radio (GMRS)	l_gmrs.zip

Extract Group	Radio Service	Zipped File Name
Land Mobile - Broadcast Auxiliary	LP Broadcast Auxiliary Low Power LV Low Power Wireless Assist Video Devices RP Broadcast Auxiliary Remote Pickup	1_LMbcast.zip
Land Mobile - Private	GB Business, 806-821/851-866 MHz, Conventional GE PubSafty/SpecEmer/PubSaftyNtlPlan,806-817/851-862MHz,Conv GF Public Safety Ntl Plan, 821-824/866-869 MHz, Conv. GI Other Indust/Land Transp, 896-901/935-940 MHz, Conv. GJ Business/Industrial/Land Trans, 809-824/854-869 MHz, Conv. GO Other Indust/Land Transp, 806-821/851-866 MHz, Conv. GP Public Safety/Spec Emerg, 806-821/851-866 MHz, Conv. GU Business, 896-901/935-940 MHz, Conventional IG Industrial/Business Pool, Conventional IQ Intelligent Transportation Service (Public Safety) PA Public Safety 4940-4990 MHz Band PW Public Safety Pool, Conventional QM Non-Nationwide Public Safety/Mutual Aid, 220 MHz QQ Intelligent Transportation Service (Non-Public Safety) RS Land Mobile Radiolocation SG Conventional Public Safety 700 MHz SL Public Safety 700 MHz Band-State License SP 700 MHz Public Safety Broadband Nationwide License SY Trunked Public Safety 700 MHz YB Business, 806-821/851-866 MHz, Trunked YE PubSafty/SpecEmer/PubSaftyNtlPlan, 806-817 / 851-862 MHz, Trunked YF Public Safety Ntl Plan, 821-824/866-869 MHz, Trunked YG Industrial/Business Pool, Trunked YI Other Indust/Land Transp. 896-901/935-940 MHz, Trunked YJ Business/Industrial/Land Trans, 809-824/854-869 MHz, Trunked YO Other Indust/Land Transp. 806-821/851-866 MHz, Trunked YP Public Safety/Spec Emerg, 806-821/851-866 MHz, Trunked YU Business, 896-901/935-940 MHz, Trunked YW Public Safety Pool, Trunked	1_LMpriv.zip
Land Mobile - Commercial	GL 900 MHz Conventional SMR (SMR, Site-Specific) GM 800 MHz Conventional SMR (SMR, Site-specific) GR SMR, 896-901/935-940 MHz, Conventional GS Private Carrier Paging, 929-930 MHz GX SMR, 806-821/851-866 MHz, Conventional IK Industrial/Business Pool - Commercial, Conventional LN 902-928 MHz Location Narrowband (Non-multilateration) LW 902-928 MHz Location Wideband (Grandfathered AVM) NC Nationwide Commercial 5 Channel, 220 MHz QD Non-Nationwide Data, 220 MHz QO Non-Nationwide Other, 220 MHz QT Non-Nationwide 5 Channel Trunked, 220 MHz YK Industrial/Business Pool - Commercial, Trunked YL 900 MHz Trunked SMR (SMR, Site-Specific) YM 800 MHz Trunked SMR (SMR, Site-specific) YS SMR, 896-901/935-940 MHz, Trunked YX SMR, 806-821/851-866 MHz, Trunked	1_LMcomm.zip

Extract Group	Radio Service	Zipped File Name
Maritime Coast & Aviation Ground	AA Aviation Auxiliary Group AF Aeronautical and Fixed AR Aviation Radionavigation MA Marine Auxiliary Group MC Coastal Group MK Alaska Group MR Marine Radiolocation Land	l_coast.zip
Market Based Services	AW AWS, 1710-1755/2110-2155 MHz bands BA 1390-1392 MHz Band, Market Area BB 1392-1395 and 1432-1435 MHz Bands, Market Area BC 1670-1675 MHz Band, Market Area CJ Commercial Aviation Air-Ground Radiotelephone (800 MHz band) CN PCS Narrowband CP Part 22 VHF/UHF Paging (excluding 931MHz) CW PCS Broadband CX Cellular, Auctioned CY 1910-1915/1990-1995 MHz Bands, Market Area CZ Part 22 931 MHz Paging DV Multichannel Video Distribution AND Data Service GC 929-931 MHz Band, Auctioned GW General Wireless Communications Service LD Local Multipoint Distribution Service LS Location and Monitoring Service, Multilateration (LMS) MS Multiple Address Service, Auctioned PC Public Coast Stations, Auctioned QA 220-222 MHz Band, Auctioned TN 39 Ghz, Auctioned TZ 24 GHz Service WS Wireless Communications Service WX 700 MHz Guard Band WZ 700 MHz Lower Band YC SMR, 806-821/851-866 MHz, Auctioned YD SMR, 896-901/935-940 MHz, Auctioned YH SMR, 806-821/851-866 MHz, Auctioned (Rebanded YC license) ZV 218-219 MHz Service	l_market.zip

Extract Group	Radio Service	Zipped File Name
Microwave - 47 CFR Parts 74 and 101, and 3650 – 3700 MHz	AB Aural Microwave Booster AI Aural Intercity Relay AS Aural Studio Transmitter Link CE Digital Electronic Message Service - Common Carrier CF Common Carrier Fixed Point to Point Microwave CT Local Television Transmission MG Microwave Industrial/Business Pool MM Millimeter Wave 70/80/90 GHz Service MW Microwave Public Safety Pool NN 3650-3700 MHz PE Digital Electronic Message Service - Private TB TV Microwave Booster TI TV Intercity Relay TP TV Pickup TS TV Studio Transmitter Link TT TV Translator Relay WA Microwave Aviation WM Microwave Marine WR Microwave Radiolocation	l_micro.zip
Paging - 47 CFR Part 22	CA Commercial Air-ground Radiotelephone CB BETRS CD Paging and Radiotelephone CG General Aviation Air-ground Radiotelephone CO Offshore Radiotelephone CR Rural Radiotelephone	l_paging.zip
Ship - 47 CFR Part 80	SA Ship Recreational or Voluntarily Equipped SB Ship Compulsory Equipped SE Ship Exemption	l_ship.zip

There are two sets of zipped files for each group – licensed (l_xxx.zip) and application (a_xxx.zip). The zipped files contain several tables sets depending on the radio group being extracted. The program currently only will process the licensed data set, *i.e.*, (l_xxx.zip)

These extracts are comprised of several table sets that are radio service dependent which are in turn zipped into a single. These tables are exported from the licensing system using the Sybase BCP function which creates a series of flat ASCII file using the pipe character “|” as the field delimiter and the string “|^|” as the record terminator .

Installing *CnvUls*

- Create a permanent directory to host the program *CnvUls* (*i.e.*, “c:\Program Files\Fcc\CnvUls\”) as well as a temporary directory in which you unzip the file *CnvUls.zip*.
- UnZip the file *CnvUls.zip* in a temporary directory. Then double click on the “setup” file and follow the program installation instructions.

Create Input and Output Data Directories

- Create a directory to store each radio group with sub-directories for “licensed” and “applications”.
- Create a directory for the assignment data base to be created by this program.
- It is suggested that these two directories be place on different controllers and hard drives on your computer to speed up the conversion process, i.e., on drives “D” and “E”

Acquiring Raw Data

- Download the desired radio group zipped file sets to the appropriate directory location.
- Unzip the files.
- The unzipped files have use the naming convention “uls_extract..PUBACC_xx.dat” where “xx” is the data set type for the extract.
- Rename to “PUBACC_xx.dat”

Running the Program

Launch the program *CnvUls*.

- Upon startup, the program will test to see if the file “CnvUls.ini” exists. If not, the program will create the “ini” file and fill it with default values.

Define the location of the input and output files.

- To do this, left click on <Setup> on the Menu Bar. This causes a drop down menu to appear. Left click on the <Modify File Location> option on the drop down menu. This causes an other drop down menu to appear listing the various radio groups the program can convert. Left clicking on the radio group will cause a “Modify File Location” widow to be displayed.
- To define the location where the “CnvUls.dat” file is located, left click on the “Input Data Table of Contents” <Browse> command button. This will cause a “File Location” dialog box to appear. Select the desired path and file name.

To define the path and filename of the MFF data base to be created, left click on the “Output MDB File” <Browse> command button. This will cause a “File Location” dialog box to appear. Select the desired path and file name.

- Left click on the <Accept> command button to accept your selections.

Run the Program

It should be noted that the Microsoft ACCESS programs has a maximum file size limit of 2 GB. Several of the data set exceed this 2 GB limitation. In order to process these data sets, they have been split apart as follows:

- Left click on the data set to be converted button.

Extract Group	Radio Service Codes	Zipped File Name
Aircraft	AC	1_aircr.zip
Amateur	HA and HV	1_amat.zip
Cellular	CL	1_cell.zip
Coast and Ground [Maritime Coast & Aviation Ground]	AA, AF, AR, MA, MC, MK and MR	1_coast.zip
GMRS [General Mobile Radio Service]	ZA	1_gmrs.zip
LM Broadcast Auxiliary	LP, LV and RP	1_LMbcast.zip
LM Commercial < 806 MHz	IK, YK, NC, QD, QO and QT	1_LMcomm.zip
LM Commercial > 806 MHz	GM, YM, GX, GR, YS, GL, YL, LN, LW and GS	1_LMcomm.zip
LM Commercial = 806 MHz (YX)	YX (806-821 MHz)	1_LMcomm.zip
LM Commercial = 851 MHz (YX)	YX (851-866 MHz) NOTE: because of the number of frequencies per site, only the first twenty are processed.	1_LMcomm.zip
LM Private < 806 MHz (IG)	IG	1_LMpriv.zip
LM Private < 806 MHz (YG)	YG	1_LMpriv.zip
LM Private > 806 MHz	GE, GP, YE, YP, GP, YE, GF, YF, IQ and PA	1_LMpriv.zip
LM Public Safety < 806 MHz	AW, BA, BB, BC, CJ, CN, CP, CW, CX, CY, CZ, DV, GC, GW, LD, LS, MS, PC, QA, TN, WS, WX, WZ, YC, YD, YH, ZV	1_LMpriv.zip
LM Public Safety > 806 MHz	GE, GP, YE, YP, GP, YE, GF, YF, IQ and PA	1_LMpriv.zip
Market [Market Based Services]	AW, AWS, BA, BB, BC, CJ, CN, CP, CW, CX, CY, CZ, DV, GC, GW, LD, LS, MS, QA, TN, TZ, WS, WX, WZ, YC, YD, YH and ZV	1_market.zip
Microwave	AB, AI, AS, CE, CF, CT, MG, MM, MW, NN, PE, TB, TI, TP, TS, TT, WA, WM and WR	1_micro.zip
Paging	CA, CB, CD, CG, CO and CR	1_paging.zip

Extract Group	Radio Service Codes	Zipped File Name
BRS & EBS	BR, ED, MD and VX	1_mdsitfs.zip
Ship	SA, SB and SE	1_ship.zip
Radio Operator [Comm. Radio and Restricted Radiotelephone - FRC]	CM and RR	1_frc.zip

Source of “special_cond_code.dat” Data

The “special_cond_code.dat” file can be download from the following web page <http://wireless.fcc.gov/uls/index.htm?job=transaction&page=weekly>. The file name has a sequence number and thus need to be renamed “special_cond_code.dat”

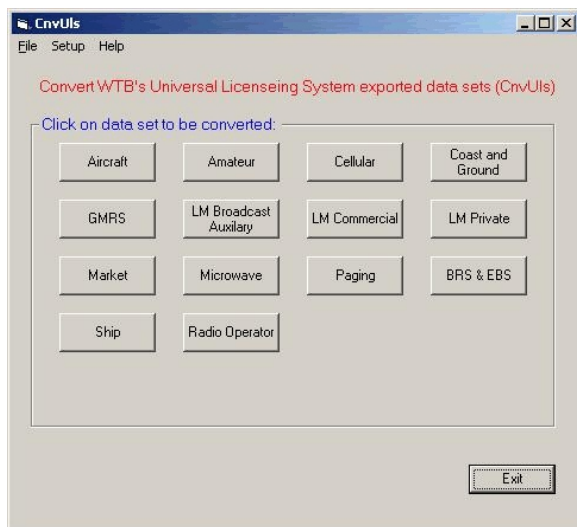


Figure 13 – CnvUls.jpg



Figure 14 – CnvUls_1_mw.jpg

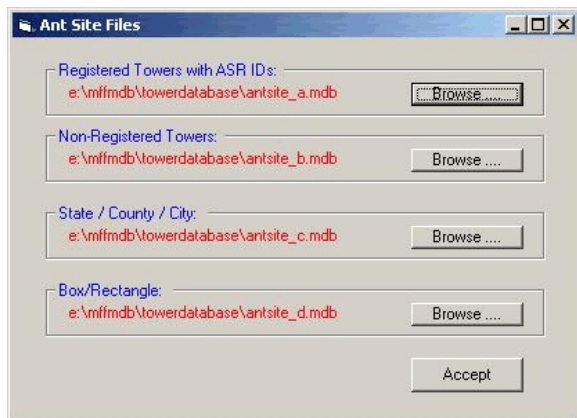


Figure 15 – CnvUls_2.jpg

Master Frequency File Tools

(MffTools)

Introduction

This program, *MffTools*, extracts radio assignment information from a relational database system (OET's Master Frequency File (MFF) database) based on user selected extraction criteria and generates several reports. The setup program and associated files, program documentation, database file structure documentation and program source code are all contained in the zipped file "MffTool.zip".

Installing *MffTools*

- Create a permanent directory to host the program *MffTools* as well as a temporary directory in which you can unZip the file *mfftool.zip*
- UnZip the file **mfftool.zip** in a temporary directory. Then double click on the "setup" file and following the program installation instructions.
- Create a directory to store the output map files created by MffTools

Running *MffTools*

If you are running *MffTools* for the first time or if you have changed the location of the input and output files, you will need to tell the program where these files are located, otherwise skip to Section 3.2.

Defining Input and Output File Locations.

MFF Path and Filename – Define the path and filename of the MFF database (*.mdb) by left clicking on the <Browse> button in "MFF Location and Name" frame which causes the "file command dialog" window to appear. Select the desired Master Frequency File Database.

Project Path and Filename – Define the path and filename of the output project file (*.pjt) by left clicking on the <Browse> button in the "Project Path and File Name" frame causing the "file command dialog" window to appear. Select a project output file name. This project file name is the base name used in creating the associated "*.wor", "*start.wor" and other files created by this program. **NOTE:** The project file name must begin with a character between the letters 'a' and 'z'. If the project name is "all6525", then following files were created by *MffTools* – "all6525.pjt", "all6525.mid", "all6525.mif", "all6525.wor" and "startall6525.wor", etc.²

²

This file name limitation is imposed by MapInfo on file names imbedded in MapInfo 'wor' files.

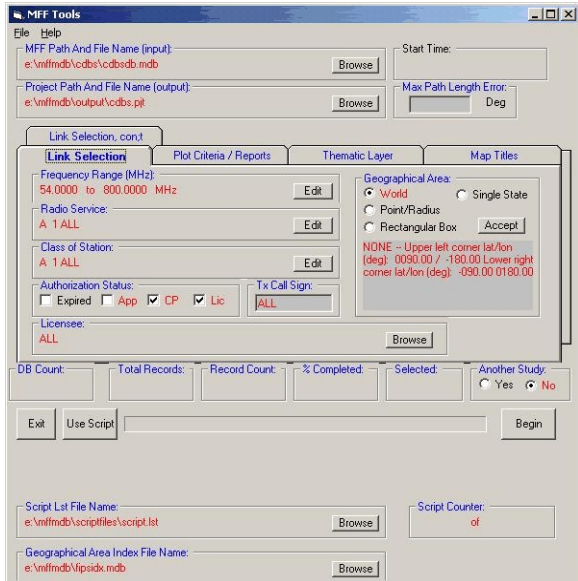


Figure 16 – MffTools.jpg

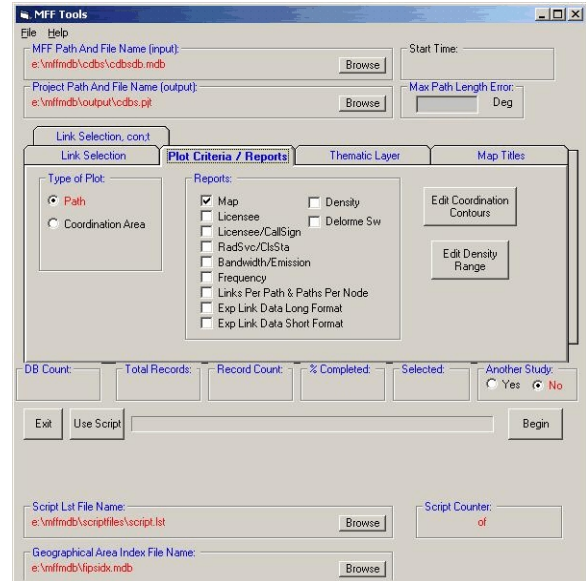


Figure 17 – MffTools_1.jpg

Maximum Path Length Error

The program can be used to identify suspect data, i.e., links³ whose paths are vary long. In Max Path Length Error frame enter the path length trigger point in decimal degrees.

Establish Extraction Criteria

It should be noted that this program can only be used with “site specific” assignments. Radio systems are licensed by FCC as either a “site specific” authorization or a “geographic area” (market based) authorization. A “geographic area” authorization (PCS and cellular systems are prime examples of this) contain no information on transmitter locations (lat/long *etc.*) or technical information on the equipment used (transmitter/ receiver, power levels, antennas) and operating parameters. A “site specific” authorization, on the other hand, will contain transmitter and receiver site location information as well as technical operating parameters and make and model information for the transmitter and antennas.⁴

Click on the <Link Selection> tab to access the following options: ‘Frequency Range’, ‘Radio Service’, ‘Class of Station’, ‘Authorization Status’, ‘Tx Call Sign’, ‘Licensee’ and ‘Geographical Areas’. Select the desired option and follow the option sequencing.

Frequency Range: To select the frequency range, left click on the <‘Frequency’ Edit> command button to display the “Select Frequency Range” window, Figure 2. Enter the desired frequency range and left click on <Accept>. A list of frequency bands and associated radio service / rule section is provided in a list box for conveyance.

³ **NOTE:** A “link” is defined as a single frequency/ polarization combination between a fixed transmitter site and a receiver site via passive repeaters sites if any are presents. There can be several links on a given “path”. You might consider the “path” to be a sidewalk and “links” to be the people walking on the “path”.

⁴ If polygon data sets can be developed that defines each of the geographic areas used to authorize market base systems, the program can be modified to generate MapInfo ‘mid’ and ‘mif’ files of the authorized service area .

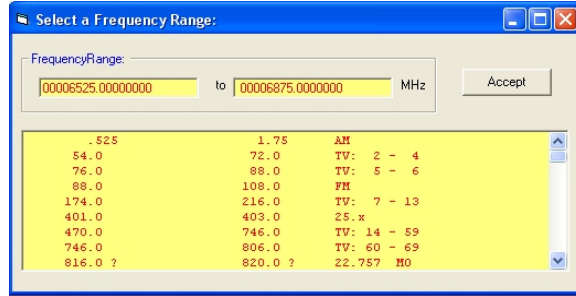


Figure 18 – Select a Frequency Range

Radio Service: To select a radio service(s), left click on the <‘Radio Service’ Edit> command button to display the “Select Radio Service” window, Figure 3. In the “Options” list box, left click on the radio service(s) to extracted to place that radio service in the “Selections” list box. Alter making your selecting, left click on the <Accept> command button.

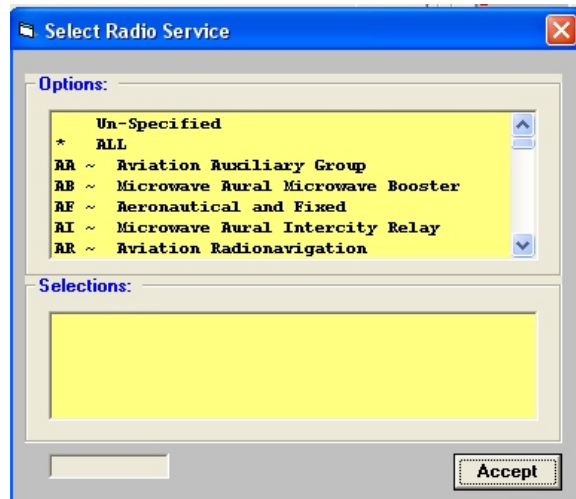


Figure 19 3 – Select Radio Services

Class of Station: To select a desired class of station(s), left click on the <‘Class of Station’ Edit> command button to display the “Select Class of Station” window, Figure 4. In the “Options” list box, left click on the class of stations to extracted to place that class of stations in the “Selections” list box. Alter making your selecting, left click on the <Accept> command button.

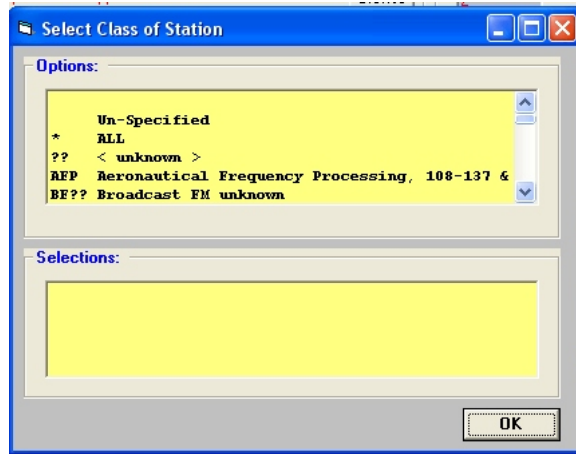


Figure 20 – Select Class of Station

Authorization Status: To select a authorization status”, left click on the one or more of the following “Authorization Status” check boxes: ‘Expired’, “App(lication)”, “CP” or “Lic(ensed)”. [**StatusCode** (gtSCL and gtSCU): 0 = expired, 5 = tendered 6 = application, 7 = CP, 8 = STA, 9 = licensed (or lic / cp). By default, checking “Lic” picks-up STA.]

Tx Call Sign: To select a TX Call Sign, enter the transmitter call sign in the text box.

Licensee: To select a licensee, left click on the <‘Licensee’ Browse> command button to display the “Select Licensee Name” window, Figure 7. First enter the first character of the licensee name in the text box and then left click on the <Go> command button. This action will cause the “Select the Licensee name to used” list box to be filled. Left click on the desired name to place that name in the “Selected Licensee” list box. NOTE: Only ONE name can be selected. After making your selection, left click on the <Accept> command button.

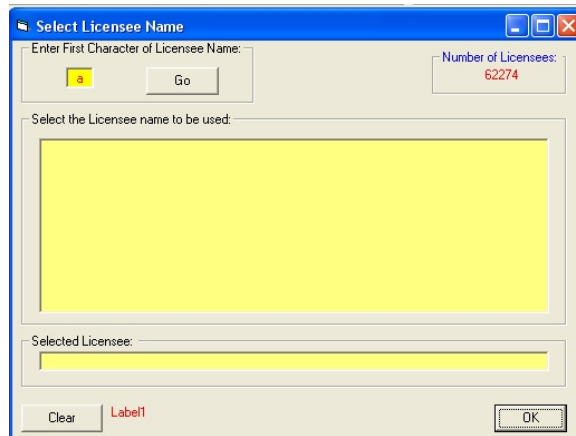


Figure 21 – Select a Licensee Name

If you select “a” you will get a list of all licensees whose name begins with the letter “a” and will find what appears to be duplicate licensee entries. Why? If you look closely at the names you will find minor variations in the spelling and presentation, *e.g.*, “ALBANY BROADCASTING CO INC”, “ALBANY BROADCASTING CO., INC.” and “ALBANY BROADCASTING COMPANY, INC.”. These three entities

share the same address and one would presume that are one and same.

The Commission now requires applicants and licensee to obtain a “FCC Registration Number” (FRN) before they can file an application to modify an existing station or apply for a new station. As part of the registration process, the applicant/licensee must provide the Commission with the entity’s Taxpayer Identification Number (TIN). For a business the TIN is the business’ Employer Identification Number (EIN). While for an individual, is the individual’s Social Security Number (SSN). Because of privacy concerns, the entities’ TIN is not made public.

The FRN is sort of a TIN equivalent, however, if an entity empowers its distributed offices to file its own applications with the Commission, each difference office can acquire its own FRN. If one tries to get a picture of what all “AT&T” owns, you will find several “AT&T” address with various FRNs.

Geographical Area of Operation: There are three geographical area of operation options: “World”, “Point/Radius” and “Rectangular Box”, see Figure 1.⁶

If you left click on the <World> radio button, followed by left clicking on the <Accept> command button, the area is defined as Latitude: 90° North to 90° South, Longitude: 180° West to 180° West.

If you left click on the <Point/Radius> radio button, followed by left clicking on the <Accept> command button, the “Geographical Area: Point/Radius” window appears, see Figure 6. This widow allows the used to define the reference point and radius to be used as well as to define the style of line to drawn around the selected point – circle, box or none. Left click on the <Accept> command button to accept entered values.

If you left click on the <Rectangular Box> radio button, followed by left clicking on the <Accept> command button, the “Geographical Area: Rectangular Box” window appears, see Figure 7. This widow allows the used to use one of the following predefined areas (CONUS, Alaska, Hawaii, Guam or PR/VI) or to define a unique box. Left click on the <Accept> command button to accept entered values.

⁵ American Telephone and Telegraph Company, AT&T Corp., etc.

⁶ Many broadcast auxiliary mobile pickup assignments (Part 74) lack a latitude/longitude reference point and associated radius of operation value. The only positional information is the state and city/place of operation. In order to identify an approximate location of operation of the broadcast auxiliary station, the program associates the parent broadcast station latitude/longitude coordinates with broadcast auxiliary station to establish an approximate location around which the mobile units are operating.

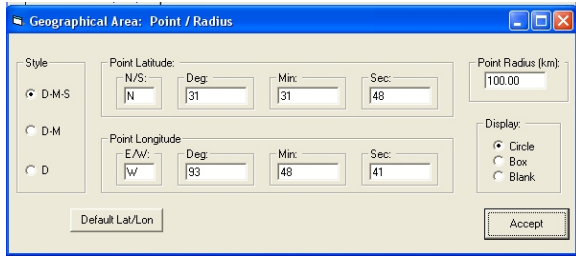


Figure 22 – Geographical Area: Point/Radius

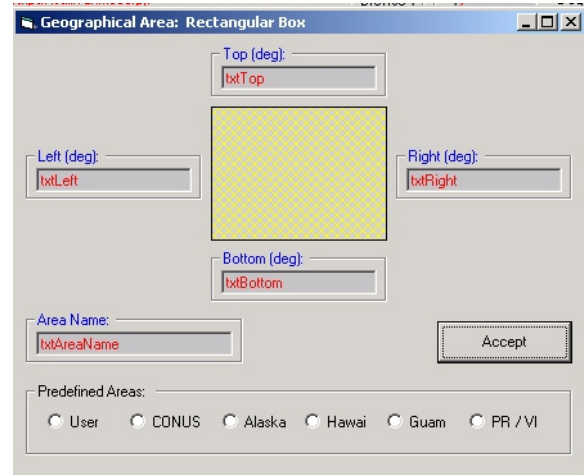


Figure 23 – Geographical Area: Rectangular Box

Define the Type of Plot and Reports.

Click on the <Type Plot / Reports> tab to access the following options: “Type of Plot” and “Reports”, Figure 8.

- Currently only one type of plot is available – “Path”
- Select one or more report formats:

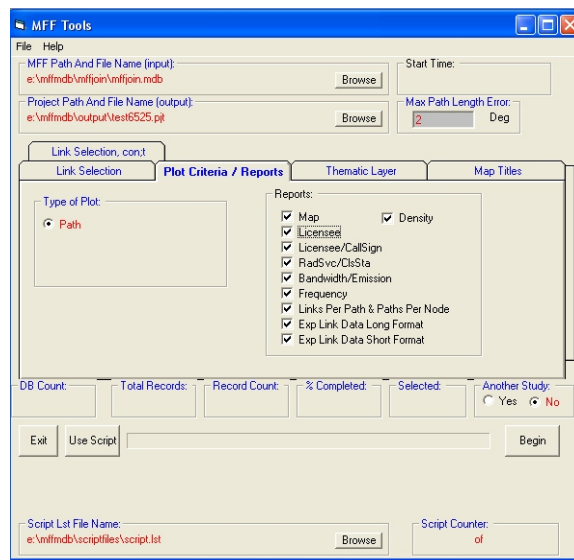


Figure 24 – Plot Criteria / Reports tab

Define thematic layer file locations.

Click on the <Thematic Layer> tab to define the location of the thematic layer map file locations. Figure 9. Using the associated check boxes, define which maps are to be displayed and then left click on the associated <Browse ...> command button.

- Click on the <Thematic Layer> tab to display the various report image options.
- The States “tab” File is required and can be downloaded from the FCC/OET web site. To specify the location of the file, click on the <Browse> button in the “States TAB File” frame, causing a “file command dialog” window to appear. Select the “tab” file.⁷
- The County “tab” File is required and can be downloaded from the FCC/OET web site. To specify the location of the file, click on the <Browse> button in the “County TAB File” frame, causing a “file command dialog” window to appear. Select the “tab” file.⁸

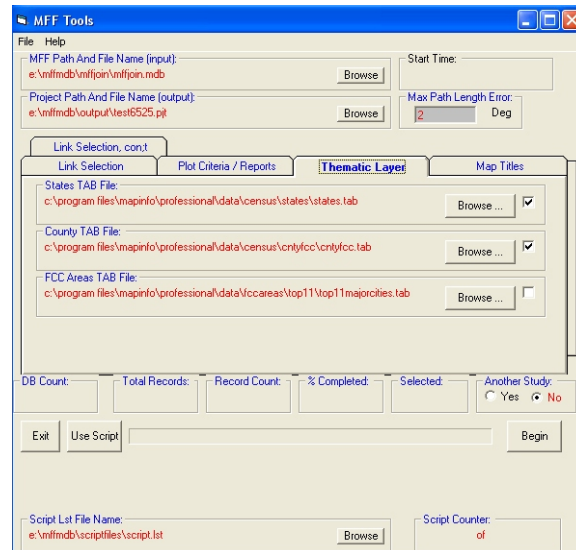


Figure 25 – Thematic Layer tab

⁷ Note, the states tab file defines the boundaries of the 50 states, the District of Columbia, Puerto Rico, American Samoa, Guam, the Northern Mariana Islands, Palau, and the Virgin Islands of the United States. A description of how this file was derived can be found at <http://www.fcc.gov/oet/info/maps/census/states/> while the file itself can be download from <www.fcc.gov/oet/info/maps/census/states/states.zip>.

⁸ Note, the county tab file defines the boundary of first order-divisions of the 50 states, the District of Columbia, Puerto Rico, American Samoa, Guam, the Northern Mariana Islands, Palau, and the Virgin Islands of the United States. A description of how this file was derived can be found at “<http://www.fcc.gov/oet/info/maps/census/county/>” while the file itself can be download from <www.fcc.gov/oet/info/maps/census/states cntyfcc.zip>.

Map Titling:

Click on the <Map Title> tab to define the text to be used in titling the map. Figure 10.

- The default Map Title name is the same as that indicated in the ‘MFF Location and Name’ text box. To change the displayed map title caption, just type over the entry in the “Map Title” text box and then click on the <Save> button.
- To change the Map Caption text, just type over the entries in the “Map Caption” text boxes and then click on the <Save> button.

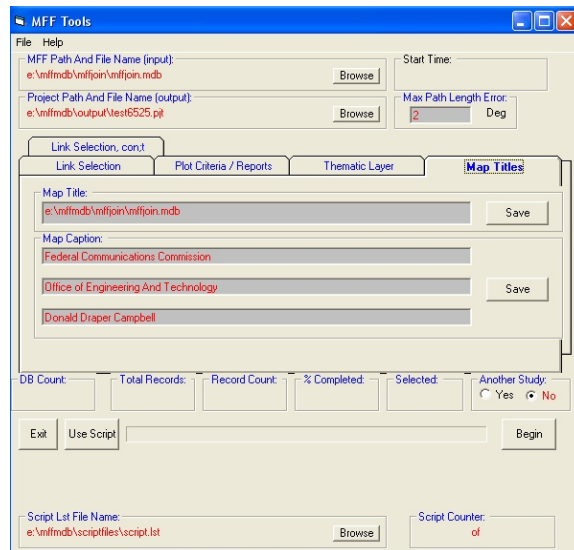


Figure 26 – Map Titles

Running MffTools

There are two running options: non-script and script. To begin the “non-script” extraction process, just left click on the <Begin> command button and set back a wait. It should not take long to complete the task. To begin the “script” extraction process, just left click on the <Script> command button and set back a wait. It should not take long to complete the task. Make sure you have defined the location of the “script.ini” file.

Using Scripts

In the case where a spectrum study is being conducted for say thirty cities, the only difference between the studies is the reference point location (latitude / longitude). All other values remain constant. If this is the case, a script can be created to run the desired series of retrievals. When the <Begin> command button is left clicked, the selection criterion is written to the file “mfftools.ini” located in both the *MffTools* program directory and the “ScriptLstFileName” directory.

```

[File Location]
MffDbFileLocation=e:\mffmdb\mffjoin\mffjoin.mdb
ProjectPathAndFileName=e:\mffmdb\out\put\test652.5.pjt
ScriptLstFileName=e:\mffmdb\scriptfiles\script.lst

[Link Selection]
FrequencyRange=00006525.00000000 00006875.00000000 00000000.00000000 00000000.00000000
RadioService=A 1 ALL
ClassOfStation=A 1 ALL
AuthStatusFlag=0111
SqlFlag=100
SqlLicenseKey=
SqlTxCallSign=ALL

[Plot Criteria]
TypeOfPlot=P
PlotLinkYN=Y
TxRxSiteDensity=T 00001 00025 00026 00050 00051 00100 00101 00150 00151 99999
Contour=T L 1 0000.0 0000.0 0000.0
MapProjection=1
ExpLinkDataYN=N

[GeoArea]
RetrievalArea=8
GeoAreaName=World
LatUpper= 90
LatLower=-90
LonRight= 180
LonLeft=-180
UserDefAreaFlag= 0

[PointRadius]
PointRadiusFlag=0
PointRadiusStyle=1
CircleBoxBlankFlag= 1
PointLatD=31
PointLatM=31
PointLatS=48
PointLatHem=N
PointLonD=93
PointLonM=48
PointLonS=41
PointLonHem=W
PointRadiusKm=100.00

[MapInfo]
MapInfoAnsYN=Y
StatesTabDisplay=1
StatesTabFile=c:\program files\mapinfo\professional\data\census\states\states.tab
StatesZoomMin=300
StatesZoomMax=100000
CountyTabDisplay=1
CountyTabFile=c:\program files\mapinfo\professional\data\census\cnty\cc\cntyfcc.tab
CountyZoomMin=0
CountyZoomMax=300
FccAreasTabDisplay=0
FccAreasTabFile=c:\program files\mapinfo\professional\data\fccareas\top11\top11majorcities.tab
FccAreasZoomMin=300
FccAreasZoomMax=100000

[Titles]
MapTitle=e:\mffmdb\mffjoin\mffjoin.mdb
MapCaption1=Federal Communications Commission
MapCaption2=Office of Engineering And Technology
MapCaption3=Donald Draper Campbell

[ReportsFlag]
StatsMapYN=Y
StatsLicenseYN=N
StatsLicenseCallSignYN=Y
StatsRadSvcClsStaYN=Y
StatsBandwidthEmissionYN=Y
StatsFrequencyYN=Y
StatsLinksPerPathYN=Y
ExpLinkDataLongYN=Y
ExpLinkDataShortYN=Y
StatsDensityYN=N


[MaxPathLengthError]
MaxPathLengthError=2

[EarthStationElevAng]
EarthStationElevAngFlag=0
EarthStationElevAngMax=-9999.9
EarthStationElevAngMin=-9999.9

```

Figure xx – xxxx (File: “mfftools.ini”)

Using your favorite editor, modify the “mfftools.ini” as required, i.e., point location latitude and longitude and save the file with a new file name, i.e., ‘newyorkcity.ini’. Do this for each location change. Using the editor, create a file name “script.lst”. In this file add the names of the ‘INI’ files to be processed., i.e., “newyorkcity.ini”, “washingtondc.ini”, etc.



```
newyorkcity.ini
washingtondc.ini
```

Figure xx – Script List (File: “script.lst”)

You will need to define location of the script file list. Do this by left clicking the “Define Script Lst File Name” <Begin> command button.

Status Reporting

The status of the data extraction progress is display in the lower half of the main program window.

- DB Count is the total number of frequency records contained in the MFF database. [**glNumFreqRecs**]
- Total Records is the number of MFF database records selected meeting the “Frequency Range” and “Authorization Status” criteria. [**glNumRecs**]
- Record Count indicates how many links have been processed. [**glRecCnt**]
- % Completed is an indication of the percentage of the number of links processed since the run began.
- Selected is the number of records actually plotted. This value is always less than or equal to the “Total Records” count. The difference between “Total Records” count and the “Selected” count is attributed to the following selection criteria: “Radio Service”, “Class of Station”, “Authorization Status”, “Licensee”, “Tx Call Sign” and “Geographic Area” in addition to exclusion of “bad data” (i.e., links whose coordinates put the link “off the planet”). [**gdSelectedLinkCnt**]

NOTE: You will notice that the total number of records meeting “Frequency Range” and “Authorization Status” criteria may vary from report to report. In some case the “Freq” table and the “SiteRx” tables are joined in other cases just the “Freq” table is used. It appears that there are orphaned “Freq” records, i.e., “Freq” records without any “SiteTx” or “SiteRx” records.

Sample Report Outputs

Output file naming convention. The basic file name must begin with a letter (a to z). Base on the report generated, additional character will be appended to the basic file name, where “xxxx” is the base file

name. In this section sample outputs are presented for an extraction of the 6525 to 6875 MHz band along with discussion of how the data sort was made. You will notice, depending on the band being studied, that there are differences between the number of links extracted for each report. As it turns out, there are orphaned frequency table records, that is frequency records which have no corresponding TX or RX site records. This problem does not appear to be data conversion problem but just plain bad data.

Project File and MapInfo 'mid', 'mif' and 'wor' files This report is generated using a 'recordset' sorted ascending on 'Freq.FreqC' using the 'Freq' table.

Figure xx – This file contains information on the extraction run: frequency range, Extraction area, class of station and radio service constraints as well as extraction counts. (File: “xxxx.pjt”)

```
Date/Time: 10/4/2002 / 8:42:39 AM
Source: ULS-Micro(2002.09.29)
Image parameter data file: e:\mffmdb\output\all6525.pjt
World
Extraction area:
  Lat Upper: 90.0000   Lat Lower: -90.0000
  Lon Left: -180.0000  Lon Right: 180.0000
Freq Range (MHz)      Lower           Upper
                     6525.00000000      6875.00000000
FCC Radio Service: All

Number of 'freq table' records: 1,003,279
      Number of SQL records: 027,675
      Number of links processed: 027,675
      Number of links mapped: 027,675
      Number of links NOT mapped: 000,000
Number of records off the world: 000,000
```

Figure xx – This file contains information on the extraction run: frequency range, Extraction area, class of station and radio service constraints. (File: “xxxx.pjt”)

Path Length
table.

This report is generated using a 'recordset' sorted ascending on 'Freq.FreqC' using the 'Freq'

```
Path Length Statistics

Dist (km)  Link Count  Link Cnt Sum
0.2         6           6
0.3         9          15
0.4         4          19
0.5         2          21
0.6        12          33
0.7         6          39
0.8         6          45
0.9        12          57
1.0        13          70
.....
150.0       1       27498
152.6       2       27500
155.3       2       27502
160.3       2       27504
166.1       2       27506
170.9       4       27510
187.1       1       27511
200.0      18       27529

Avg Path Length (km) = 30.7
Path Count = 27529
Median Path Length (km) = 27.2
Standard Deviation (km) = 0.0

Suspect links which have been excluded from path length computations.

Dist (km)  Link Count
= 0.0      146
>= 200.0   18
Off the World  0
```

Figure xx – Path Length Statistics (File: “xxxx_len.txt”)

Links per Frequency This report is generated using a 'recordset' sorted ascending on 'Freq.FreqC' using the 'Freq' table.

Frequency Use Statistics	
Count	FreqC
1	00006525.42500000
10	00006525.62500000
4	00006525.68500000
1	00006525.90000000
4	00006526.25000000
8	00006527.07500000
....	
3	00006872.92500000
1	00006873.75000000
5	00006874.10000000
2	00006874.37500000
2	00006874.57500000
8	00006874.57500000

Number of links processed: 027,599
 Number of links in selected area: 027,599

Figure xx – Links per Frequency Statistics (File: “xxxx_freq.txt”)

Links per Bandwidth/Emission Statistics This report is generated using a 'recordset' sorted ascending on 'Freq.EmissionDesignator1' using the “Freq” table.

Bandwidth/Emission Statistics	
Count	Bandwidth/Emission
14907	10M0A7W
596	10M0A9W
4	10M0D7D
1	10M0D7W
2116	10M0D8W
1	10M0D9W
356	10M0F2D
.	
35	800KF9W
1	882KG7D
1	8M50F9W
2	8M60F9W
5	9M95F9W
21	9M95F9W

Number of links processed: 027,599
 Number of links in selected area: 027,599

Figure xx – Links per Bandwidth/Emission Statistics (File: “xxxx_bwem.txt”)

Links per Licensee This report is generated using a ‘recordset’ sorted ascending on ‘Lice.LiceName’ using the ‘Freq’ and ‘Lice’ tables.

Licensee / Licensed Link Statistics			
Count	FRN	Licensee	
9/18/2002 10:43:02 PM			
4	2841252	360' communications company of florida	
2	2543650	a g edwards & sons inc	
19	4521977	ab cellular la, llc	
3	1837814	acadiana cellular general partnership	
6	1765031	acc kentucky license llc	
19	3475613	acc new york license i llc	
....			
4	4536264	wyoming, state of	
137	6242689	xcel energy services inc.	
9	2321156	yakima msa limited partnership	
6	1602713	yavapai college	
2	1539626	yolo, county of	
3	2156370	yosemite community college district	
2		youngstown/warren msa limited partnership d/b/a alltel	
Number of links processed: 027,599			
Number of links in selected area: 027,599			

Figure xx – Links per Licensee Statistics (File: “xxxx_lice.txt”)

Links per Callsign This report is generated using a ‘recordset’ sorted ascending on ‘Lice.LiceName’ + ‘SiteTx.TxCall’ + ‘SiteRx.RxCall’ using the ‘Freq’, ‘Lice’, ‘SiteTx’ and ‘SiteRx’ tables.

Licensee / Licensed Link by Callsign Statistics			
Count	FRN	CallSign	Licensee
1	2841252	WMJ214	360' communications company of florida
2	2841252	WMJ655	360' communications company of florida
1	2841252	WNTL715	360' communications company of florida
1	2543650	WNTL716	a g edwards & sons inc
1	2543650	WLV435	a g edwards & sons inc
2	4521977	WLW491	ab cellular la, llc
2	4521977	WMJ339	ab cellular la, llc
3	4521977	WMJ340	ab cellular la, llc
3	4521977	WMQ538	ab cellular la, llc
1	4521977	WMQ786	ab cellular la, llc
.			
2	1602713	WNTW309	yavapai college
2	1602713	WNTW310	yavapai college
2	1602713	WNES344	yavapai college
1	1539626	WNES345	yolo, county of
1	1539626	WNEY485	yolo, county of
2	2156370	WNEY487	yosemite community college district
1	2156370	WLC413	yosemite community college district
1	2531275	WLM622	youngstown/warren msa limited partnership d/b/a alltel
1	2531275	WLM622	youngstown/warren msa limited partnership d/b/a alltel
Number of links processed: 027,584			
Number of links in selected area: 027,584			

Figure xx – Links per Callsign Statistics (File: “xxxx_cs.txt”)

Links per Radio Service / Class of Station This report is generated using a 'recordset' sorted ascending on 'Freq.FccRadSvc' + 'SiteTx.TxClassStation' + 'SiteRx.RxClassStation' using the 'Freq', 'Lice', 'SiteTx' and 'SiteRx' tables.

RadSvc / Class Station Statistics			
Count	RadSvc	Class Station	
		TX	RX
4	CF	FXO	FXO
5489	CX	TC	
10	MG	FX5	FX5
60	MG	FXO	FXO
14366	MW	FX5	FX5
18	MW	FXO	FXO
7631	MW	MO5	MO5
2	TP	MO	MO
1	WA	FXO	FXO
3	WA	FXO	FXO
27574			
Number of links processed: 027,584			
Number of links in selected area: 027,584			

Figure xx – Links per Radio Service / Class of Station Statistics (File: “xxxx_rscs.txt”)

Links per Path This report is generated using a 'recordset' sorted ascending on “Freq.FreqC” using the “Freq” table.

Links Per Path Statistics		
Count	Class Station	
	Links Per Path	Sum Links
1	27567	27567
2	5	27577
6	1	27583
9/18/2002 10:46:34 PM		

Figure xx – Links per Path Statistics (File: “xxxx_lpp.txt”)

Transmitter / Receiver Density This report is generated using a ‘recordset’ sorted ascending on “Freq.FreqC” using the “Freq” table.

Lat	Lon	TX	RX
-090.00000	-180.00000	0	0
-090.00000	-179.00000	0	0
0018.00000	-069.00000	0	0
0018.00000	-068.00000	30	27
0018.00000	-067.00000	99	94
0018.00000	-066.00000	41	51
0018.00000	-065.00000	16	16
0018.00000	-064.00000	0	0
0270.00000	0179.00000	0	0
0270.00000	0180.00000	0	0

Figure xx – Transmitter / Receiver Density (per 1 degree block or per 0.1 degree block) (File: “xxxx_den.txt” / “xxxx_den10.txt”)

```

“FreqC”,”Bndwidth1”,”EmsCls1”,”gtBndwidth2”,”EmsCls2”,”DateExpire”,”FccRadSve”,”StatusCode”,”PathSiteKey”,”TxCall”,”TxState”,”TxCounty”,”TxCity”,”TxLatSec”,”TxLonSec”,”Pr1 State”,”Pr1 County”,”Pr1 City”,”Pr1 LatSec”,”Pr1 LonSec”,”Pr2 State”,”Pr2 County”,”Pr2 City”,”Pr2 LatSec”,”Pr2 LonSec”,”RxCall”,”RxState”,”RxCounty”,”RxCity”,”RxLatSec”,”RxLonSec”,”LicenseIdKey”,”LicName”,”LicStreet1”,”LicCity”,”LicState”,”LicZipCode”,”LicPhone”
“6525.0”,”24M0”,”G7F”,””,””,”20170820”,”CX”,”9”,”IB-0000027080-01T”,”E020091”,”CA”,”LOS ANGELES”,”LONG BEACH”,”33.8”,”-118.2”,””,””,”0.0”,”0.0”,””,””,”0.0”,”0.0”,””,””,”0.0”,”0.0”,”IB14966”,”CALIFORNIA BROADCAST CENTER, LLC”,”3800 VIA ORO AVENUE”,”LONG BEACH”,”CA”,”90810”,””
“6666.5”,”750K”,”G7D”,””,””,”20170717”,”CX”,”9”,”IB-0000030239-01T”,”E920377”,”NY”,”KINGS”,”BROOKLYN”,”40.7”,”-73.9”,””,””,”0.0”,”0.0”,””,””,”0.0”,”0.0”,””,””,””
“0.0”,”0.0”,”IB14401”,”PanAmSat License Corp.”,””,”20 Westport Road”,”Wilton”,”CT”,”06897”,””
“6580.0”,”882K”,”G7D”,””,””,”20090402”,”CX”,”9”,”IB-2099835452-01T”,”E980157”,”HI”,”HONOLULU”,”KAPOLEI”,”21.3”,”-158.1”,””,””,”0.0”,”0.0”,””,””,”0.0”,”0.0”,””
“”,””,”0.0”,”0.0”,”IB14509”,”LORAL CYBERSTAR DATA SERVICES CORPORATION”,”2440 RESEARCH BLVD., SUITE 400”,”ROCKVILLE”,”MD”,”20850-3288”,””
“6615.0”,”50K0”,”G1W”,””,””,”20090402”,”CX”,”9”,”IB-2099835452-01T”,”E980157”,”HI”,”HONOLULU”,”KAPOLEI”,”21.3”,”-158.1”,””,””,”0.0”,”0.0”,””,””,”0.0”,”0.0”,””
“”,””,”0.0”,”0.0”,”IB14509”,”LORAL CYBERSTAR DATA SERVICES CORPORATION”,”2440 RESEARCH BLVD., SUITE 400”,”ROCKVILLE”,”MD”,”20850-3288”,””
    
```

Figure xx – Export Link Data Long Format (File: “xxxx_dlf.txt”)

```

“FreqC|Bndwidth1|EmsCls1|TxEquipMfg|TxEquipMod|TxCall|TxLatSec|TxLonSec|TxAntMfg|TxAntMod|TxAntGn|TxAntBw|TxAntSize|RxCall|RxLatSec|RxLonSec|RxAntMfg|RxAntMod|
RxAntGn|RxAntBw|RxAntSize
6525.0|24M0|G7F||E020091|121785.0|-425563.3||||0.0|0.0||||
6666.5|750K|G7D||E920377|146373.0|-265925.0||||0.0|0.0||||
6580.0|882K|G7D||E980157|76824.0|-569131.0||||0.0|0.0||||
6615.0|50K0|G1W||E980157|76824.0|-569131.0||||0.0|0.0||||
6572.0|72M0|G7W||KA333|93013.0|-288898.8||||0.0|0.0||||
6607.0|72M0|G7W||KA333|93013.0|-288898.8||||0.0|0.0||||
6572.0|72M0|G7W||KA333|93013.0|-288898.8||||0.0|0.0||||
6607.0|72M0|G7W||KA333|93013.0|-288898.8||||0.0|0.0||||
6572.0|72M0|G7W||KA333|93013.0|-288898.8||||0.0|0.0||||
6607.0|72M0|G7W||KA333|93013.0|-288898.8||||0.0|0.0||||
6775.0|25M0|F9W||KA88834|122595.0|-425671.2||||122595.0|-425671.2||||
6635.0|10M0|F9W||KAC57|147783.9|-344551.0||||KWB49|148666.9|-344887.0||||
6675.0||||KAC57|147783.9|-344551.0||||KAI25|147623.9|-342754.9||||
6785.0|10M0|F9W||KAC75|148851.9|-335181.7||||KAI65|149982.9|-335668.7||||
6865.0||||KAC75|148851.9|-335181.7||||KAC88|148651.9|-337311.7||||
6755.0||||KAC75|148851.9|-335181.7||||WEE751|148760.0|-333547.6||||
6645.0|10M0|F8W||KAC87|149810.9|-337261.7||||KAI99|149593.9|-336676.7||||
6855.0||||KAC87|149810.9|-337261.7||||WNTH670|149857.9|-337546.8||||
6705.0|10M0|F9W||KAC88|148651.9|-337311.7||||KAC75|148851.9|-335181.7||||
    
```

Figure xx – Export Link Data Short Format (File: “xxxx_dsf.txt”)

This report is generated using a ‘recordset’ sorted ascending on “Freq.FreqC” using the “Freq” table.

```
e:\mffmdb\output\test6525_bad.txt
1 = abs(Lat) > 90 or abs(Lon) > 180
2 = abs(Tx - Rx) > 2 deg
3 = abs(Tx - Pr1) > 2 deg
4 = abs(Pr1 - Rx) > 2 deg

"Error","FreqC","Bndwdth1","EmsCls1","Bndwdth2","EmsCls2","DateExpire","FccRadSvc","StatusCode","PathSiteKey","TxCall","TxState","TxCounty","TxCity","TxLatDMS","TxLonDMS","Pr1State","Pr1County","Pr1City","Pr1LatDMS","Pr1LonDMS","Pr2State","Pr2County","Pr2City","Pr2LatDMS","Pr2LonDMS","RxCall","RxState","RxCounty","RxCity","RxLatDMS","RxLonDMS","LicenseIdKey","LiceName","LiceStreet1","LiceCity","LiceState","LiceZipCode","LicePhone"

"2","6595.0","N","N","20080730","MG","9","KBY75-2","KBY75","ME","CUMBERLAND","YARMOUTH","0434503.2N","0700921.1W","WNES260","0355830.9N","1145115.9W","L00026531-04330","CENTRAL MAINE POWER COMPANY","57 OLD WINTHROP ROAD","AUGUSTA","ME","04330"

"2","6825.0","10M0","F9W","1M60","F9W","20090811","WA","9","KEV52-1","KEV52","VI","CHARLOTTE AMALIE","0182125.8N","0645816.5W","KEV50","0362704.0N","1065826.1W","L00164321-00801","ACKLEY COMMUNICATIONS ENTERPRISES INC","CHARLOTTE AMALIE","VI","00801"

"2","6645.0","20120409","MG","9","KMN60-3","KMN60","TX","MILAM","MILANO","0304258.7N","0965153.9W","WPNL828","0305221.6N","0910727.3W","L00005110-66106","The Burlington Northern and Santa Fe Railway Co","4515 Kansas Avenue","KANSAS CITY","KS","661061199","9135514700"

"2","6815.0","20080929","CF","9","WBH619-3","WBH619","AZ","PIMA","SAHUARITA","0315518.2N","1110339.3W","WBH618","0340412.1N","1104853.4W","L00353143-85602","SOUTHWEST TRANSMISSION COOPERATIVE INC","BENSON","AZ","85602","5205865599"
```

Figure xx – Bad Data (File: “xxxx_bad.txt”)

Program / Database Limitation

Add introduction to this section.

The Commission only licenses transmitters. Receivers play a very important part in the scheme of things. In the case of non-broadcast auxiliary point-to-point operations and more recently applied for broadcast auxiliary point-to-point operations,⁹ receiver location and technical information are collected as part of the application process. For many legacy broadcast auxiliary point-to-point operations this is no specific information on the location of the associated receiver site – only distance and bearing information which cannot really be relied on to determine position (lat/lon) of the receiver site.

In the case of broadcast auxiliary mobile, their area of operation is a defined radius around a defined point. In many cases the broadcasters have deployed permanent receive-only base stations within this point/radius defined service area at considerable expense to assure that realtime coverage can be had at all times. These systems are licensed using WTB’s ULS, however that system was not designed to record the location of the permanent receive-only base stations. This situation was of little concern until the satellite systems were granted access to this spectrum and sharing was required. In order to protect these receiving sites, the earth station operators need to know where they are located and when they were deployed.¹⁰

A similar situation exists for receive-only earth station deployed in fixed satellite service spectrum.¹¹ In the case of receive-only earth stations, those facilities can be registered with the Commission (IB) if the owner wants to receive interference protection.

⁹ These systems are licensed in the band segments: 1990 to 2110 MHz, 6875 to 7125 MHz and 12,700 to 13250 MHz.

¹⁰ When the Form 310 form was used to apply for broadcast auxiliary authorizations, data on the location of permanent receive-only base stations was collected. With the introduction of Form 601 by WTB, RX-only data is no longer collected. However, Form 327 does collect RX-only data for the Cable Operations and Licensing System (COALS). It should be noted that these operations share the same spectrum: 1990-2110, 6875-7125 and 12700-13250 MHz.

¹¹ In the band segments 3.7 to 4.2, 10.7 to 11.7, 11.7 to 12.2, 14.0 to 14.5 GHz, etc.

In many cases the licensing period for a radio license is 10 years. License holders are supposed to turn in their licenses when facilities are no longer in use. License holders quit using their radio systems or go out of business and in many cases fail to turn in their licenses. Thus, there may be a lot of deadwood in the databases.

Quality assurance of data collected. This is a particular problem with legacy assignment data converted from previous licensing system. Quality assurance checking routines are slowly being added to existing systems. This particularly noticeable when a point-to-point system operating above 900 MHz appears from the database to span from Los Angeles to New York City or an earth station seems to be located in Canada, the Atlantic or Pacific Oceans.

Creating a Map using the *MapInfo* program

MffTools creates MapInfo files: “mid”, “mif” and “wor” files. For example: “all6525.mif”, “all6525.mid”, “all6525.wor” and “all6525start.wor”.¹² All four of the files are ASCII text files. The “all6525 mif” file defines the placement, color and shape of the object (*i.e.*, transmitter sites, or the path between a transmitter and receiver sites) to be displaced on the resulting generated map. The “all6525 mid” contains data technical data associated with these objects (*i.e.*, operating frequency, site coordinates, *etc.*). The “all6525.wor” file is a script that MapInfo use to layout of the map that is to be generated by MapInfo. (See Figure ____.) MapInfo use “dat”, “id”, and “tab” files to create the map. The “all6525start.wor” files is a script that tells MapInfo what files are to be to generate these “dat”, “id”, and “tab” files.

This section describes how to create the stylized map shown in Figure ____ . If you want to incorporate the extracted link data as a layer in an existing MapInfo map all you will need to create “dat”, “id”, and “tab” files.¹³

¹² These files are compatible with MapInfo Professional version 3.5 upward. MapInfo’s *ProViewer version 4.5* can be used in lieu of MapInfo Professional. This version of ProViewer has the engine need to generate the rerquired “dat”, “id”, and “tab” files discussed below.

¹³ Add text describing how to do this

The first step is to launch **MapInfo**, Figure MI01.

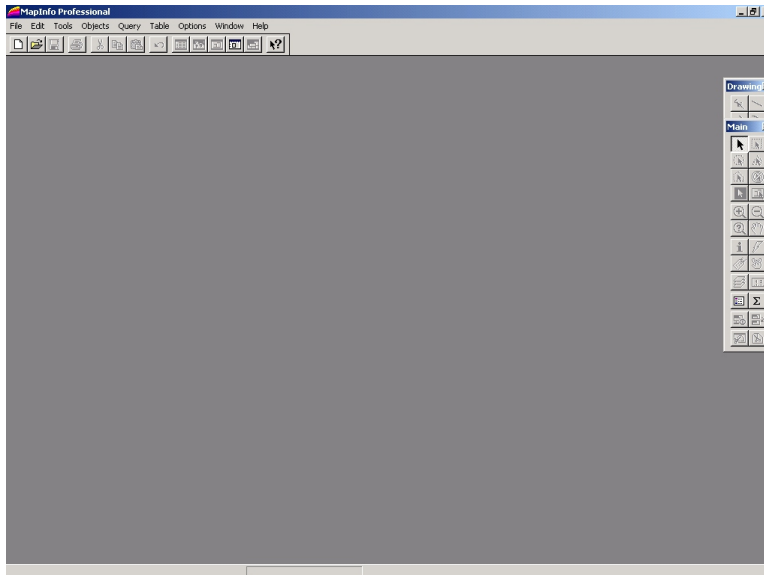


Figure 27 MI01 – MapInfo startup screen

Then in menu bar, left click on “**F**ile|**O**pen Tables or Workspaces . . . “ to display the “Open MapInfo Tables or Workspaces” dialog box, left click on “Open Workspace, Figure MI02.

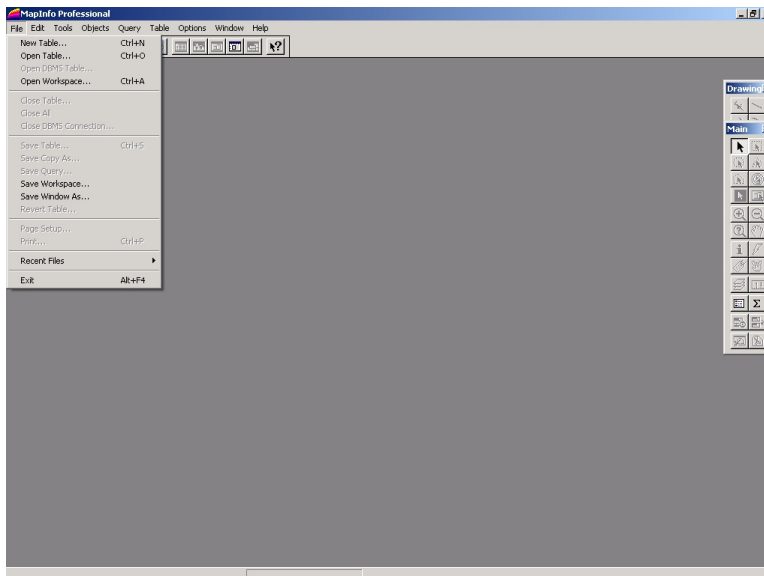


Figure 28 – MapInfo

Select the start-up work file, which is in this example is “startall6525.wor” and open the file, Figure MI03. *MapInfo* will begin processing the “wor”, “mid” and “mif” files. A status window will appear. *MapInfo* uses the contents of “mid”, “mif” and “wor” files to build several other *MapInfo* files – “DAT”, “ID”, “Map”, and “TAB”.

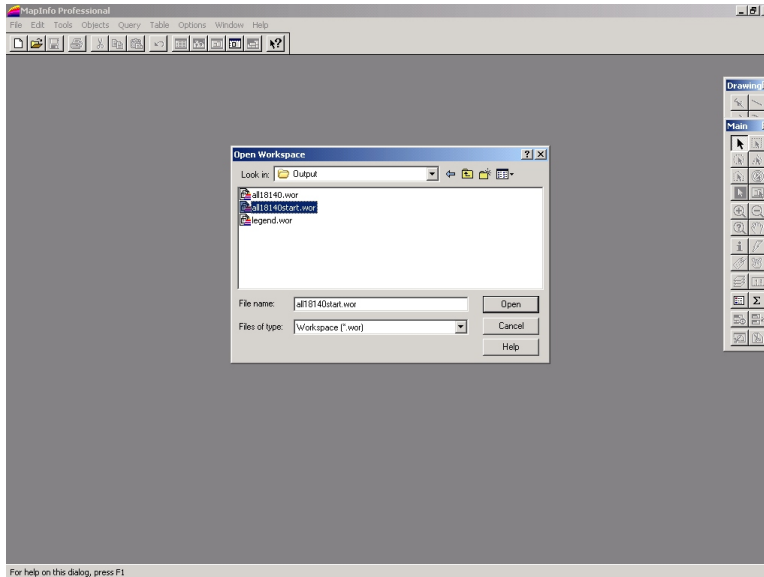


Figure 29 – MapInfo

A composite map is generated displaying the results of the links/stations you selected. Along the bottom of this composite map image there are five minimized map images (“CONUS map”, “AK Map”, “PR&VI Map”, “HI Map” and “Zero Map”). These components are used to create the composite map. See Figure MI04.

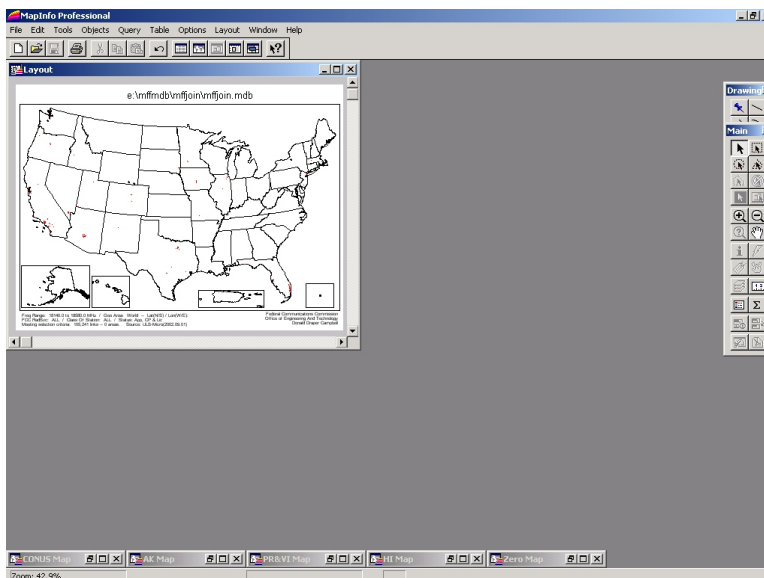


Figure 30 – MapInfo

To view the technical parameters of a station or link you need to first maximize a minimized map, for example, the “CONUS Map”. To do this left click on the restore icon for the “CONUS Map”. The “CONUS Map” will be maximized. See Figure MI05

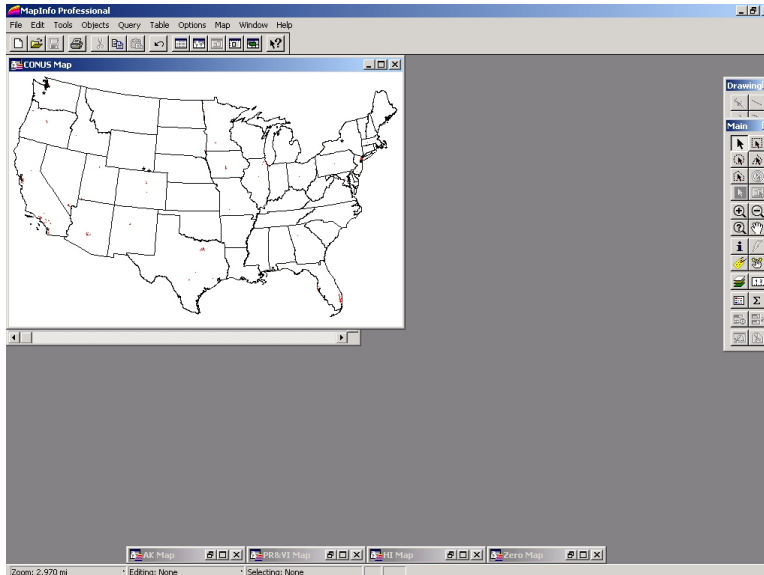


Figure 31 – MapInfo

To zoom in on an area, right click on the “+” icon on the menu bar, then left double click on the area to be expanded. You may need to do this several times to distinguish between several objects on the map. See Figure MI06.

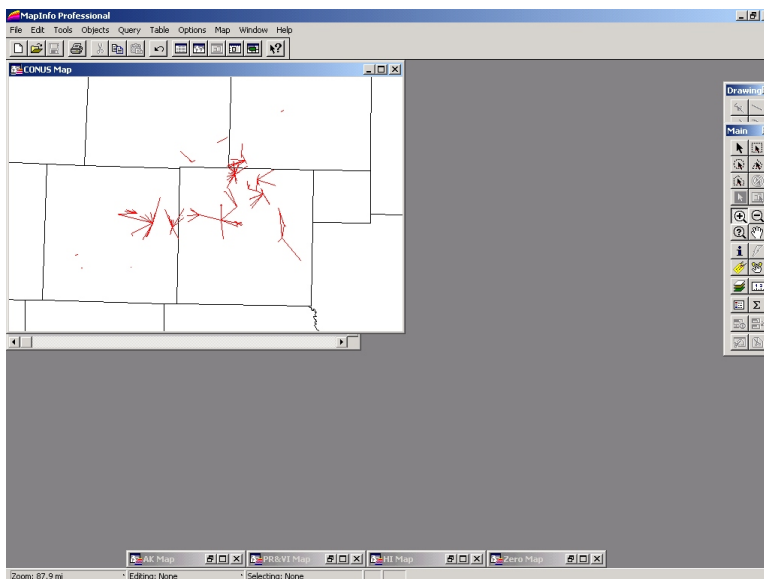


Figure 32 – MapInfo

To display the parameters associated with a map object, left click on the “i” icon on the menu bar. Then left click on the object of interest. This action will display a “Info Tool” drop down box which contains a list of entries associated with this object. Left click on an entry to display the contents of the entry. See Figure MI07.

To move across the map to display, left click on the “hand” icon on the menu bar. Drag the “hand”

across the map to view the area of interest to display the next map.

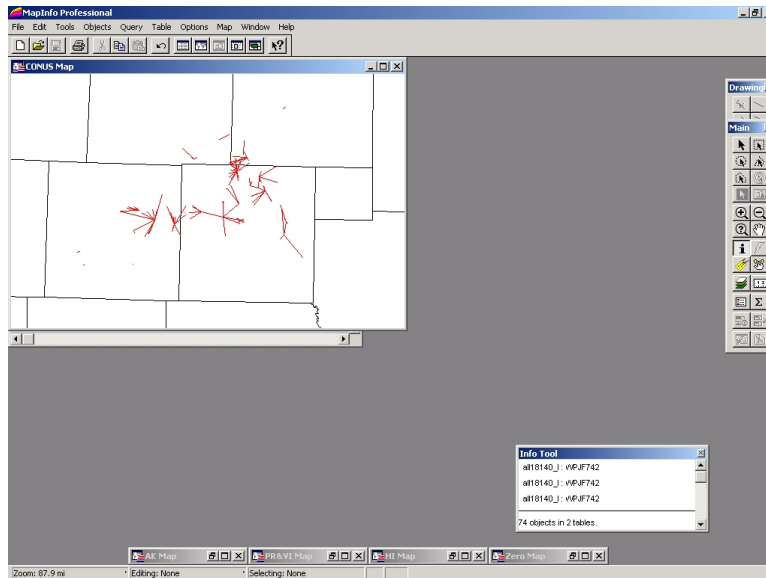


Figure 33 – MapInfo

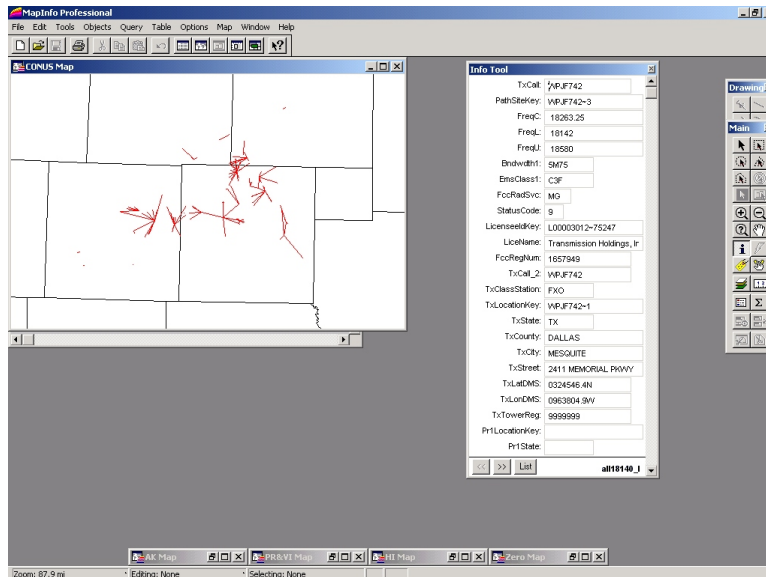


Figure 34 – MapInfo

To return the “CONUS Map” to the bottom of the composite map image, left click the “Minimize” icon for the “CONUS Map”.

Before selecting another map, left click on “File|Close All”. Then repeat the above instructions.

NOTE: Once you have created the map object, you need only select the “all6525.wor” file to redisplay the map.

To print a map, just left click on “File|Page Setup ...” on the menu bar to display the “Page Setup” dialog box. Set page “Orientation” to “Landscape” and then click “OK” to close the box. Now right click on the printer icon on the menu bar.

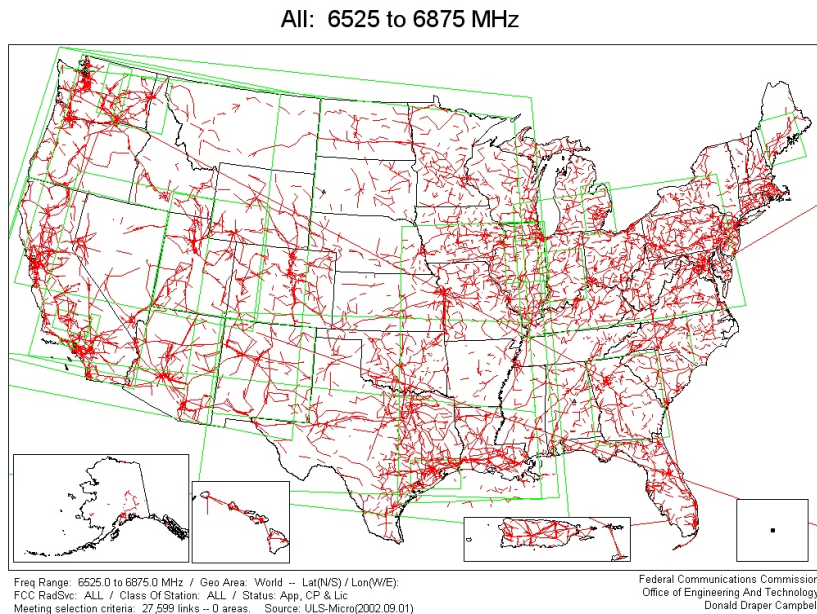


Figure 35 – Radio System Map. Derived from the MapInfo files: “xxxx_a.mid”, “xxxx_a.mif”, “xxxx_l.mid”, “xxxx_l.mif”, “xxxx.wor”, “xxxx start.wor” and “legend.wor”.

Map Legend:

Each time the program is run, it creates a “Map Legend” file which is written to the same directory at the “project”.

A **Red Line** “—” represents the path between a fixed transmitter site and a fixed receiver site via up to four passive repeater sites if any are present. A “link” is defined as a single frequency/ polarization combination between a fixed transmitter site and a receiver site via passive repeaters sites if any are presents.

A **Blue Up Triangle** “▲” represents the transmitter site of a fixed link where the corresponding receiver site is not defined the in the assignment record.

A **Blue Down Triangle** “▼” represents the point round which a mobile transmitter is assumed to operate. This point may be in fact be the receiver site for the mobile operation.

A **Blue Diamond** “◆” represents the point round which a mobile transmitter is assumed to operate. Since the assignment record did not have either TX or RX coordinates, the coordinates of this object are the coordinates of the parent broadcast station.

A **Green Star** “★” represents a fixed earth station (transmit or receive) site in the fixed or mobile satellite service.

A **Red Dot** “●” represents a full-service station: TV (NTSC), FM or AM.

A **Blue Dot** “●” represents a full-service station: TV (digital).

A **Green Dot** “●” represents a low power station: TV

A **Yellow Dot** “●” represents a translator station: TV or FM.

A **Black Dot** “●” represents a booster station: TV

A **Green Polygon** “□” defines the area of operation of a temporary fixed or mobile station(s).

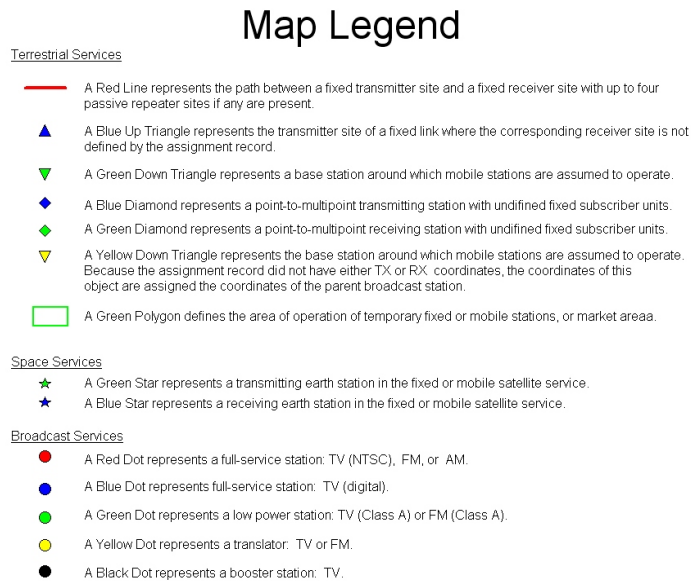


Figure 36 – Map Legend

Split ULS

(SplitUls) is used to separate the output data file resulting from a selective search of the Universal Licensing System using the 'Query Download' method into the bulk data format of individual table files that can be processed by the CnvULS program, see <http://wireless2.fcc.gov/UlsApp/UlsSearch/searchLicense>. The setup program and associated files, program documentation, database file structure and source code are all contained in the zipped file “ SplitUls.zip”.

Setting up the program

- Launch the program “MffTools”
- Left click on “Step”
- Left click on “Modify File Location”
-
-
-
-
- Left click on “Exit” to exit the program

Running the program

-
-
-
-

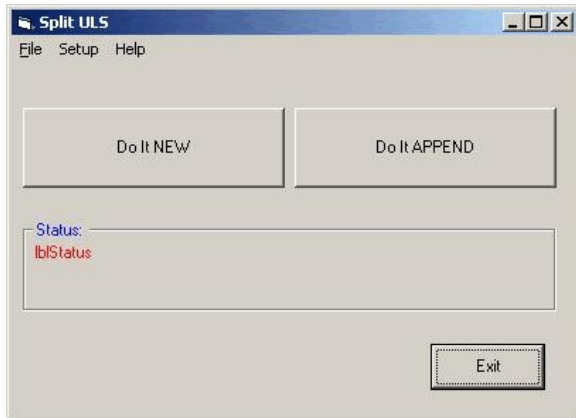


Figure 37 – SplitUls.jpg

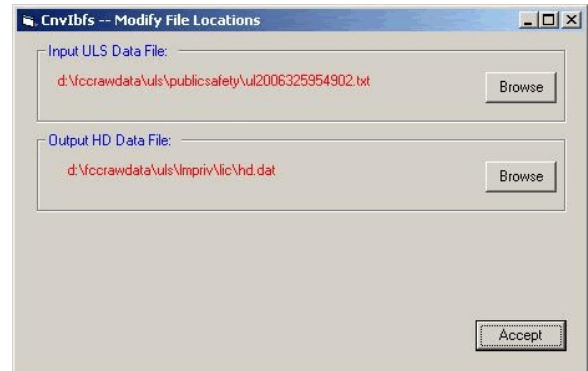


Figure 38 – SplitUls_1.jpg

=====

Convert EIN FRN

(CnvEinFrn)

NOTE: This data set is not publicly available. It is specially generated for internal Commission use.

..... Commission Registration System (CORES) data and the relationships between Employer Identification Number (EIN) and FCC Registration Number (FRN) for businesses.

NOTE: Not all the assignment records have the FRN field populated – particularly old records. Additionally, CDBS does not export the FAN data field. Thus, it cannot be associated with the CDBS record.

The setup program and associated files, program documentation, database file structure and source code are all contained in the zipped file “CnvEinFrn.zip”.

Setting up the program

- Launch the program “CnvEinFrn”
- Left click on “Step”
- Left click on “Modify File Location”
- Select source of raw input and output files.
- Left click on “Exit” to exit the program

Running the program

- Launch the program “CnvEinFrn”
- Left click on the <Initialize Database> button.
- When finished, left click on the <Process Domestic Raw Data> button
- When finished, left click on the <Process International Raw Data> button
- If desired, you left click the <Generate Reports> button to get some optional analysis reports.
- Left click on “Exit” to exit the program

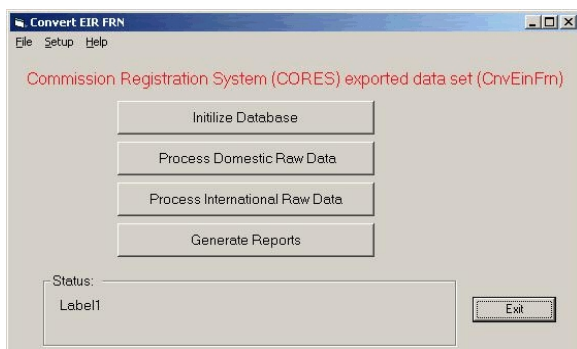


Figure 39 – CnvEirFrn.jpg

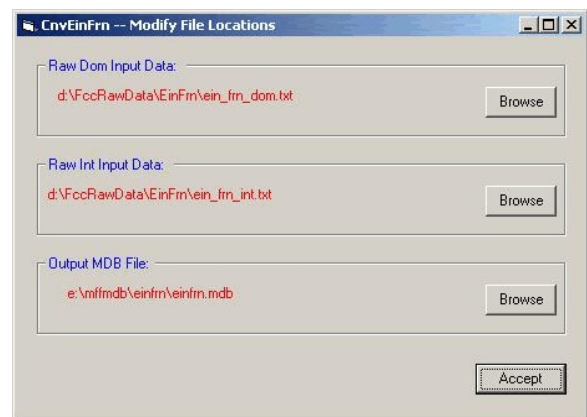


Figure 40 – CnvEirFrn_1.jpg

All the convert programs look for EIN FRN database to be located in --

gtLiceEinFrnTablePath = "E:\MffMdb\EinFrn\einfrn.mdb"

File Name: Using_Suss.wpd