

**Information about the
'FS9_Create_Flight_Files_simulation.exe' program.**

V1

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In a nut shell what is this all about

The flight simulator data extracted from his computer indicated a possible practice flight that mirrored the satellite data derived a flight route leading deep into the southern Indian ocean.

This data extracted was reported as being found on an area of the disk drive used by Windows 7 to automatically backup files.

However, the way Windows 7 backup procedure works all our research shows that it would not be possible for these files that were created during his alleged flight simulation session to be actually backed up to this area.

So we have written a computer program that simulates what the captain was alleged to have done on his PC based flight simulator so other independent IT specialists can independently test this.

If it turns out that highly experienced IT specialists are unable to get Windows 7 to automatically backup the files to this area then it would also not be possible for the captain to do so.

If so how did these files get there?

How to Install this program

Enter into your browser the following link:

<https://www.mh370whathappened.com/download-program.html>

Click on 'Download program to simulate Captain's Creating flight files' button.

After extracting the 'FS9_Create_Flight_Files_simulation.exe' file just copy it to any directory on your C drive (e.g. C:\Simulate_creating_flight_files').

How to run the program

Just double click the .exe to run the program. The program just has one screen. To create the flight files just click on the 'Simulate creating FS9 temporary files' button.

The program will take 72 minutes to run. This mimics the time the Captain was alleged to be using his simulator to possibly plan a flight leading deep into the southern Indian ocean.

The program will create six Flight files all with the same name of 'Program generated temporary flight.FLT' in the directory 'C:\FLIGHT_FILES_SIMULATED_FS9'. When the program has finished all the six flight files will have been deleted from the directory. This mirrors how the Microsoft Flight Simulator 2004 works when the user creates temporary flight files using the MAP function.

PLEASE NOTE THE FIRST TIME YOU RUN THIS PROGRAM IT MIGHT TAKE A COUPLE OF MINUTES TO LOAD UP.

Background

Part of the MH370 mystery included the flight simulator plot points (7) created by the Captain that when joined together create a flight route leading deep into the Southern Indian ocean. This route bore some similarities with the projected flight path deduced by analysing the satellite data from the aircraft.

Our Research

We have researched many parts of the whole MH370 mystery and the purpose of his program is to simulate what the captain was alleged to have done on his flight simulator on 2nd of February 2014. This is 33 days before the Boeing 777 aircraft disappeared on 8th March.

In essence he was reported to have created six flight files over a 72 minute flight simulator session. The session was started at 15:26 and terminated at 16:38. Please see Appendix F - Plot points allegedly created by the captain

Details on the created Flight Files

The flight files were generated by the Microsoft Flight Simulator 2004 program each time the captain moved the aircraft to a different location using the flight simulator MAP function.

Each time the flight simulator creates a file name of 'Program generated temporary flight.FLT'. This is a temporary file and it is deleted each time the user moves the aircraft using the MAP function and also when quitting the program.

As an example this would have happened during his 72 minute flight simulator session. Note, the times shown as just for illustration purposes but it does not matter what the actual times that applied:

Flight files generated by Captains 72 minute flight simulator session

Time	Action by captain	Action by Flight simulator
15:26	Captain starts up his flight simulator	
15:35	Captain moves the aircraft to Latitude N2 44 52.6561 and Longitude E101 43 20.3843 using the MAP FUNCTION.	'Program generated temporary flight.FLT' file is created.
15:45	Captain moves the aircraft to Latitude N3 24 54.5139 3843 using the MAP FUNCTION.	The prior 'Program generated temporary flight.FLT' is deleted. A new 'Program generated temporary flight.FLT' file is created.

15:59	Captain moves the aircraft to Latitude N5 6 41.8671 and Longitude E98 35 16.6071 3843 using the MAP FUNCTION.	The prior 'Program generated temporary flight.FLT' is deleted. A new 'Program generated temporary flight.FLT' file is created.
16:15	Captain moves the aircraft to Latitude N10 10 59.2526 and Longitude E90 13 28.26343843 using the MAP FUNCTION.	The prior 'Program generated temporary flight.FLT' is deleted. A new 'Program generated temporary flight.FLT' file is created.
16:24	Captain moves the aircraft to Latitude N45 5 6.8357 and Longitude E104 8 43.95763843 using the MAP FUNCTION.	The prior 'Program generated temporary flight.FLT' is deleted. A new 'Program generated temporary flight.FLT' file is created.
16:38	Captain moves the aircraft to Latitude N45 7 39.5993 and Longitude 8 26.99983843 using the MAP FUNCTION.	The prior 'Program generated temporary flight.FLT' is deleted. A new 'Program generated temporary flight.FLT' file is created.
16:40	Captain exits the flight simulator program	The current 'Program generated temporary flight.FLT' is deleted.

The end result is that the file named prior 'Program generated temporary flight.FLT' would have been created six times and also deleted six times. This mean on the captains hard drive there would not be any files with the name 'Program generated temporary flight.FLT' as they have all been deleted.

Note, the start and end times of the captain flight simulator session has been revealed but actual times the flight files were created during the session has just been estimated. However, the actual times will have no bearing on the outcome (i.e. were these flight files backed up in the Windows 7 Shadow Copy Volume area).

Please See Appendix E - Where flight files were found.

Where the Flight files were found

All the Captains flight files were found in a Window 7 backup area. This is known as the 'Volume Shadow Copy'.

Please see Appendix E - Where flight files were found.

Note, although this the 'Volume Shadow Copy' works at the block and not the file level we will just now explain for the non IT oriented people in conceptual terms how this all works.

A backup of file only occurs when this task the 'Volume Shadow Copy' service is run. Typically this service only runs when the CPU has been inactive for 15 minutes and also just fires up about once a week. Each time it fires up it can only make one backup of a particular file e.g. in this case 'Program generated temporary flight.FLT' file.

To confirm the CPU would be busy when the Flight Simulator program was running we took CPU usage measurements when the program was running normally and also when in the MAP function was being used. See Appendix I- CPU Utilisation when Microsoft flight simulator 2004 was running.

So in the 72 minutes simulator session from a theoretical point of view the process would not have fired up as the CPU would be constantly busy when the Microsoft Flight Simulator program was running. Even it did manage to fire up it would only be able to backup one of the six files created. So that means five files would still be missing. Note, this backup process will run only once every seven days. Please see Appendix G - Volume Shadow Copy process fires up once every seven days.

We have set up a Windows 7 PC in a very similar configuration as the Captain's flight simulator. We even purchased the same SSD drive where the flight files were allegedly located. This a Sandisk Extreme Pro solid state drive (240GB).

Firstly we used the same Flight Simulator as used by the captain namely the Microsoft Flight simulator 2004 program to replicate what he was alleged to have done during the flight simulator session. This was to create six temporary Flight Files by using the programs MAP function to move the aircraft.

Afterwards we performed another test using our customised program that simulates the same thing that Captain did to create the six flight files.

In both cases we were unable to get any of the flight files backed up into the 'Volume Shadow Copy' area.

Note, as explained above this is conceptually how Windows 7 backs up files to the 'Volume Shadow Copy'. Please see Appendix A for a more technically accurate description.

Your Mission

Your Mission is to try to replicate what the Captain did over the 72 minute simulator session and see if you can get at least four of the flight files to be backed up in the 'Volume Shadow Copy' area where the files were reported to be located.

You can do this by either:

- Installing Microsoft Flight Simulator 2004 on a Windows 7 PC and use the MAP function six times to be able to generate the six temporary flight files. Please see Appendix H - Getting and installing Microsoft Flight Simulator 2004.

- Installing this program we wrote that simulates what the captain was alleged to have done during his flight simulator session on a Windows 7 PC and then running it.

Then let us know the results of your testing. If you are able to get at least four of the flight files to be saved in the 'Volume Shadow Copy' area then let us know how you managed to do it so we can replicate what you did and then update our research data accordingly.

How will you know if the flight files have been backed up to the 'Volume Shadow Copy' area. See Appendix D - How to see if the Flight Files have been backed up to the Volume Shadow Copy area.

Note, the minimum requirements to perform this test are a PC or Notebook with Windows 7 installed.

Appendix A - How Windows 7 Shadow Copy Volume process works

WHAT IS VOLUME SHADOW COPY?

Volume Shadow Copy is a service that creates and maintains snapshots (“shadow copies”) of disk volumes in Windows 7 and Vista. It is the back-end of the System Restore feature, which enables you to restore your system files to a previous state in case of a system failure (e.g. after a failed driver or software installation).

DOES VOLUME SHADOW COPY PROTECT ONLY MY SYSTEM FILES?

No. Volume Shadow Copy **maintains snapshots of entire volumes**. By default, it is turned on for your system volume (C:) and protects *all* the data on that volume, including all the system files, program files, user settings, documents, etc.

WHEN ARE THE SHADOW COPIES CREATED?

Volume shadow copies (restore points) are created before the installation of device drivers, system components (e.g. DirectX), Windows updates, and some applications.

In addition, **Windows automatically creates restore points at hard-to-predict intervals**. The first thing to understand here is that the System Restore task on Vista and 7 will only execute if your computer is **idle for at least 10 minutes** and is running on AC power. Since the definition of “idle” is “0% CPU usage and 0% disk input for 90% of the last 15 minutes, plus no keyboard/mouse activity” ([source](#)), **it could take days for your machine to be idle**, especially if you have a lot of programs running in the background.

As you see, the frequency with which automatic restore points are created is hard to estimate, but **if you use your machine every day on AC power and nothing prevents it from entering an idle state, you can expect automatic restore points to be created every 1-2 days on Windows Vista and every 7-8 days on Windows 7**. Of course, the actual frequency will be higher if you count in the restore points created manually by you and those created before software installations.

Here’s a more precise description: By default, the System Restore task is scheduled to **run every time you start your computer and every day at midnight**, as long as your computer is idle and on AC power. The task will wait for the right conditions for up to 23 hours. These rules are specified in Scheduled Tasks and can be changed by the user. If the task is executed successfully, Windows will create a restore point, **but only if enough time has passed since the last restore point (automatic or not) was created**. On Windows Vista the minimum interval is 24 hours; on **Windows 7 it is 7 days. As far as I know, this interval cannot be changed.**

IS VOLUME SHADOW COPY A REPLACEMENT FOR VERSIONING?

No. A versioning system lets you access *all versions* of a document; every time you save a document, a new version is created. Volume Shadow Copy only allows you to go back to *the moment when a restore point was made*, which could be several days ago. So if you do screw up your dissertation, you might have to roll back to a very old version.

IS VOLUME SHADOW COPY A REPLACEMENT FOR BACKUPS?

No, for the following reasons:

- **Shadow copies are not true snapshots.** When you create a restore point, you're not making a new copy of the drive in question — you're just telling Windows: *start tracking the changes to this drive; if something changes, back up the original version so I can go back to it.* Unchanged data will not be backed up. If the data on your drive gets changed (corrupted) for some low-level reason like a hardware error, VSC will not know that these changes happened and will *not* back up your data. (see below for a more detailed description of how VSC works)
- The shadow copies are **stored on the same volume as the original data**, so when that volume dies, you lose everything.
- With the default settings, **there is no guarantee that shadow copies will be created regularly.** In particular, Windows 7 will only create an automatic restore point if the most recent restore point is more than 7 days old. On Windows Vista, the minimum interval is 24 hours, but remember that the System Restore task will only run *if your computer is on AC power and idle* for at least 10 minutes, so it could take days before the conditions are right, especially if you run a lot of background processes or do not use your computer frequently.
- **There is no guarantee that a suitable shadow copy will be there when you need it.** Windows deletes old shadow copies without a warning as soon as it runs out of shadow storage. With a lot of disk activity, it may even run out of space for a single shadow copy. In that case, you will wind up with no shadow copies at all; and again, there will be no message to warn you about it.

HOW EFFICIENT IS VOLUME SHADOW COPY?

- It's quite efficient. The 5% of disk space that it gets by default is usually enough to store several snapshots of the disk in question. How is this possible?
- The first thing to understand is that **volume shadow copies are not true snapshots.** When a restore point is created, Volume Shadow Copy does not create a full image of the volume. If it did, it would be impossible to store several shadow copies of a volume using only 5% of that volume's capacity.
- Here's what really happens when a restore point is created: VSC starts tracking the changes made to all the blocks on the volume. Whenever anyone writes data to a block, VSC makes a copy of that block and saves it on a hidden volume. **So blocks are “backed up” only when they are about to get overwritten.** The benefit of this approach is that no backup space is wasted on blocks that haven't changed at all since the last restore point was created.
- Notice that **VSC operates on the block level**, that is below the file system level. It sees the disk as a long series of blocks. (Still, it has some awareness of files, as you can tell it to exclude certain files and folders.)
- The second important fact is that **shadow copies are incremental.** Suppose it's Wednesday and your system has two shadow copies, created on Monday and Tuesday. Now, when you overwrite a block, a backup copy of the block is saved in the Tuesday shadow copy, but not in the Monday shadow copy. The Monday copy only contains the differences between Monday and Tuesday. More recent changes are only tracked in the Tuesday copy.
- In other words, if we were to roll back an entire volume to Monday, we would take the volume as it is now, “undo” the changes made since Tuesday (using the blocks saved in the Tuesday shadow copy), and finally “undo” the changes made between Monday and Tuesday. So the oldest shadow copy is dependent on all the more recent shadow copies.

IF VSS IS CONSTANTLY BACKING UP BLOCKS OF DATA THAT GET OVERWRITTEN, WHAT ACTUALLY HAPPENS WHEN A RESTORE POINT IS CREATED IF DATA IS AUTOMATICALLY BEING BACKED UP ANYWAY?

Not much — VSS simply starts backing up the data to a new place, while leaving the “old place” there (at least until it runs out of space). Now you have two places to which you can restore your system, each representing a different point in time. When you create a restore point, you’re simply telling VSS: “I want to be able to go back to this point in time”.

Note that it’s a mistake to think that VSS is backing up every change you make! It only backs up enough to enable you to go to a specific point in time. Here’s an example scenario to clear things up:

1. You create a file (version #1)
2. You create a restore point
3. You change the file (resulting in version #2) — VSS backs up version #1
4. A week later, you change the file again (resulting in version #3) — **VSS doesn’t back anything up**, because it already has version #1 backed up. As a result, you can no longer go back to version #2. You can only go back to version #1 — the one that existed when the restore point was created.

(Note that actually VSS doesn’t operate on files but on blocks, but the principle is the same.)

Appendix B - Turning on and using Windows 7 Volume copy facility

Turning on Windows 7 Volume copy

Bottom left of the windows screen enter 'Services' in the search box

Go to 'Volume Shadow Copy'

double click on it

Select Automatic

How to manually create a restore point

- 1) Click on the Start Button (Normally located on the bottom right of the screen)
- 2) Right click Computer (One above control panel)
- 3) Select Properties
- 4) Select on left hand side System Protection
- 5) Bottom item is Create a restore point now for the drives that have a system protection turned on. Click on it.

Appendix C - Question and Answer section for Windows 7 VOLUME SHADOW COPY

This is our understanding of **Windows 7 VOLUME SHADOW COPY** function would be functioning as discussed below during the Captains 72 minute flight simulator session when he was alleged to have created the flight files that lead deep into the Southern Indian Ocean.

Note, All these flight files were reported to be recovered from the Windows 7 VOLUME SHADOW COPY hidden file. Please see Appendix E - Where flight files were found.

Hopefully if enough IT specialists are able to replicate what the Captain did during his flight simulator session we should be able to establish if it was possible or not for these flight files to be recovered from the Windows 7 VOLUME SHADOW COPY hidden file.

Question 1 - During the 72 minute flight simulator session was the CPU idle and no keyboard/mouse input detected for at least a 15 minutes period. This condition is required for the Windows 7 task to fire that will create a notional snapshot of the flight files in the Windows 7 VOLUME SHADOW COPY area ?

Answer 1 - The captain would need to be using his mouse multiple times and additionally the CPU load when the Microsoft Flight Simulator 2004 program was running would be at least around 13 % CPU utilisation. Note, this was ascertained using a PC with similar performance to the captains. See Appendix I - CPU Utilisation when Microsoft flight simulator 2004 was running.

This means during the flight simulator session the process to effectively notionally place the recovered flight files in the area that they were alleged to be found namely **Windows 7 VOLUME SHADOW COPY** area would not have run. This means the flight files could not have been notionally moved to this area.

Question 2 - As mentioned in question 1 the process that takes a snapshot of the disk contents could not have activated during the Captain's flight simulator session as the CPU was busy. But if we now just pretend that it could have run how many of the six flight files could have been notionally saved in the **Windows 7 VOLUME SHADOW COPY** area?

Answer 2 - Only one of the six flight files could have been notionally transferred to the **Windows 7 VOLUME SHADOW COPY** area.

The reason being this process that notionally moves files that have been changed to the **Windows 7 VOLUME SHADOW COPY** area only occurs about once every seven days and it each time it runs can only create one snapshot. This means that five of the six flight files would be missing in action.

See Appendix G- Volume Shadow Copy process fires up once every seven days.

Question 3 - Please summarise the above?

Answer 3 - It appears that it is not possible for the flight files to be recovered from the **VOLUME SHADOW COPY** area as reported as the process that performs this function only works:

(a) If the CPU is at idle and no mouse/keyboard activity for 15 minutes. This situation was not possible as the flight simulator was running.

(b) Even if the process could be run with us pretending the CPU was idle the Volume Shadow Copy snapshot only occurs once every seven days and will only be able to make a Snapshot of one file. Thus five flight files would be missing in action.

Appendix D - How to see if the Flight Files have been backed up to the Volume Shadow Copy area.

Here are two options:

Use the free ShadowExplorer Utility

(1) First download the free ShadowExplorer program. Either Google it or enter this text in your browser <https://www.shadowexplorer.com/downloads.html>.

(2) Install the program.

(3) Run it. If no details appears that means you do not have a any restore points saved for the Volume Shadow Copy function.

To confirm the program works create a restore point as follows:

(a) Click on the Windows 7 start button

(b) Click on COMPUTER

(c) Right Click on Computer

(d) Select on left hand side 'System Protection'

(e) Confirm Protection is ON for your local C drive. if not click configure and set it on.

(f) Click on 'Create' to create a restore point.

Use inbuilt Windows 7 previous versions option

Using windows explorer select the directory that contains the flight files.

If using the 'Microsoft Flight Simulator 2004 program' then go to C:\Users**User**\My Documents\Flight Simulator Files. Note, the \User\ directory might have a different name on your system.

If using our 'create flight files simulator program' select C:\ FLIGHT_FILES_SIMULATED_FS9 .

Right click on the sub-directory

Select the Previous Versions tab.

Select the required version.

This will show the state of the files at the time that your chosen snapshot was run.

Appendix E - Where the Captain's flight files were found

All coordinates were found in a file Volume Shadow Information (VSI) named {0Od7ef6c-8bcb-11e3-b3f7-ee8a9181afad} {3808876bc176- 4e48-b7ae-04046e6cc752} dated February 3, 2014. This is the VSI File a file that stores information when a state computer the computer is in an unused or ideally more than 15 minutes. Therefore, it can not be ascertained that all the 7 coordinate is from * .FLT the same file.

Appendix F - Plot points allegedly created by the captain

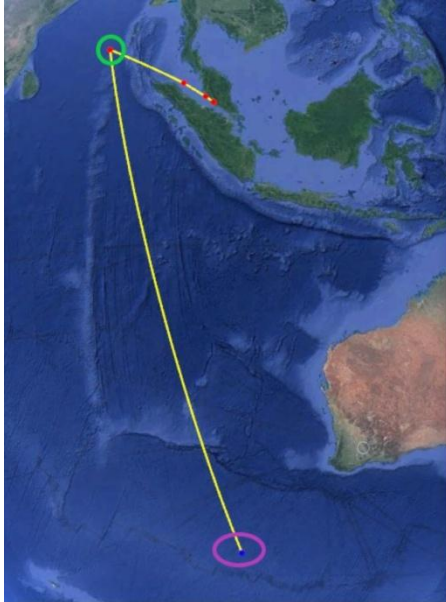


Table 2. Abbreviated List of Parameters Recovered from Deleted Flight Files

Data set ID		2N	3N	5N	50N	4551	4552
Coordinate Number		6	1	2	3	4	5
[SimVars]							
Latitude (deg)		N2° 44' 52.6561"	N3° 24' 54.5139"	N5° 6' 41.8671"	N10° 10' 59.2526"	S45° 5' 6.8357"	S45° 7' 39.5993"
Longitude (deg)		E101° 43' 20.3843"	E100° 53' 8.0655"	E98° 35' 16.6071"	E90° 13' 28.2634"	E104° 8' 43.9576"	E104° 8' 26.9998"
Altitude (ft)		70	23247	32246	40003	37651	4000
AGL (ft)		70	23244	32245	40003	37653	37654
Pitch (>0 = down) (deg)		-0.1	-4.91	-3.46	-4.29	-1.03	-5.86
Bank (>0 = left) (deg)		0	0.034	0.014	20.09	-10.92	-2.87
Heading (deg)		-33.85	-54.7	-45.25	-104.53	178.22	-167.01
XVelBodyAxis (ft/s)		0	0	29.62	0	0	0
YVelBodyAxis (ft/s)		0	0	-19.87	0	0	0
ZVelBodyAxis (ft/s)		0	682.78	731.34	794.61	614.09	330.95
PVelBodyAxis (rad/s)		0	0	0.0011	0	0	0
BVelBodyAxis (rad/s)		0	0	-0.0011	0	0	0
HVelBodyAxis (rad/s)		0	0	0	0	0	0
XVelWorld (ft/s)		0	-555.17	-498.44	-767.03	19.06	-73.99
YVelWorld (ft/s)		0	58.4477	24.26	59.5	11.0572	33.81
ZVelWorld (ft/s)		0	393.1438	535.82	-198.8	-613.69649	-320.8
PVelWorld (rad/s)		0	-0.00027	-0.001067	0.000284	-0.000871	-0.001455
BVelWorld (rad/s)		0	-0.00030317	-0.001113	-1.87E-05	-0.008335	0.00052119
HVelWorld (rad/s)		0	-1.63E-06	1.79E-05	-0.0155	0.0102	0.0029496
MaximumGForce (g)		1	1.4397	1.4397	2.2032	2.2032	2.2032
MinimumGForce (g)		1	0.5958	0.5958	0.1453	0.1453	0.1453
[Engine Parameters]							
ThrottleLeverPct1 (-)		0	0.7865	0.8768	0.9811	0.5523	0.5562
Pct Engine RPM1 (-)		0.3158	0.9768	1.0065	1.093	0.001	0
ThrottleLeverPct2 (-)		0	0.7865	0.8768	0.9811	0.5252	0.5252
Pct Engine RPM2 (-)		0.3158	0.9768	1.0065	1.093	0.001	0
MaxReachedEngineRPM1 (rpm)		0	31517.5	31517.5	32968.9	32968.9	32968.9
MaxReachedEngineRPM2 (rpm)		0	31909.4	31909.4	32968.9	32968.9	32968.9

Appendix G - Volume Shadow Copy process fires up once every seven days

What is system protection?

System protection is a feature that regularly creates and saves information about your computer's system files and settings. System protection also saves previous versions of files that you've modified. It saves these files in restore points, which are created just before significant [system events](#), such as the installation of a program or device [driver](#). They're also **created automatically once every seven days** if no other restore points were created in the previous seven days, but you can create restore points manually at any time.

System protection is automatically on for the [drive](#) that Windows is installed on. System protection can only be turned on for drives that are formatted using the [NTFS file system](#).

There are two ways that you can take advantage of system protection:

- If your computer is running slowly or isn't working properly, you can use System Restore to return your computer's system files and settings to an earlier point in time using a restore point. For more information about System Restore, see [System Restore: frequently asked questions](#).
- If you accidentally modify or delete a file or folder, you can restore it to a previous version that's saved as part of a restore point. For more information about previous versions, see [Previous versions of files: frequently asked questions](#).

Appendix H - Getting and installing Microsoft Flight Simulator 2004

To simulate what the Captain was alleged to have done during his 72 minute flight simulator session you can just use our program that simulates the creation and deletion of the six temporary flight files.

However it would be more ideal to use the actual program used by the Captain.

If you do not already have a copy of the Microsoft Flight Simulator 2004 program it can be obtained on line. Just do a Google search for ' Microsoft Flight Simulator 2004'. So far they seem to cost about \$15 US.

Alternatively it might be possible for us to post you a copy. Please contact us at MH370whathappened@gmail.com.

Note, when you install the program onto a Windows 7 PC or Notebook computer do not use the default install directory. Instead install it in a top directory on your 'C' drive. e.g. C\FS9.

Once the program is installed and running use the MAP function to move the aircraft six times in a row.

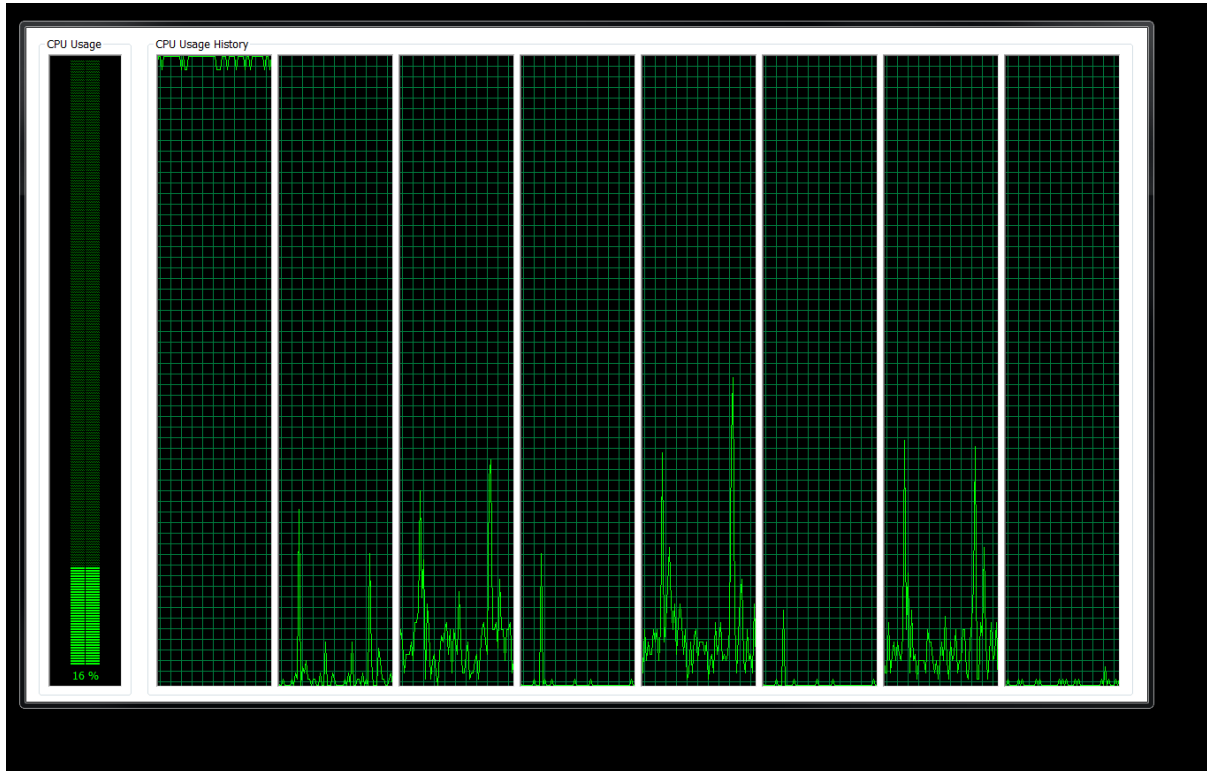
If you use two screens or run the simulator not in full screen mode you will be able to use file explorer to see the temporary files used by the program. They will be held in this to C:\Users**User**\My Documents\Flight Simulator Files. Note, the \User\ directory might have a different name on your system.

The temporary file name the program uses is always 'Program generated temporary flight.FLT'

So as mentioned previously you will need to see if at least four of these temporary flight files can be automatically saved in the Windows 7 Volume Shadow Copy area.

Appendix I- CPU Utilisation when Microsoft flight simulator 2004 was running

Simulator running normally (16%)



Simulator during the Map Function (13%)

