WA2HIP US Callsign Database-Application

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Purpose & Strategy

The database application is intended to be a stand-alone US Ham Radio Callsign Database.

Retrieving regular and frequent updates should be simple with a minimum amount of user interaction

Updates should be easily adaptable by means of configuration settings. Further, updates should use a "point and click" methodology. No major user interaction should be necessary.

The data source should be reliable, consistent, freely available, and updated regularly.

All major activities such as downloads (FTP) and loading of the database should be audited (recorded action and the time to perform the maintenance action).

All activities should require only a MINIMUM of technical knowledge about databases, FTP, Zip programs & commands, and program setup.

This application/database is NOT intended to eclipse any of the multiple & great on-line callsign databases.

Acknowledgments

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- Ken (N1DOT) and Gerry (K1WTX) for their listening, encouragement, suggestions and more.
- Mike T. for his encouragement and lending an ear to my endeavors
- Carl D. for his positive words and listening to my ideas.

Their contributions to this project are greatly appreciated.

Legal

Name: WA2HIP US Ham Radio Callsign Database Application
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Data Source

The FCC's weekly update was chosen as a source for the US Amateur Callsign data.

This data is updated weekly (typically on a Sunday) and is made available to the public via FTP as well as a website. This is in the form of a ZIP file containing several useful files.

The files containing the data for this application are: AM.dat, EN.dat, HD.dat, and HS.dat.

These 4 files are used to load the database, with each file containing a variety of data. The files each have a field called "Unique_System_Identifier" that is common to all and facilitates linking of the data within the files.

Description of the Database

The database is built within MS Access ® although it could likely run in Open Office ®.

The database consists of several key elements:

1. Data Tables
2. Modules to perform FTP (from FCC)
3. Modules to perform the extraction of the flat files from the downloaded ZIP file
4. Modules to load each of the 4 data files.
5. Queries to produce a variety of summaries and reports
6. Simple Auditing of major actions/activites

All of the maintenance/updates, summaries and reports are organized into 3 GROUPS:

1. $$Initial Tasks
2. Tabular Summaries.
3. Reports

From these three groups, a user can perform all activities and generate tabular summaries and reports.

Installation and Setup

After downloading the file (ZIP format)

1. Create a suitable directory on your hard drive.
2. Unzip the database from the zip file into the previously created directory.
3. Make a note of the name of the created directory.
4. Start up the database by clicking on its Icon.
5. Go to the Tables
6. Click on the "$$Config" Table. NOTE: DO NOT CHANGE the NAMES – ONLY the VALUES!
7. Edit the "$$Config Table" to reflect the directory created in Step 1. This will be the "Local_Data_Dir" parameter that will need to be updated.
8. In the $$Config Table, change/verify the "ZIP Pgm" parameter to reflect the location/name of your ZIP/Unzip program. Note that the command contains "Meta Data". Thus the values prefixed with the "@" symbol will be replaced with there appropriate and corresponding data from a similarly-named parameter.
9. Make a copy of the ".mdb" file with a slightly different name.
10. Go to the $$Initial Tasks Group.
11. Click on the "Create or ReCreate Audit Table" item.
12. Click on the "Get Data From FCC via FTP" item. Follow the prompts. The download from the FCC will begin. BE PATIENT ! The file is over 100MB and should take less than 10 minutes. The times are variable as it is based on your Internet connection speed.
13. Click on the "Unzip_FCC_Data" item.
14. Click on each of the "Load_xx_Data" items (AM, EN, HD, HS). Note that after loading each of the tables, the user will be shown the "Table Screen". This is normal. Simply click on the $$Initial Tasks Group and continue.
15. Click on the "Reports" Group.
16. Enjoy viewing each of the summaries and reports.

Database Updates

At this time, the FCC data is updated at approximately 02:00 US Eastern Time on a Sunday.

Updates may be accomplished with either of 2 methods

First Method

1. Delete the current copy of the database
2. Copy file created in Step 9 of the Installation and Setup to the current/to-be-used database-name. This will REPLACE the current database with a FRESH COPY
3. Run Steps 11 thru 16 in the "Installation and Setup" section
4. Enjoy viewing each of the summaries and reports

This is the faster method as it avoids the need to COMPACT the database after loading updates.

Alternate Method

1. Run Steps 12 thru 16 in the "Installation and Setup" section
2. From the "$$Initial Tasks" click on "Compact Database". This will take some time (10 minutes or so) depending on your computer's speed and memory.
3. Enjoy viewing each of the summaries and reports

The Audit Table

The Audit Table retains a copy of all activity. In addition, it shows the start time, end time, and elapsed time to perform each individual maintenance/update task or action.

The Audit Table also can function as a reference as to when the last FTP, Unzip, or Update has been performed. Thus this will help determine how up-to-date the data is.

Environment

The application was developed in Windows XP ® using Microsoft Access ®. It is likely that, with some minor changes, it will run in other environments.

Some Typical Timings

Computer: Dell Inspiron 5150, 2.6 GHz, 1.5Gb RAM, 120Gb ATA HDD
Internet Connection: Cable with 3 Gb max download speed

Download Zip file from FCC: 5 to 7 minutes (transfer rate 350+ kBytes/sec)

Unzip Data File from FCC: 36 seconds

Load AM Data Table: 60 Seconds

Load EN Data Table: 88 Seconds

Load HD Data Table: 77 Seconds

Load HS Data Table: 101 Seconds

Also, please see the Audit Table screen, shown near the end of this document.

Fields in Tables

Each table has numerous fields extracted from the FCC data. In most cases, there are additional fields that are not relative to this application. The defined MS Access Import Specifications (part of this application) keep these from being imported and thus are not listed in the summaries below

The field "Unique_System_Identifier" in each of the tables is the key used to relate the data to the other tables.

AM Table

FieldName	Start	Width
Record_Type	1	3
Unique_System_Identifier	4	7
ULS_File_Number	11	1
EBF_Number	12	1
Call_Sign	13	6
Operator_Class	19	2
Group_Code	21	2
Region_Code	23	3
Trustee_Call_Sign	26	1
Trustee_Indicator	27	2
Physician_Certification	29	1
VE_Signature	30	1
Systematic_Call_Sign_Change	31	1
Vanity_Call_Sign_Change	32	1
Vanity_Relationship	33	1
Previous_Call_Sign	34	7
Previous_Operator_Class	41	2

EN Table

FieldName	Start	Width
Record_Type	1	3
Unique_System_Identifier	4	7
ULS_File_Number	11	1
EBF_Number	12	1
Call_Sign	13	6
Entity_Type	19	2
License_ID	21	10
Entity_Name	31	22
First_Name	53	8
MI	61	2
Last_Name	63	12
Suffix	75	3
Phone	78	1
Fax	79	1
Email	80	1
Street_Address	81	27
City	108	16
State	124	3
Zip_Code	127	10
PO_Box	137	4
Attention_Line	141	27
SGIN	168	4
FCC_Registration_Number	172	11
Applicant_Type_Code	183	2
Applicant_Type_Code_Other	185	1
Status_Code	186	1

HD Table

FieldName	Start	Width
Record_Type	1	3
Unique_System_Identifier	4	7
ULS_File_Number	11	11
EBF_Number	22	1
Call_Sign	23	6
License_Status	29	2
Radio_Service_Code	31	3
Grant_Date	34	11
Expired_Date	45	11
Cancellation_Date	56	11
Eligibility_Rule_Num	67	1
Effective_Date	121	11
Last_Action_Date	132	11

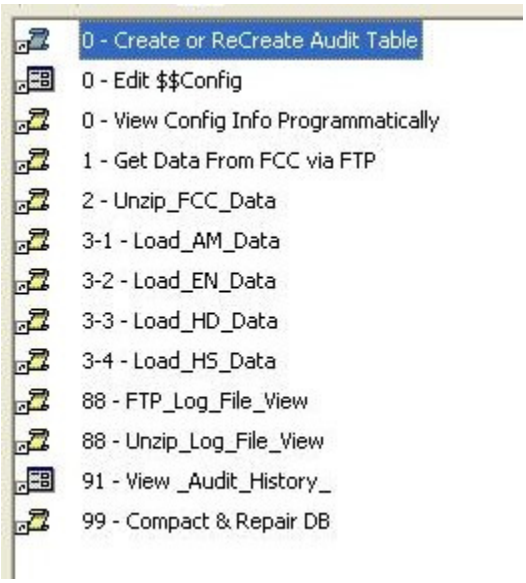
HS Table

FieldName	Start	Width
Record_Type	1	3
Unique_System_Identifier	4	7
ULS_File_Number	11	1
Call_Sign	12	6
Log_Date	18	11
Code	29	7

$$Initial Tasks Group

This screen, located in the "$$Initial Tasks" Group and, as its name describes, contains all of the Initial Tasks, including:

1. Creating the Audit Table
2. Edit The Configuration Information
3. View Configuration Information Programmatically (This is useful for validating the configuration data in a manner that is exactly as the database Modules will see it)
4. Performing the FTP from the FCC
5. Unzipping the data from the FCC
6. Loading the database tables (4 tables)
7. Viewing the FTP Log File
8. Viewing the Unzip Log File
9. Viewing the Audit History
10. Performing a Compact on the database

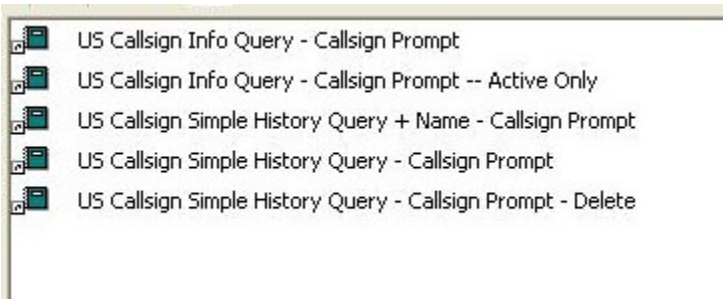


Tabular Summaries Group

These are Simple tabular summaries for each of the 4 tables in the database. The user is prompted for the indicated parameters. In each prompt the use of "wild-cards" is supported (See section below on wild-cards)

Reports Group

These are a series of detailed reports from the database. As can be seen in the list, the user is prompted for a callsign. In each prompt the use of "wild-cards" is supported (See section below on wild-cards)



Wild-Card Searches

As stated previously, the database supports the use of "Wild-Cards" in all searches. The "*" character matches any prefix or suffix (multiple characters). The "?" is a single character wild-card.

Examples:
((Note that no callsign mentioned in the following examples should be considered anything other than an example. Any reference to an existing call sign is purely coincidental).

WA2H*	Would match WA2HI, WA2HIP and WA2HXX"
WA2H?	Would match WA2HI, WA2HA Would NOT match WA2HIP, WA2HIX
W?2H*	Would match WA2HIP, WC2HI, WD2H Wound NOT match WA3HXX
*HIP	Would match WA2HIP, WA3HIP, K1HIP (any call ending in "HIP")
WA?H?P	Would match WA2HIP, WA3HXP, WA4HZP Would NOT match WB2HIP, WA2XIP
WA??IP	Would match WA2HIP, WA3XIP, WA5DIP Would NOT match WB2HIP, WA2HXP, WA2HIX

Note: for ZIP Code searches it is advisable to ALWAYS use the trailing "*" wild-card. Thus a search for "04412" should be entered as "04412*" since in some cases there is a 9-digit zip code.

For further reference on search/filters, the user should become familiar with such parameters as "Like" and etc. This is freely available on the internet.

Technical Notes

For normal use, ALL OPERATIONS should be run from the appropriate GROUP. Running parts of the database from Queries, Forms, Reports, Pages, Macros, or Modules is NOT RECOMMENDED !

The database-application is build with a simple modular strategy.

There are a variety of modules that support the operation of the database-application. The modules are written in VBA.

A user should NOT ALTER these modules unless very familiar with VBA and MS Access.

All modules however are well documented with in-line comments.

During the FTP and Unzip actions there are several files that will be written to the "Local_Data_Dir".

For the FTP Action:

- CMD(batch) file
- FTP Log file

For the Unzip Action:

- CMD (batch) file
- Unzip Log File

Upon completion of the action the user will have the opportunity to view the corresponding Log File. The user may also view the CMD (batch) and log files by looking in the "Local_Data_Dir".

Additionally, there is an option in the "$$Initial Tasks" to view each of the two log files.

Also note that this method facilitates debugging and/or check pointing should the need arise.

The data files contained in the ZIP file download from the FCC have a ".dat" extension. The Unzip Action will subsequently change the extension of these files to ".txt".

The reason for this is that the MS Jet engine has a problem with files with a 'dat' extension being imported to MS Access.

This is documented in both the VBA code and the appropriate CMD (batch) file.

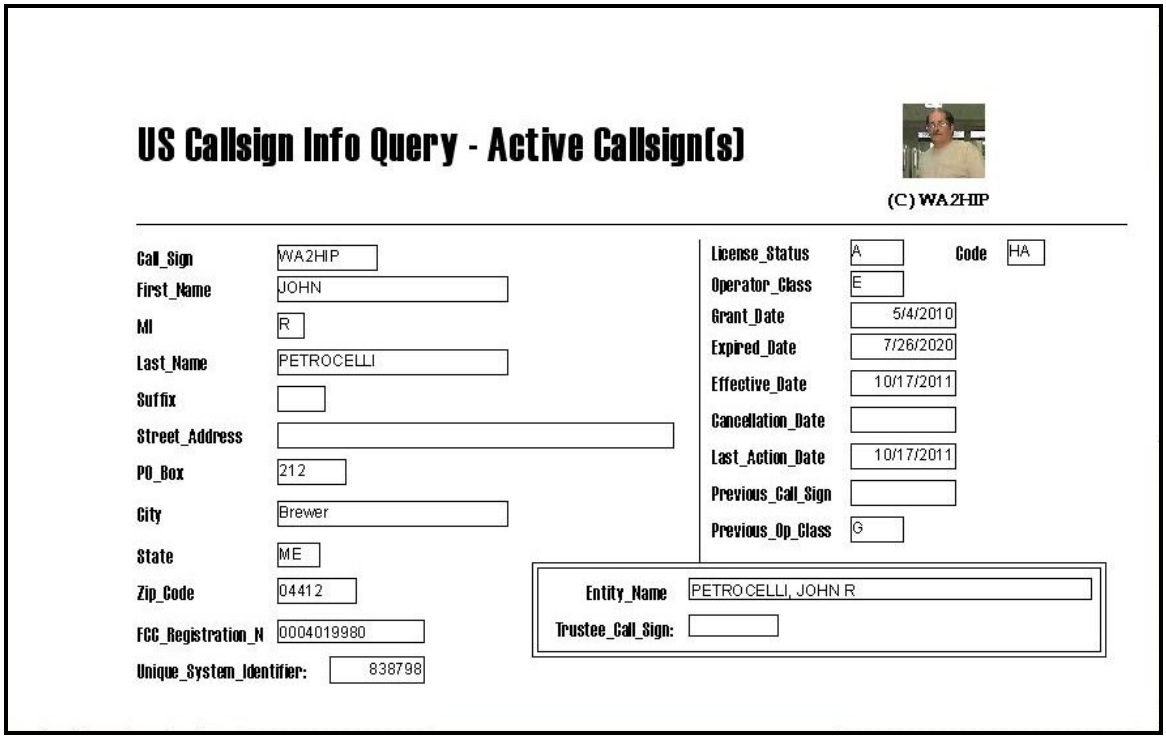
The empty database file (".mdb") size is approximately 200 Kb

The database file with data loaded is approximately 700 Mb. Thus a Database Compact can take a bit of time. This is also why it is suggested, when updating, to start with a fresh copy of the empty database file from the distributed ZIP file.
(See Section "Database Updates")

At this time, the FCC data is updated at approximately 02:00 US Eastern Time on a Sunday. Waiting a few hours should assure that the most up-to-date data will be retrieved.

Sample Reports

The following are sample reports generated by the database-application. The first report show can be generated for either Active Callsigns or All Callsigns.



US Callsign Info Query - Active Callsign(s)

(C) WA2HIP

Call_Sign	WA2HIP
First_Name	JOHN
MI	R
Last_Name	PETROCELLI
Suffix	
Street_Address	
PO_Box	212
City	Brewer
State	ME
Zip_Code	04412
FCC_Registration_N	0004019980
Unique_System_Identifier:	838798

License_Status	A	Code	HA
Operator_Class	E		
Grant_Date	5/4/2010		
Expired_Date	7/26/2020		
Effective_Date	10/17/2011		
Cancellation_Date			
Last_Action_Date	10/17/2011		
Previous_Call_Sign			
Previous_Op_Class	G		

Entity_Name	PETROCELLI, JOHN R
Trustee_Call_Sign:	

This second report shows the history of FCC actions. This report can be generated with or without the Name field. However, for simplicity reasons, only the Last Known City and Last Know State is shown with the Name field.

It is also useful to show the history of a callsign that has been reassigned.

US Callsign Simple History + Entity Name

(C) WA2HIP

Call_Sign	Log_Date	Code	Entity Name	Last Known City	Last Known State
WA2HIP	7/26/2000	LIREN	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	8/24/2004	LIAUA	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	8/31/2004	LIAUA	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	9/22/2005	LIAUA	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	6/6/2006	LIAUA	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	12/5/2006	LIAUA	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	12/5/2006	LIAUA	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	10/21/2008	LIAUA	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	5/4/2010	LIREN	PETROCELLI, JOHN R	Brewer	ME
WA2HIP	10/17/2011	LIMOD	PETROCELLI, JOHN R	Brewer	ME

Some typical codes are:

LIAUA	Administrative Update Applied
LICALL	License Call Sign was Changed
LICAN	License Canceled
LICCNV	License Converted
LIDUP	Duplicate Authorization Generated
LIEXP	License Expired
LIISS	License Issued
LIMOD	License Modified
LIPUR	License Purged
LIREN	License Renewed
LITERM	License Terminated
LITRAN	License Transferred

Audit Table Listing

The following shows a typical listing of the Audit Table as one would expect after downloading data from the FCC, Unzipping the data, and loading the 4 tables into the database-application

Record	_Date_	_Action_	Comments
1	2013-08-13 @ 02:53:31	Audit Table Created-Initialized	
2	2013-08-13 @ 02:53:42	FTP Download FCC Data	Started
3	2013-08-13 @ 02:59:53	FTP Download FCC Data	Completed 371 Seconds
4	2013-08-13 @ 03:00:31	Unzip FCC Data	Started
5	2013-08-13 @ 03:01:00	Unzip FCC Data	Completed 29 Seconds
6	2013-08-13 @ 03:01:43	Load PU_ACC_AM Table	Started
7	2013-08-13 @ 03:02:42	Load PU_ACC_AM Table	Records Loaded: 1175281
8	2013-08-13 @ 03:02:42	Load PU_ACC_AM Table	Completed 59 Seconds
9	2013-08-13 @ 03:02:56	Load PU_ACC_EN Table	Started
10	2013-08-13 @ 03:04:39	Load PU_ACC_EN Table	Records Loaded: 1177543
11	2013-08-13 @ 03:04:39	Load PU_ACC_EN Table	Completed 103 Seconds
12	2013-08-13 @ 03:04:48	Load PU_ACC_HD Table	Started
13	2013-08-13 @ 03:06:01	Load PU_ACC_HD Table	Records Loaded: 1177543
14	2013-08-13 @ 03:06:01	Load PU_ACC_HD Table	Completed 73 Seconds
15	2013-08-13 @ 03:06:07	Load PU_ACC_HS Table	Started
16	2013-08-13 @ 03:07:44	Load PU_ACC_HS Table	Records Loaded: 2535438
17	2013-08-13 @ 03:07:44	Load PU_ACC_HS Table	Completed 97 Seconds

Config Table Listing

The following shows the $$Config Table listing. This is in the distributed copy of the database application. The user will need to edit this table to reflect the particulars of his own setup.

Parameter_Name	Parameter_Value
Comment_000	<<***** The Following Data Defines The User's Information *****>>
My_Callsign	WA2HIP
My_Name	John Petrocelli
My_Address_1	PO Box 212
My_Address_3	USA
My_Address_2	Brewer, Maine
My_Zip	04412
My_CQ_Zone	5
My_ITU_Zone	8
My_Grid	FN54ot
My_Email	nospam@nospam.net
Comment_200	<<***** The Following Data Is for REFERENCE. These are DIRECT LINKS to the FCC Web & FTP site(s) *****>>
FCC_Download_Web	http://wireless.fcc.gov/uls/index.htm?job=transaction&page=weekly
FCC_Download_Direct_Weekly	http://wireless.fcc.gov/uls/data/complete/l_amat.zip
FCC_Download_Direct_Applications	http://wireless.fcc.gov/uls/data/complete/a_amat.zip
FCC_Download_Direct_FTP	ftp://wireless.fcc.gov/pub/uls/complete/l_amat.zip
Comment_300	<<***** The Following Directory Is Where The Download And Rad Data Reside *****>>
Local_Data_Dir	C:\ImportFiles\DB FCC\Support\Data
Comment_400	<<***** The Following 4 Files Are Used For Data Import. Should Include ==>>> "Local_Data_Dir" *****>>
AM_Text_File_Delimited	C:\ImportFiles\DB FCC\Support\Data\AM.txt
EN_Text_File_Delimited	C:\ImportFiles\DB FCC\Support\Data\EN.txt
HS_Text_File_Delimited	C:\ImportFiles\DB FCC\Support\Data\HS.txt
HD_Text_File_Delimited	C:\ImportFiles\DB FCC\Support\Data\HD.txt
Comment_500	<<***** The Follwing Is Used By The ZIP Program. Must Include Full Path ****>>
Zip_PGM	C:\Program Files\7-Zip\7z.exe
Comment_509	<<***** The Following File Name Is The ZIP FILE Used By The Program. Should MATCH ==>>> "FCC_FTP_File" ****
Zip_File	l_amat.zip
Zip_Files_To_Extract	EN.dat HS.dat AM.dat HD.dat
Comment_520	<<***** The Following Data Is The Command Used To Unzip The FCC Data. The Strings With A "@" Will Be Replaced
Zip_Extract_CMD_Meta	"@Zip_PGM" e @Zip_File -y @Zip_Files_To_Extract
Comment_530	<<***** The Following Is An Alternate ZIP Command Meta File With Quoted File Names - Not Used At This Time *****
Zip_Extract_CMD_Meta_Alternate	"@Zip_PGM" e "@Local_Data_Dir\@Zip_File" -y -o"@Local_Data_Dir" @Zip_Files_To_Extract
Comment_540	T<<***** The Following Is REFERENCE ONLY. It Is A 7-Zip Command String -- SAMPLE ONLY !!! *****>>
Zip_Extract_CMD_Full	"C:\Program Files\7-Zip\7z.exe" e "C:\ImportFiles\DB FCC\Support\Data\FCC____l_amat.zip" -y -o"C:\ImportFiles\DB
Comment_600	<<***** The Followning Data Is Used To Run The FTP Download From The FCC *****>>
FCC_FTP	wireless.fcc.gov
Comment_609	<<***** The Following File Name Is The ZIP FILE Used By The Program. Should MATCH ==>>> "Zip_File" *****>>
FCC_FTP_File	l_amat.zip
FCC_FTP_Dir	pub/uls/complete
Comment_700	<<***** The Following Data Is Used For Working And/Or Temp Files By The Application/Database *****>>
FTP_CMD_File_Created	Get_FCC_l_amat.cmd
FTP_Script_File_Created	Get_FCC_l_amat.ftp
Unzip_CMD_File_Created	Unzip_FCC_l_amat.cmd