N. Guidance Notes

Overview

Guidance is provided below on the following issues:

- N.1 SATALL .UFS LPT Hanging / Corruption prior to 11.4.07H
- N.2 SAVEIT Approximation
- N.3 Latest Advice on UFO Files
- N.4 Disappearing P1X mouse cross-hairs when using Windows 10
- N.5 SATURN EXES Multi-core implementation
- N.6 P1X GRAF.DAT changing screen dimensions

If you require further technical support, please do not hesitate to contact us at <u>saturnsoftware@atkinsrealis.com</u>

N.1 SATALL .UFS LPT Hanging / Corruption – prior to 11.4.07H

N.1.1 Overview

Prior to 11.4.07H, in certain circumstances, SATALL will appear to have successfully completed but subsequent attempts to access the resulting output UFS file (eg using P1X) will generate an exception error or fail to run.

It is an intermittent problem that has been very difficult to reproduce, investigate and resolve. The problem arises with the interaction of Silverfrost's Clearwin+ Graphical User Interface routines, as used by SATURN, and the Windows Operating System.

In developing the 11.4.07 release, we have reconfigured the program so that the program closes the files earlier in the process, so if it fails at the very end the files themselves should be complete and usable in subsequent processing. Following discussions with Silverfrost, we have now received updates to the compiler and libraries. We believe from SATURN 11.4.07H onwards this problem is fixed.

For earlier versions, a workaround described below should be used if you hit the problem.

N.1.2 Examples of the Problem

Users will typically encounter the problem in one of four ways:

 When trying to subsequently open or access the UFS file produced by SATALL in another software application (eg P1X or SATLOOK), a Run-time Error message is generated:

Exception:C:\PROGRAM FILES (X86)\ATKINS\SATWIN 11.XX\XEXES 11.4.06D MC N4\\$P1X.EXE	×
Run-time Error	
Error 57, Attempt to read past end-of-file	
004cd920 DAFIND [+02fa] 004d87d0 LONGDA [+0033] 00720f60 P1SET1 [+1353] 006f3890 P1_OPEN_FILES [+0248] 005d9650 DOSP1X [+057a] 005d9580 main [+0085]	^
< .	× -
Save As Details Close]

2) When looking at the SATALL LPT file, the file is truncated as shown on right-hand side file below:

DS_Truncated.LPT DS_Complete.LPT ×	
C:\Data\5120257 - SATURN\Guidance Notes\UFS LPT Hanging\Complete\DS_Complete.LPT	📓 🚺 C:\Data\5120257 - SATURN\Guidance Notes\UFS LPT Hanging\Complete\DS_Truncated.LPT 🛛 🔲 🖾
0,,10,,20,,30,,40,, [†] ,,50,,60,	, <u>0</u> ,, 10,, 20,, 30,, 40,, 50,, 60,
18 TOTAL NUMBER OF STOPS/HOUR =	1704
19 9	1706 Pollutants (in kg) emitted within this time period
20 RATE OF FUEL CONSUMPTION ······ = ····· 221.5 LITRES/HOUR	1707 9
21 9	1708
22 FUEL CONSUMED DURING TIME PERIOD = · · · · 110.7 LITRES	1709 1 1710 - PV CADACTEV (INDEX)
23 1	1711 9
25 TOTAL CPU TIMES IN SECONDS FOR PROGRAM STAGES:	1712 None
126 9	1713 9
27 SATNET	1714131
28 9	1715 1
29 SATALL Pre 0.14	1716 TOTALS 4.68 110.74 1.58 0.88 0.01
30 Assignment 0.09	1717 4
31 Simulation 0.24	1710 1 1710
33 T	1720 S
34 Totals	1721NFE - NON-FATAL ERRORS
35 9	1722 ···································
36 9	1723 W - WARNINGS
37 ·····	1724 1
38 1	1725 Loop Simulation
39 NORMAL COMPLETION OF PROGRAM SATALL	1726
41 THERE HAVE BEEN	
43 FILES CURRENTLY IN USE:	
44 CHANNEL FILE NAME	
45 9	
46 DS_Complete.UFN	
47 2 DS_Complete.UFS4	
5 DS_Complete.OFC	
50 (SCRATCH) SALVER SATURN.\$8	
51 9	
52 ····································	
53 ¶	
54 COMPLETION CODE - 0	
55 1	
· · · · · · · · · · · · · · · · · · ·	

SATURN

- 3) An unexplained crash or hang within an internal looping process (eg DIADEM-based Variable Demand Model) without any obvious failure mode. In the DIADEM instance, one of the output UFS file may have become corrupted but the problem is not immediately picked-up and DIADEM subsequently fails with an unhelpful error or simply 'hangs'.
- 4) An exception error after SATALL has tried to exit but fails to do so this problem may still arise but we have not been able to reproduce it to date.

N.1.3 Workaround

As noted above, the problem has been fixed we believe in the majority of circumstances from SATURN 11.4.07G onwards. For earlier versions, the workaround is to change the default parameters so that the software does not use the Clearwin+ graphics libraries. This may be undertaken by either:

- Setting WINDY=F in the network DAT file this replaces the summary information panels with scrolling text windows (see section 6.3.1 of the User Manual)
- Setting QUIET=T in SatWin or directly via the use of environmental variable command SET QUIET=T (see section 15.55) – this removes all on-screen reporting

Note that neither option changes the results from the assignment.

N.2 SAVEIT Approximation

N.2.1 Background

The SAVEIT Approximation is an integral part of the SATURN assignment and is used to reduce the amount of time taken (and storage space required) to undertake secondary analysis tasks including skimming, select link analysis and cordoning. However, the importance of the SAVEIT approximation (and the associated controlling parameter, NITA_S) on accuracy of the resulting outputs from SATURN is less well understood.

This perception continues to be reinforced by the examination of the SATURN assignments we often receive on the technical support helpdesk that flag inappropriate values for the key NITA_S parameter.

N.2.2 UGM Presentation

To assist users in understand more about the SAVEIT approximation and the possible unintended (and negative) consequences of using incorrect (low) values, Atkins gave a presentation at the 2017 User Group Meeting (with extracts also provided at the 2018 UGM). The presentation is reproduced below.

A more detailed description of the SAVEIT Approximation is provided in section 15.23 of the User Manual.

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SATURN



Impact on TUBA Scheme Appraisal ATKIN Illustrative Example (iii) With & Without Scheme Scenarios, 60 year appraisal

· Shows changes in PVB arising from inaccuracies in the SAVEIT approximation

	Ref Case	Run 1	Run 2	Run 3	Run 4	Run 5
NITA_S	256	25	99	256	256	256
NISTOP	4	4	4	5	4	4
RSTOP	98.5%	98.5%	98.5%	98.5%	97.5%	94.5%
AM - %Flow	98.9%	98.9%	98.9%	98.5%	98.0%	96.7%
AM - %GAP (Main)	0.009%	0.009%	0.009%	0.008%	0.010%	0.036%
AM - %GAP (SAVEIT)	0.010%	0.164%	0.016%	0.008%	0.012%	0.036%
PVB (Index)	100	85 !!!	95	95	95	95
22 August 2018 NB: Scheme / scenario specific!						

N.3 Latest Advice on UFO Files

With the introduction of UFF files in SATURN 11.6, the use of the problematical UFO files to speed up analyses is no longer necessary. There are a few cases where UFOs are still required (warm-starts being one) but these will be replaced with UFF-based solutions in future versions.

The following is left in **unchanged**, for historic reference.

N.3.1 Overview

Over the last few years, the use of .UFO files has been recommended, particularly for larger models, to speed-up all secondary analysis processes. In response, .UFO files have been applied more widely by users across many different types of model and applications and this, in turn, has highlighted emerging concerns with their use in certain circumstances.

The current position at the time of writing (April 2020), was summarised at the 2019 Annual User Group Meeting and reproduced below.

Store path (origin-based) information Secondary analysis undertaken using UFO files Advantages: > Paths extracted rather than recreated from existing link costs (UFC) > Secondary analysis only takes a few minutes > Available in SATLOOK, SATCH, SLAS & SATPIJA > Create during the assignment (SAVUFO=T) or post-assignment (SATUFO) especially for large models Disadvantages: > Assignments will take longer (an extra process) but available with Multi-Core (& SATGPU 11.5) Problems / Concerns > Not available with Area Charging > NOT recommended for demand model skimming + if you do, DO NOT mix and match > NOT all SLA options working - most are and quicker - but if in doubt try / revert to FW			
Secondary analysis undertaken using UFO files Advantages: Paths extracted rather than recreated from existing link costs (UFC) Secondary analysis only takes a few minutes Available in SATLOOK, SATCH, SLAs & SATPIJA Create during the assignment (SAVUFO=T) or post-assignment (SATUFO) especially for large models Disadvantages: Assignments will take longer (an extra process) but available with Multi-Core (& SATGPU 11.5) Problems / Concerns Not available with Area Charging NOT recommended for demand model skimming + if you do, DO NOT mix and match NOT all SLA options working - most are and quicker - but if in doubt try / revert to FW	Store path (origin-ba	sed) information	
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 Not available with Area Charging NOT recommended for demand model skimming + if you do, DO NOT mix and match NOT all SLA options working - most are and quicker - but if in doubt try / revert to FW 	Problems / Concerns	3	
	 Not available with Area C NOT recommended for de NOT all SLA options work 	harging emand model skimming + if you do, DO NOT mix and match ing - most are and quicker - but if in doubt try / revert to FW	

Background details on .UFO files are available in sections 15.23.6 and 22.5 of the User Manual.

Recommendations

Users are advised to be vigilant when using .UFO files.

If any issues arise, they should report the issue, and revert to the existing UFC-based approach.

For reasons discussed below, all users should migrate to the latest appropriate SATURN release (11.4.07H and at least 11.3.12W) to take advantage of the latest functionality and corrections.

N.3.1.1 Problems and Concerns

Unless the origin-based assignment (OBA) algorithm is used (ie MET=2), the .UFO file used for the secondary analysis is created by converting the paths generated by the Frank-Wolfe (FW) assignment to the equivalent UFO-based solution. The UFO solution is an approximation of the 'main' FW assignment and there continues to be concerns namely:

- The new Area Charging functionality introduced with SATURN 11.5, as described in section 20, is (practically) incompatible with the mathematical processes required to reproduce the assigned area-charging paths with an equivalent UFO-based solution. Nevertheless, the requirement remains to quickly undertake secondary analysis, and this will require the adoption of GPU-based techniques to meet these substantial computational demands and negating the further development and adoption of UFO methods.
- There may be issues with the accuracy of cost skims for <u>zero</u> demand OD-pairs affecting demand models with distribution choice. The UFO-based solution stores route flow information to enable the paths to be quickly reassembled and uses 'splitting factors' at each node as part of the process. These node-based splitting factors may become less reliable for OD-pairs with zero demand with a corresponding impact on the accuracy of the cost skims for these movements. In most instances, this potential reduction in accuracy is not a concern as there is no demand (eg select link and cost-benefit analyses) but there may be an impact on cost skims used in demand models where the values for all OD-pairs are used (eg destination choice).
- Not all Select Link Analysis (SLA) options are working with .UFO files with users reporting notable differences between the 'main' assigned flows and SLA outputs on specific links when analysing their model results.

N.3.1.2 Other Identified Issues

Prior to SATURN 11.4.07H in August 2018, several other issues were identified with earlier releases and several significant revisions were made to the internal processes used to generate .UFO files to address them. Further details on background to .UFO files and the specific known issues with previous versions are described below.

N.3.2 Known Issues with Older Versions

Following the release of SATURN 11.3.12U in November 2015, several inconsistencies have been identified with data stored in .UFO files and their accuracy.

Whilst the inconsistencies are believed to be relatively minor, users are strongly recommended to migrate to the latest SATURN release (11.4.07H at the time of writing) rather than continuing to use older versions, irrespective of whether they are using .UFO files or not.

In the following sections, the previously reported issues to date with the UFO files are summarised for clarity.

N.3.3 Pre-11.3.12W Release (May 2017)

The 11.3.12W Release provided a significant revision to the creation of .UFO files to create the problem of truncated paths generated for specific cell ij pairs when there was no demand (ie $T_{ij}=0$).

Where the UFO was used for normal select link analysis or cordoning, by definition Tij was non-zero, and 11.3.12W materially gave the same results. For users that used .UFO files to generate the full skimmed cost matrix, for cells where T_{ij} =0, the costs in 11.3.12U and earlier could have been significantly wrong from being short from a truncated tree, or high from choice of a longer path (compared with a weighted average UFC based tree). If these were not identified, they could have caused problems, e.g. in distributional modelling and wider impacts. By definition, in many cases where Trips*Costs were used, the overall problem could have been small as the erroneous costs were weighted by a low number of trips.

The (partial) correction resolved the truncated path issue, and made all Tij=0 skimmed costs a better match to the equivalent UFC ones. That said, however, the requirement to ensure consistency with previous assignment results precluded the full set of (theoretical) changes to be implemented and a more practical workaround was implemented. The full set of changes were introduced as part of SATURN v11.4.

An example of the truncation for $T_{ij}=0$ movements is highlighted below.



As previously noted in the 11.3.12W Release Notes, all pre-11.3.12W users were strongly recommended to migrate to 11.3.12W at the earliest opportunity – especially if they wished to take advantage of .UFO files.

N.3.4 11.4.06D Release (February 2018)

As noted above, the subsequent 11.4.06D Release in February 2018 enabled the problem of path truncation for cells T_{ij} =0 to be fully resolved by modifying the UFO algorithm rather than relying on the use of very small seeding values (with PLUFO) to prevent the issue being encountered.

N.3.5 11.4.07H Release (August 2018)

Whilst not specifically UFO related, the 11.4.06H Release in August 2018 has also resolved several recently uncovered issues in the creation of both .UFC and .UFO files, as documented in App E-Latest, and reproduced below:

- SATALL / P1X / SATLOOK If the CLIMAX option is used at all then any .UFC file created by SATUFC or any .UFO file created by SATUFO will be compromised – but the flows etc. generated by SATALL are correct. This means that any analysis options such as SLA undertaken in P1X will also be incorrect – the margin of error will be dependent on the relative contribution CLIMAX has on the network costs (and how they subsequently accumulate over the iterative path-building process). NB: any .UFC or .UFO files generated during by the assignment are **not** affected. (see #133)
- SATUFC the post-assignment process to generate the .UFC may produce different paths to original SAVEIT=T assignment as it was not receiving the value of UNCRTS used in the equivalent process. The problem also affected by CLIMAX and Q-node issues. Longstanding bug now resolved (see #134)

N.4 Disappearing P1X mouse cross-hairs when using Windows 10

The problem has been fixed in SATURN 11.5. An explanation of why the issue arises and the resulting workarounds available for earlier releases are given below.

N.4.1 Overview

Following the release of Windows 10 version 1709 (and also known as the 'Fall Creators Update'), several laptop users have reported a problem with mouse cross-hairs disappearing in the main P1X window (the shaded 'red' area shown below) but the cross-hairs still appear in both the Windows Frame and Menu Box (the 'blue' areas). Most of the reporting users have experienced the issue on laptops running Windows 10 version 1709 (or later) when using a secondary monitor display but some have also reported that it also occasionally occurs with laptops using only their native display.



The issue was first reported in August 2018 and coincided with the SATURN 11.4.07H release but the investigations have confirmed that it also affects previous SATURN versions as well (eg SATURN 11.3.12W) and relates to the version of Windows Operating System ('Windows') in use.

The problem in P1X has arisen following changes in Windows 10 version 170<u>3</u> to allow applications to obtain DPI (dots per inch) or display scaling information from

Windows without needing to sign-out and sign back-in and when running applications on multiple displays¹.

N.4.2 Why the Cursor Disappears in P1X

The disappearance of the mouse cross-hairs occurs when there is a significant difference between the level of DPI scaling used in P1X compared to the DPI scaling used by the display. The difference between the levels of scaling used arises in two specific instances as described below when running Windows 10 version 1703 or later.

Display Scaling

Display scaling enables Windows applications to be clearly viewed on a wide variety of devices irrespective of their physical size and resolution. It also enables applications to work across multiple displays with different configurations – for example, a small 15" laptop display made up of 2580 x 1440 pixels (ie 197 pixels per inch or 'ppi') and a 24" external monitor using 1920 x 1080 pixels (ie 92 ppi).

Windows automatically determines the default scaling level for each display so that text, for example, remains readable when viewed on both displays. For the example above, the Windows recommended scaling for the 24" monitor will be 100% whilst the smaller laptop, with approximately twice the pixel density (ie 197 ppi versus 92 ppi), will have a recommended scaling value of 200%.

When an application is opened, Windows informs the application the level of scaling in use on the <u>main</u> display. However, if the application is either opened on or moved to a secondary display, the main level of scaling may no longer be appropriate. The same issue may also arise if the level of scaling is changed on the main display and Windows is not able to fully update until the user has signed out.

Disappearing P1X Mouse Cursor

The disappearing cursor arises in P1X when the main display has a substantially larger scaling applied than the secondary display. The size and thickness of the cross-hairs for the mouse cursor are drawn based on the <u>main</u> display scaling and their dimensions are then fixed. If P1X is either moved to or opened on the secondary display, the scaling used will still be based on the main display value even though it may no longer be appropriate.

Empirical testing has shown that the P1X mouse cross-hairs 'disappear' – as they are effectively too small to remain visible – if the <u>main</u> display scaling level is between 50% (and perhaps up to 75%) <u>higher</u> than the <u>secondary</u> display level. Note that if the main display scaling level is lower than the secondary then the issue doesn't arise.

The table below illustrates some typical combinations based on the two display examples described above and whether the cross-hairs are likely to be visible on

¹

https://blogs.windows.com/buildingapps/2017/04/04/high-dpi-scaling-improvements-desktop-applications-windows-10-creators-update/

the secondary display. The examples in table are provided as guide - users may observe different behaviours on their specific combinations of PC hardware.

ID	Main Display: Pixels & Scaling	Secondary Display: Pixels & Scaling	Difference in Scaling (Secondary - Main)	P1X Cross- hairs visible on Secondary Display
1	2560 x 1440 (200%)	2560 x 1440 (150%)	-50%	Likely
2	2560 x 1440 (200%)	1920 x 1080 (100%)	-100%	Very unlikely
3	1920 x 1080 (100%)	1920 x 1080 (150%)	+50%	Yes
4	1920 x 1080 (100%)	2560 x 1440 (200%)	+100%	Yes

N.4.3 Workarounds

There are two workarounds based on changing the display properties – these are accessed via the display settings menu (Start Menu -> Settings -> System).

Reducing the Difference in Scaling Levels between the Main and Secondary Displays

As already noted above, empirical testing showed that the scaling level for the main display should not be more than 50% (but possibly 75%?) higher than the secondary display. So, for example, if the main display uses 200% scaling level then the secondary display should be using 150% scaling or higher for the cross-hairs to remain visible.

To change the scaling levels in the display settings menu, go to "Change the size of text, apps and other items" and adjust the scaling for each monitor so they are more closely matched. Users may need to try a few scaling values to ensure the cross-hairs remain visible and other displayed items (such as text) are still sufficiently sharp and appropriately sized.

Settings - 🗆 X	Scale and layout
ŵ Display	Change the size of text, apps, and other items
Select and rearrange displays	Advanced scaling settings
Select a display below to change the settings for it. Press and hold (or select) a display, then drag to rearrange it.	Resolution
	1920 × 1200 (Recommended) V
	Orientation
2	Landscape \lor
1	Multiple displays
I	Multiple displays
	Extend these displays \checkmark
Identify Detect	Make this my main display

Scale and layout		
Change the size of text, apps, and other items		
100% (Recommended) V		
Advanced scaling settings		
Resolution	Scale and layout	
1920 × 1200 (Recommended) V	100% (Recommended) ;	
\cup	125%	
	150%	
	175%	
	2000/	

Note that 'Scale and layout' settings are defined separately for each display. To change a specific display, click on the Display symbol '1' or '2' in the 'Select and rearrange displays' area – in the example above, the highlighted display '2' has been selected.

Setting the Display with the lower Scaling Value as the <u>Main</u> Display

The alternative workaround is to set the display with the lower scaling value as the main display with all applications, Windows toolbars etc now appearing on the lower scaled display.

Settings – 🗆 🗙	Scale and layout
ŵ Display	Change the size of text, apps, and other items
Select and rearrange displays	Advanced scaling settings
Select a display below to change the settings for it. Press and hold (or select) a display, then drag to rearrange it.	Resolution 1920 × 1200 (Recommended) \checkmark
2 1 Identify Deter	Orientation Landscape \checkmark Multiple displays Multiple displays Extend these displays \checkmark Make this my main display

Note that 'Scale and layout' settings are defined separately for each display. To set display 2 as the main display, display '2' needs to be selected first.

The original recommended workaround achieved the above by signing out and/or re-booting with the laptop lid closed so that Windows set the secondary external monitor as the main display. The simplified method above achieves the same outcome without requiring the user to sign-out.

Note the layout of the Display settings in Windows varies between versions – the above screenshots were taken from Windows Version 1809.

N.5 SATURN EXES – Multi-core implementation

If you have a multi-core (MC) version of SATURN, it is implemented for normal assignment in SATALL and SATUFE for both TAC and non-TAC networks (ie creating UFC including UFC++ files). P1X and SATDB are both multi-cored when using UFC files, for SLAs (in P1X) and SATRAP/One-Song-to-the-Tune-of-Another (in SATDB and P1X). However, the use of UFFs should reduce the need for multi-coring the analysis programs.

Note though, with increased demands for memory in the multi-core programs and the machines having more available threads, we are sometimes seeing the following error message.

	forrtl: severe (41): insufficient virtual mem	orv
X)	Image	PC Routine Line	Source
	libifcoremd.dl Unknown	II 7343F16B Unknown	Unknown
	MCLIB.dll Unknown	00196D2A Unknown	Unknown
	SSATALL.exe Unknown	0047B5E2 Unknown	Unknown
	SSATALL.exe Unknown	0041AF88 Unknown	Unknown
	SSATALL.exe Unknown	00414349 Unknown	Unknown
	\$SATALL.exe Unknown	004F0269 Unknown	Unknown
	\$SATALL.exe Unknown	005B291E Unknown	Unknown
	KERNEL32.DLL Unknown	. 754FFA29 Unknown	Unknown
	ntdli.dli Unknown	77677A9E Unknown	Unknown
	ntdll.dll Unknown	77677A6E Unknown	Unknown
	SSATALL.exe Unknown	0048000B Unknown	Unknown

Looking at the "Intel(r) Visual Fortran run-time error" window above, the detail message is "insufficient virtual memory".

This arises because the program is not acquiring sufficient virtual memory to run the MC version of the software; it doesn't mean that there is necessarily anything fundamentally wrong with the program, just that the machine isn't meeting the requirements to run.

When running in multi-core mode, the program has to replicate memory for each thread it is using. Our programs default to running with as many threads as possible (to a limit of 32). What exactly controls the virtual memory it can find is not easily quantifiable but is dependent on what physical memory the machine has, what else is running, how any paging is set up, etc etc.

Typically, you may get this message when running on a machine capable of running more threads. It may work on a machine handling 20 threads with no problem, but moving to one running 24 threads will require it finding 20% more virtual memory and potentially fail.

However, we can control the number of threads that are used by the environmental variable OMP_NUM_THREADS. All other things being equal (which they probably won't be), the solution on the 24-core machine may be to limit it to 20 threads as follows:

set OMP_NUM_THREADS=20
call SATURN net mat
set OMP_NUM_THREADS=

You may need to experiment to discover what the appropriate setting for a machine / program is.

N.6 P1X - GRAF.DAT – changing screen dimensions

N.6.1 From within P1X

For the 11.6.03E release, the GRAF.DAT file was changed to default to giving parameters suitable for 16:9 screens. From a survey, 80% of users found that this default was preferable to the 4:3 ratio. Most users now use 16:9 screens, and we had assumed that those preferring the 4:3 ratio would have been using machines with a 4:3 ratio primary screen, but this do not appear to be the case. We are investigating further.

This change in GRAF.DAT does not only affect the current release, but all previous releases. However, there is a facility in P1X that enables you to switch screen dimensions which has not been invoked for many years. The GRAF.DAT has been changed to allow the switch to alternative screen settings.

The following example is based on the Epsom test network, and on a set up that works best in 16:9 mode, so switching to 4:3 mode will give a distorted picture.

To change the screen setting, from the "Master Menu", first select "System/devic".



Then, click on "Device" to open up the selection menu, select the "SCREEN 4:3" version.



For 11.6.03E, this will directly give you ...



which, in this case is the distorted version, as the better aspect ratio for this machine is 16:9.

For versions earlier than 11.6.03E however, there is an issue with P1X not refreshing the screen correctly, and you will see something like this:



The reshaping has begun, but the menu has moved off the right-hand side. [For other aspect changes, you may find that the menu has moved in from the right, and you will actually see two menu panels]. There is an "odd" way to force the refresh. From the top banner menu, select File, then Print Graphics,,,



and just hit the cancel button...



which throws up the message...



which you can clear by clicking on the X, to get...



In this case, again, it is the distorted version, as the better aspect ratio for this machine is 16:9.

N.6.2 From SatWin

We have also added a facility in SatWin to change the default GRAF.DAT file in use, but this may require help from your organisations' IT department, as sometimes the program area is protected, and you will need someone with administrator privileges to run this for you.

On the Tool tab, there is a GRAF.DAT preference selection table, from where the default file can be changed (if the program area on your machine is NOT locked down).

This means that the default SCREEN setting when opening P1X can be set to 4:3 instead of 16:9 or "OLD" to match the pre-11.6.03E settings. Note, all three allow the swapping from within the program to be undertaken.

N.7 Version Control

JOB NUMBER: 5213865		DOCUMENT REF: App N.doc				
Revision	Purpose / Description	SATURN				
		Originated	Checked	Reviewed	Authorised	Date
10.9.10	SATURN v10.9 Release	DVV	DG	IW	IW	04/09/09
10.9.12	SATURN v10.9 Release	DVV	DG	IW	IVV	22/10/09
10.9.22	Web release – Dec 10	DVV	AG	IW	IW	06/12/10
10.9.24	SATURN v10.9 Release (Full)	DVV	AG	IW	IW	06/05/11
11.1.09	SATURN v11.1 Release (Full)	DVV	AG	IW	IW	31/03/12
11.2.01	SATURN v11.2 Beta Release	DVV	JS	IW	IW	07/12/12
11.2.05	SATURN v11.2 Release (Full)	DVV	JS	IW	IW	17/03/13
11.3.03	SATURN v11.3 Release	DVV	SN	IW	IW	28/02/14
11.3.07	SATURN v11.3.07 Release	DVV	DAS	IW	IW	26/09/14
11.3.10	SATURN v11.3.10 Release	DVV	DAS	IW	IW	19/01/15
11.3.12	SATURN v11.3.12 Release	DVV	DAS	IW	IW	20/04/15
11.4.06	SATURN v11.4.06 Release	DVV	DAS	IW	IW	18/01/18
11.4.07	SATURN v11.4.07 Release	IW	DAS	IW	IW	23/08/18
11.5.05	SATURN v11.5.05 Release	IW	DAS	RJ	IW	16/07/20
11.6.03	SATURN v11.6.03 Release	IW	DAS	RJ	RJ	01/06/23
11.6.03E	SATURN v11.6.03E Release N.5 and N.6 added	DAS	MJW	RJ	RJ	19/07/24