

Release Notes - Version 5.4.10

Version 5.4.10

SUAs with more than 512 vertexes have been included recently, causing all GEN programs to fail in both Listing and Create Image functions. This issue corrects this problem, which affected some SUAs named ST PETERSBURG with 625 vertexes. (yes, really).

Version 5.4.9

1. The main reason for this issue is that GPS_USB and GPS_DBM have been upgraded to handle Waypoints (USR) and Flight Plans (RTE) of Aera units, which differ from all other units in their use of GPX format text files instead of binary .gar files.
2. GPS_USB can now download USR, RTE, and TRK data into a .gpx file of your choice.
3. Unlike the original .gar files, GPS_USB cannot list these Aera.gpx files so listing and changes have to be performed by GPS_DBM.
4. GPS_DBM is now able to 'import' Aera Waypoints which have been downloaded from the unit, and place them in the USR section of the ISAM db on your PC. It can also 'export' them to a .gpx file of your choice.
5. GPS_DBM can 'import' Flight Plans, placing them in the RTE section of the ISAM db. The route waypoints are all classified as 'USR' types, but the File/Convert option will change them to main types where possible by reference to the current ISAM contents. The RTE db can be 'exported' to a .gpx file of your choice.
6. GPS_USB can Write USR and RTE .gpx files back to the Aera, placing them into a series of Temp.gpx files in the GPX folder. The Aera processes these on startup because their file dates are later than the existing Current.gpx file.
7. The User Manual has been brought up to date, and split into two, one copy for units which use a Serial interface, and one for units able to use a USB interface or SD Card. Where units have more than one of these interfaces, users are encouraged to use SD Cards where possible, failing that USB cables, and finally Serial ports on legacy hardware.
8. Program dbview now includes the RTE db in its display.

Version 5.4.8

1. Version 5.4 is built on Win 10 by VS2019, and the MFC library is no longer compiled into each program but is installed as a redistributable .dll
2. The program start menu links now carry a prefix so that the icons appear in my preferred order, since alpha order seems to be the only option on Win 10. I think it looks better if you choose to view them as medium sized icons.

Changes in 5.4.8 since version 5.4.7

Very few, apart from the GPS_DBM fix and minor changes to GPS_OBS when listing b2 obstacles files.

Changes in 5.4.7 since version 5.4.3

1. Models G3X, G3XT, and Aera760 have recently become available, causing a problem with my “handheld models only” policy because the panel-mounted G3X and G3XT use G696 navdata, while the handheld Aera760 uses G1000 navdata. I have therefore decided to support the G3X range, but not to support the Aera760.

GPS_SDC has been given a “Model” menu item with the choice of G696, G3X, or G3XT.

2. APT LTFM now has over 64 FRQs (can you believe that ?!!) and broke the GEN programs where it occurred.
3. A new file “Help with Charts” explains how to handle ‘f’ and ‘c’ charts on G696 and Aeras.

Changes in 5.4.4 since version 5.4.3

1. GPS_DBM has been upgraded to show comms channels with 3 decimal digits where appropriate.
2. 8.33khz channels are becoming very numerous, leaving users of legacy (pre G696) units with fewer and fewer comms channels to display. I have enhanced the legacy GEN programs to put the actual channel in the ‘narrative’ (restrictions) associated with ‘frequencies’. This means that you can include 8.33khz channels in a batch update, or via GPS_DBM, and see the actual channel by referring to the narrative. (see 2 below).

3. New program “frq833.pl” extracts the FRQ lines from a G696 bat.all file and applies changes as described in 2 above. You do need to have a Perl system installed – I use “Active Perl” which is freely available. Please check the separate operating instructions.

Changes since version 5.4.2

1. I have changed my mind about comms channel display by G696_GEN as described in para 3 of “Changes since 5.4.1”. It now uses 3 decimal digits in every case.
2. Please note that although legacy models can only display frequencies to two decimal digits, and the manufacturer has chosen to omit all 8.33khz channels from his updates, users can add the 8.33khz channels which end in zero. eg: 123.41, 123.43, 123.44, etc. may be added and displayed by their units.
3. All GEN programs had a small problem with comms channels specified in a batch file where the trailing asterisk was not placed in the ISAM db and therefore was not in a new image. Create ISAM did not have this problem.

Changes since version 5.4.1

1. The main reason for version 5.4.2 is the introduction of 8.33khz communications channels. Note that it is no longer accurate to call them ‘frequencies’. Only G696_GEN is affected because earlier models would need a firmware change to display them, so the manufacturer has decided to omit them altogether from legacy navdata.
2. It turns out that G696_GEN already copied all the necessary data for 8.33khz channels to display correctly on G696 units, even after the navdata image was remade. However G696_GEN did not display them correctly in listings and SaveAs batch files, and did not process them correctly if placed in a batch file.
3. Although a G696 displays all APT channels with 3 decimal digits, I have decided to adopt a more ‘usual’ approach to the problem:
 - 3.1 No change to 25khz channels (.x0 .x2 .x5 .x7).
 - 3.2 Only display a third decimal digit if it is ‘5’.
 - 3.3 The following table shows an example for chans 123.40 to 123.50.

<u>G696 unit display</u>	<u>G696_GEN display</u>	<u>Status</u>
123.400	123.40	25khz
123.405	123.405	8.33khz

123.410	123.41	8.33khz
123.415	123.415	8.33khz
123.425	123.42	25khz
123.430	123.43	8.33khz
123.435	123.435	8.33khz
123.440	123.44	8.33khz
123.450	123.45	25khz
123.455	123.455	8.33khz
123.460	123.46	8.33khz
123.465	123.465	8.33khz
123.475	123.47	25khz
123.480	123.48	8.33khz
123.485	123.485	8.33khz
123.490	123.49	8.33khz
123.500	123.50	25khz

3.4 There are some obvious omissions from this table:

123.445 and 123.495 which can be used and displayed by G696 and G696_GEN, but you cannot select them on your radio.

4. There have been some minor bugfixes not worthy of mention.

Changes since version 5.3.1

1. The Aera660 is now handled.
2. GPS_USB now works on units which have not had an official update since manufacture.
3. G696_GEN approaches section now only lists and compiles nav, faf, and map waypoints (types ending in 0,5,and 7) and in that order. These are the only points used by the G696/796, although more stuff is included in the official images because they only remove the data preceding the faf when copying it from the G1000.
4. GPS_COM and GPS_USB had a problem on Win10 with the database dropdown list in the setup dialog.

Changes since version 5.2

1. G696 images had an incorrect pointer which, while not affecting the operation of original images, did result in a small error when images were created by G696_GEN. (The first vertex of the first SUA(a) zone was rubbish).

2. FliteCharts on 795 units can be updated using GPS_USB provided you extract the large file from the .taw using RipTaw, rename it fc_tpc.fca, and copy it into the .System\AVTN\FliteCharts folder by hand. A small bug in GPS_USB stopped this working properly.
3. Images for G296/396 had outgrown the 'oversize limit' set in GPS_GEN, resulting in a "do not use" message. The sumchecking system is based on a maximum of 16 x 128k blocks (eg:2mb) and when the data exceeded this, they changed the firmware to allow the excess, but left it without any sumcheck.

GPS_GEN guessed that one extra 128k block would be the limit, but apparently this is not the case as the latest images are into the 3rd extra block.

4. FlarmDBM has been added to the package, giving Flarm users with in-cockpit displays the ability to add information from Glidernet to the database published by Flarmnet. All database formats are handled.

Changes since version 5.1

1. Cycle 1206 of 696/Aera images introduced some changes to the data format which caused G696_GEN to have problems in several areas. These have all been fixed.
2. A new 696/Area SUA(b) type has been identified, "Parachute Area", so if you are recompiling sua.all files from previous issues you need to replace all instances of "Unknown AreaB".
3. The new Aera 796 appears to be compatible with current Aera models, at least as far as the database files and uploading method are concerned. I do need to hear from someone who has created a new image for a 795 in case there is some degradation in the airport approach procedures.
4. The Aera 500 series units seem to be limited to their original part of the world, and do not accept navdata from other parts, especially the "worldwide" files. This limitation is dependent on the last two digits of the part number, and G696_GEN will adjust this for you in your created image if you place an area code argument on the command line, eg: G696_GEN -ATL for Atlantic, -AMR for Americas, or -PAC for Pacific. You do not lose sight of the description which is not changed.

5. The problem which caused GPS_USB to fail on avdb image transfers to a 695 has been fixed. The unit now requires a loader segment from the associated .taw file in the same way as for 296, 396, etc.
6. Two users of VMware have found that GPS_USB fails during an avdb Image upload, at the point where it has transmitted the loader and is waiting to send the database. There are in fact five places in the sequence where the program has to wait an arbitrary amount of time, so they have been brought out and placed in file GPS_USB.ini – generated automatically in the same folder during the first use of the program. If you experience this type of problem it is easy to make changes to these delays, where 1000 = 1 second.
7. GPS_USB.ini contains a fourth parameter “LoaderModels=” followed by a list of models which require a loader to be sent prior to the avdb. If you get a failure after the loader has been sent, temporarily removing your model from the list will make the second attempt much simpler, and you can do it without exiting the program.
8. The “Getting Started” and “FileNames” documents have been updated to reflect the fact that .awp and .taw files are available directly, without the need to extract them from .exe files.
9. Avdb files are getting longer, causing hidden limits to be exceeded in older units. GPS_GEN already warns against the use of images >2mb in 195, 196, and 295 units. It now also issues the same warning if the number of waypoints in any section exceeds 32768, but only if you are using CreateImage. You will also find that issued geographical areas have changed, for instance “amr” becoming “amrn” and “amrs”, “atl” becoming “eer” and “mea”, etc. When even these subdivisions fail to overcome the problem they just give up – witness the absence of j196-amrn this year.
10. I failed to make it clear that GPS_SDC expected a formatted SD Card because it was unable to overwrite existing protected files. You were able to keep adding new database types to the card, but not to update any of them. Although formatting is still the best way to prepare for the program to update a 695/696, this restriction has been removed.
11. New program RipTaw will create one binary file for each of the sections in a .taw file, using filenames made up from model number, memory region, and section name. This is only useful for G196 owners who want to update their Obstacles data, because GPS_COM has been modified to make this possible. You have to set File/DebugLevel=1,

filename to the binary obstacles file from riptaw, and use new option Write Obstacles (only available in debug mode).

12. GPS_GEN CompileSUA now removes an area named "MATHIATIS (D)-21" if it turns out to have no vertex points. This anomaly has been present in the navdata for several years, and this saves you from editing it out manually.

Release Notes - Version 5.1

Changes since version 5.0

1. Program GPS_SDC has been added to the package in order to place updates on an SD Card for a G696, because later unit software releases appear to have discontinued support for USB transfers of navdata images.
2. Single-line highlighting in GEN programs is improved - you can move the highlight up and down with the arrow keys and remove it by clicking on it again.
3. A bug in GPS_USB is fixed which caused it to crash if the latest dated .awp file in your image folder happened to be for a different model.
4. A bug in G3P_GEN caused it to make images a little larger than necessary if the ISAM data was created by GPS_GEN.
5. The filename box in the Setup dialog of all GEN programs has had some rule changes in an attempt to be generally more helpful at remembering filenames.
6. GPS_GEN has been changed to cater for images > 2mb which are now accepted by (and issued for) 96, 296, and 396 units with the latest firmware. If the image is longer than 2mb the program gives a warning not to use it in a 195, 196, or 295.
8. A new batch format for runway threshold co-ordinates, or "pictures", has been introduced for all GEN programs except G90 and G92. All existing formats remain supported, but the new format is used when you SaveAs batch, and replaces the picture bytes by ordinary lat/long co-ordinates. It is best described by using SaveAs to generate an example, noting that the low-end threshold comes first.

9. A long standing problem with SUA sections which cover large areas, say Europe and Eastern USA for instance, was caused by concatenation of sua.all files without keeping all the SUA(a) zones before any SUA(b) areas. GEN programs now check for this, and program RemDups will re-order your file to avoid this problem.

(Note that the SUA section always contained all the areas, it was the indexing of the entries which failed, causing them to be left off the display).

10. All units prior to the 696 have a limit of 256 SUAs in any 2 degree square. Garmin exceeded this limit several years ago for one box in Northern Europe. GEN programs will now list the 'missing' areas if Compile SUA is run with File/DebugLevel/Normal=1.
11. G90, G95, and G92 units have a limit of 32768 waypoints in any section. If you are using American data you can easily bust this limit, even if you have reduced the overall size of the image to fit your unit. The GEN programs now check for this.
12. Later units have more SUA(a) zone types defined, and GEN programs will re-map these definitions if they are encountered during Create Image, which is common when making an image using data from a later unit. The earlier GEN programs will now also compile sua.all files from later units.
13. G696_GEN Compile SUA had a bug which caused some SUA boundaries to be displayed slightly off their correct path when viewed at high zoom levels, and could result in an area not closing properly. This is now fixed.
14. Most recent atl databases have an error in the SUA section for area "SUA(b) MATHIATIS (D)-21 {Danger Area P0} 0 to 100000", so anyone wishing to recompile SUAs will have to edit this line and its single associated point out of the file. You can see the problem if you List SUAs in GPS_GEN with name filter "MATHIA". Program RemDups will also do this for you.

Release Notes - Version 5.0

1. GPSMAP 695/696 and Aera are now supported, with new program G696_GEN handling the aviation databases (which are absolutely identical). They now come with ".taw" extensions instead of ".awp", but

GPS_USB still requires you to produce ".img" files for uploading. There is no link to the issue .exe files, so you have to construct your own filenames and download them direct. Examples are given later.

2. Version 5 uses a modified ISAM database format which is **incompatible** with the previous file format. To avoid confusion, the database directory name has been changed to 'db50'.
3. The default folder for the installation is C:\AviaDBM and the Start Menu group is now named AviaDBM5, so that previous versions will not be disabled. There is no change to the licence unlock code, so a new licence is not required.
5. The Aera USB interface is new to aviation handheld units, connecting via USB but appearing as a new drive in "My Computer" allowing direct access to all the files in the unit. You should be aware that the aviation, obstacles, safetaxi, and terrain files are kept in subfolder ".\System\AVTN", while AirSport and AOPA are kept in ".\POI".
6. GPS_USB has an 'Aera Drive' box which must contain a drive letter in order to access an Aera. This box can be filled by typing the letter, or by clicking the adjacent button. You should start in a clean folder holding only the database files to avoid overwriting anything. The procedure involves the creation of a subfolder to hold copies of the database files being replaced, and the unlock file "feat_unlk.dat" from the Aera root folder. This makes it easy to revert to the previous state, simply by copying all these files back to their original places.
7. An Aera can only be accessed by GPS_USB if it has had at least one "official" update, as otherwise there is no feat_unlk file to start with. There are no USR/RTE facilities yet as they will require a GPX file editor.
8. Although all programs use the same ISAM database in folder "db50", it is not possible to create legacy images from 696 files, or vice versa, due to incompatibilities with SUA, FSS, and ARTCC sections.
9. Batch Update formats have changed for G696_GEN, as detailed in upd_dat696.pdf, which means that batch files must be re-input by the GEN program that produced them. This does not stop you performing a batch update using GPS_GEN with an old format batch file, when the ISAM db has been produced by G696_GEN. Neither does it stop you updating an ISAM db created by GPS_GEN using G696_GEN to do the job.

10. GPS_DBM produces its upd_bat.txt file in 696 format, so if you need to re-input your changes you have to use G696_GEN.
11. Aera/696 VRPs are now issued as INTs and can be found in the INTs section, and GPS_DBM now has a VRP tickbox in the change dialog.
12. Aera/696 airports have a new time-zone setting which can be changed when modifying an airport with GPS_DBM. Original data allows an "unknown" time-zone setting, but this is not supported by the change dialog: if you are making a change to an airport you surely must know its time zone.
13. Airways are a new feature of the 696/Aera database. Like approaches, they are actually kept in ISAM files in db50, but unlike approaches, they cannot be compiled piece-meal. The whole airways section has to be dumped, edited, and recompiled if you want to make changes because the whole section is deleted at the start of a compilation.
14. G696_GEN does not offer geographical limits when making a new image. This is because airways are very difficult to truncate without affecting the remaining sections. In any case, there is no shortage of memory in these units.
15. For the same reason, you should not delete INTs because they are invariably used as airway points. If an airway point is missing, a create image operation will fail.
16. GPS_DBM has a new "Convert" File menu option for the Routes database. Some flight planning software can create routes for uploading to Garmin handhelds, but dump all waypoints as USR types. The convert function changes USR waypoints to aviation waypoints wherever possible, by reference to their ICAO idents and co-ordinates.
17. All GEN programs, and OBS, COM, USB, now support copy-to-clipboard using the cntl-C keyboard shortcut. Lines can be highlighted for copying using the standard left-click for a single line, cntl key with left button drag, or shift key left-click for end of block.
18. Example database filenames are:
<http://www.garmin.com/aviation/databases/j696-amr-1003.exe> // avdb
<http://www.garmin.com/aviation/databases/jaera-atl-1003.exe>
<http://www.garmin.com/aviation/databases/b696-eur-10b1.exe> // obstacles

http://www.garmin.com/aviation/databases/baera-us-10b1.exe
http://www.garmin.com/aviation/databases/s696-us-09s5.exe //
safe taxi
http://www.garmin.com/aviation/databases/daera-us-09d4.exe //
AOPA

For help with cycle names, see:

<http://shop.garmin.com/aviation/databases/cycles.asp>

19. Long Standing Items

19.1 The problem described in [Documentation > Compilation Errors](#) > **para 4b** is still present in databases sold for the GPS 92 and III Pilot, and is unlikely to be fixed before the units become obsolete. The work-around is to treat them as obsolete already, and use a database for a current unit.

19.2 I have now heard of two occasions (in 14 years!) where a new database for a GPS89, GPS90 or GPSCOM190 has interfered with the software in the unit. This suggests that the max image size is a little less than I had been assuming, and that the software does not enforce the limit properly. Please beware of cramming too much in.

19.3 AutoGEN fails to create batch files correctly if any part of the pathname to the files contains a space character.

19.4 GPS_OBS creates batch files with unlauded chars in the names, instead of converting them to OE, UE, etc, so you have to do it by hand.

19.5 Most recent atl databases have an error in the SUA section for area "SUA(b) MATHIATIS (D)-21 {Danger Area P0} 0 to 100000", so anyone wishing to recompile SUAs will have to edit this line and its single associated point out of the file. You can see the problem if you List SUAs in GPS_GEN with name filter "MATHIA".

Release Notes - Version 4.7

1. Version 4.7 issue of AviaDBM software includes communication via USB, and facilities for uploading the Obstacle and VRP databases to units which can accept them, either in native form or as a Batch of INTs. AOPA data can also be listed.
2. GPS_USB is now fully working and tested on different combinations of operating system and gps model. In addition to the facilities offered by GPS_COM on the serial interfaces, GPS_USB includes the ability to

upload VRP files from G496 ".awp" files, and Obstacle or Terrain files from ".taw files". (It will also upload SafeTaxi and AOPA files to a G496).

3. Apart from avdb image files, GPS_USB does not place any restriction on which file you send to what unit, relying on the unit to complain if it cannot accept the type of data chosen, or its size. For instance, you can upload the European obstacles included in a G496 update to a G96, G296, etc quite happily, whereas an attempt to upload a 221Mb terrain file to a G296 will end in failure when the unit's memory becomes full.
4. Due to the changes in record format for G496 units, the pre-compiled files sua.dat and tcc.dat in folder db45 are not transferable between unit types. All the GEN programs recognise and report attempts to use them in the wrong unit, so if you want to move their data (say from a 496 to a 296) you must Save them as ".all" text files using G496_GEN and re-compile them with GPS_GEN. (These operations MUST take place without changing the ISAM data).
5. New program GPS_OBS allows Obstacle and AOPA data from .taw files, and VRP data from .awp files to be listed and saved in text format. Obstacle and VRP data can also be saved in Batch format for use in units which do not have these facilities. Editing and re-compiling is not possible yet, while terrain and safe taxi are not accessible yet by this program.
6. GPS_OBS dumps obstacles as INTs with idents contrived to indicate the max height amsl, while VRPs are dumped as INTs with idents built from their descriptions. In both cases, where the generated ident conflicts with an earlier one it is changed by altering the final character or characters as necessary. These files are plain text and can be edited before applying them to the ISAM database.
7. The SUA data of a G496 contains six new zone types, correcting the anomalies seen recently in some European zones. Although these new SUA zone types cannot be represented by earlier units, we think we have made a better job of mapping them onto existing types, and non-496 GEN programs will make these conversions if they find them in the data.

Release Notes - Version 4.6.6

1. A special version of GPS_GEN, G496_GEN is added to this issue. This has been necessary due to the complete change of record formats

introduced to overcome the restriction in the total number of names, or more specifically, the total length of the names table.

2. Following on from (1) above, all the GEN programs have been updated to recognise the names table size limit. Previously if you added so many names that the table became too long, the programs crashed. (Only one user did this).
3. GPS_COM has been modified to upload G496 images, and their co-located VRP/AirSports data, which takes the place of the loader segment required by previous models.
4. "Brief" airports, being those with no runway direction or comms frequency information, are handled better by the GEN programs. Previously their City names were included in the city names index, which was not strictly necessary. The large number of such items in the 496 database made this shortcoming rather obvious.
5. GPS_DBM now allows the runway traffic pattern arrows to be set to 'N' (absent) which I understand is valid on some units. Traffic arrows are only available if the runway thresholds have been specified.

Release Notes - Version 4.6.5

1. New models 396 and iQue3600a are now supported.
2. GPS_GEN has the facility to create image files named "0.dat", and for these files to have the unit serial number embedded ready for hotsync to upload them to the iQue. The file should be placed in the Palm\- 3. UK Airways files in TNP format have taken a turn for the better, as they now list only those parts of the airways which are "visible" from the ground - just like the UK half-million charts. Program Convair has been updated to handle the "points-only" format, and the new files are included in the Batches folder.
- 4. The problem described in [Documentation > Compilation Errors](#) > para 4b is still present in databases sold for the GPS 92 and III Pilot, and is unlikely to be fixed before the units become obsolete. The work-around is to treat them as obsolete already, and use a database for a current unit.

5. An ISAM database created by GEN from affected updates will have the corrupted names changed to ****name ptr corrupt****, so that you can then make a "clean" image if required.
6. GPS_DBM can now convert waypoint files between all models except the iQue.
7. GPS_COM now reports the unit serial number correctly for all units, and lists waypoint files from all unit types.
8. For users of serial ports higher than COM4, GPS_COM can be called with a command line argument "-COMn" where 'n' is the required value. This port will be added to the bottom of the dropdown list and pre-selected.

Release Notes - Version 4.6

1. The main reason for this issue is that I have compiled everything under Visual C++ version 6 instead of version 5.
2. New models 296, 96, and 96C are now supported via their serial interfaces. Their databases are identical to the 195/196/295 series.
3. Since the current models have standardised on the 195 format of database, I have renamed G195_GEN to GPS_GEN which I hope is slightly less confusing.
4. Most units have seven types of SUA(a) zones, but the older models only use five of them. The remaining two types are "Control Zone", and "Control Tower", and these types are now converted to existing types "Control Area" and "Terminal Ctrl" when creating an image for a 90 or 95.
5. The 96 and 96C have a new "Traffic Pattern" facility, which takes the form of arrows which appear on the map display at the end of each runway, indicating the normal circuit direction. Only runways with pictures are affected, and it is not possible to omit these arrows, so every runway direction is assigned either a "Left Hand" arrow or a "Right Hand" arrow. Previous versions of AviaDBM correctly copied this data, but assigned right hand arrows to new runways. GPS_DBM now allows these arrow settings to be changed, and displays them in the form (L-R), (R-L), (R-R), or (L-L) where the first letter refers to the low numbered end of the runway.

Release Notes - Version 4.5

3. Create Image now allows you to exclude parts of the world by specifying geographical limits, in the same way as for the compilation of SUA and FSS/TCC sections. To make full use of this feature, you must first dump and re-compile the SUA, FSS, and TCC sections applying the same limits, before creating a new image, since these sections are kept in pre-compiled form. There is also an option for including all the airports in the ISAM db, but only in 'brief' form if outside the chosen rectangle.
4. The GEN programs can now be run in automatic mode, by specifying a Control File on the command line which contains all the runtime parameters. The file format is explained in file C:\GPS\batches\GENcfexample.txt
5. RemDups can now be run in Control File mode also, see DUPcfexample.txt in the same directory.
6. New program AutoGEN will create all the Control Files necessary to create a world-wide ISAM database, and then make a new image using geographical limits entirely of your own choosing (but see para 20 below). Instructions are displayed when you run the program, which is a DOS type executable, and currently creates a set of four control files and associated batch (.bat) files to run the appropriate GEN program.
8. New function Compile APR Text is provided which reads approach records and places the information in ISAM files. The text format is that obtained when the approach section is dumped using SaveAs [*apr.all]. The text file may be modified as required, and on re-input the information will be added unless the approach exists, in which case the approach points are replaced.
9. There are two different formats in use for expressing lat/longs, being Ndd~mm.mmm Eddd~mm.mmm for the main waypoint types and approaches, and Nddmmss Edddmss for the SUA, FSS, and TCC sections. In the former, the tilde (~) character has been replaced by the degrees (°) character in all programs. However, to retain compatibility with earlier listings, all input functions (including dialog boxes) will now accept any of the characters hash, tilde, and degrees (# ~ °). The degrees character cannot be generated by a keyboard (as far as I know), and has the value 0xb0.
10. Both of the co-ordinate formats are acceptable in GEN programs, but DBM only accepts the dd~mm.mmm version.

11. The ISAM database is not opened by GEN programs until it is needed, which means that more than one instance of a GEN program may be run provided they are used only for listing image sections. A second benefit of this has meant that the CreateISAM function, which starts by clearing the database, can do this by deleting all the files instead of erasing every record.
15. Program dbview has been improved a little by the display of lat and long as co-ordinates instead of semicircular units, and the inclusion of the missing "lid" field in lwpt.dat. Searches on fields which are not the primary index (top field) now search forward (or backward) for the same value when a toolbar arrow is pressed, whereas previously they just displayed the next record in primary index order. If no more records are found, the display settles on the last record in the direction you were going.
16. The check on the number of countries in the database was unnecessarily restrictive where it complained if a country serial number in the ISAM file was >256. This situation can easily occur legally if you are making images with optimised country tables, so the serial number check has been removed.
20. There is a problem in the unit software which means that SUAs don't work properly if the selected geographical inclusion rectangle has a large E/W dimension. For instance, a rectangle including West Europe and East America gives problems. There does not seem to be any N/S limit.

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3. RWYs with an icon stripe value but not a full picture lost their stripe value when dumped to text file, either normal or batch format. The correct format for a stripe-only picture is 'xx 0000 00000000', and DBM and GEN are changed to use this.
5. Unused names are no longer removed from the ISAM database when a new image is created, although they are not included in the image unless View/Optimise is switched off.
6. If an APT already had at least one full RWY description, a 'brief' RWY in a Batch update was added to the ISAM db when it should have been ignored.

7. SaveAs file types have been modified and extended in the GEN programs to:

Text [* .txt]	Current scrollable screen in plain text
Batch [*bat.txt]	Current scrollable screen in Batch format
Text Dump [*txt.all]	All main waypoint types in plain text
Batch Dump [*bat.all]	All main waypoint types in Batch format
SUA Dump [*sua.all]	The whole SUA section in re-compilable format
FSS/TCC Dump [*tcc.all]	As for SUA, but FSS or TCC as applicable
Approach Dump [*apr.all]	The whole APPR section in re-compilable format

Only appropriate types from this list are offered, and the user's Filter settings are applied where applicable.

11. A new program "RemDups" is included, for removing duplicated entries in sua.all, tcc.all, and apr.all text files. Although this is primarily to overcome the problem of making a whole-world text file which would contain many duplicated entries, it has in fact highlighted the presence of duplicates in single databases. Entries are presumed to commence with three characters chosen from "SUA", "FSS", "TCC", or "APT". A summary is displayed, further files may be added, and a new file is created at the user's request.
12. A new compile function is available in the GEN programs to convert a tcc.all format file into a replacement for the tcc.dat file in the db32 directory, in a similar way to that already available for sua.dat files. Although it would be possible to make changes to a tcc.all file, the primary purpose of this compile facility is to enable the production of selected-area databases, so the coordinate blocks associated with ARTCC centres are included un-decoded. In fact, judging by the number of compile errors in existing Garmin databases, the FSS and ARTCC data must be little used in practice. I also intended to include a compile function for apr.all files, but this will now have to wait for the next issue.
13. GEN programs now check that there are no more than 256 countries in the ISAM db. This is a limitation in the manufacturer's image format which might well cause problems in the future, for them as well as us. Currently they use 252 of them.

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