



## E.6 SATURN 10.9 Bugs

Date of last update: 13<sup>th</sup> August 2011

The following “problems” have been identified in **SATURN** Version 10.9.12 as released in November 2009 and/or in later 10.9 releases up to and including 10.9.22 as released in January 2011 and 10.9.24 as released in May 2011.

Some of these (potentially) may pre-date 10.9 and would also have been present in 10.8 or even much earlier releases.

- 1) **SATALL** – Errors may occur when running a warm start option within MUC OBA causing the program to abort at the first assignment stage, particularly if there are banned turns under 44444. Corrected in 10.9.13. 01/12/09.
- 2) **SATPIJA** – The program may crash with Fatal Error 34 if the cost data contained on the .UFC file is too large to be copied into internal memory and therefore an external scratch file has to be created on channel 29. It may also require that UFC109 = T. Corrected in 10.9.15. 23/02/10.
- 3) **SATPIJA** – The program may hang when run in conjunction with OBA – but not always. Corrected in 10.9.15. 12/03/10.
- 4) **P1X and/or SATCH** – Cordoning off a network .dat file suitable for input to **SATNET** may run into problems with bus routes which have a single digit name/number written in column 5 (i.e., columns 1 to 4 are blank) in the original network .dat file since the cordon program only checks for non-blanks in columns 1 to 4. The error has probably been around for a long time. Corrected in 10.9.16. 17/03/10.
- 5) **SATALL** – A floating point error may occur if the total number of assignment-simulation loops exceeds 401. Normally MASL is limited to a maximum of 401 but it is possible that if one includes up to NIPS repetitions for signal optimisations that  $MASL * NIPS > 401$  and the error occurs. One solution is to optimise the signals externally, another is to improve the network coding so that you don't need so many loops to converge. The error has probably been around for a long time. Corrected in 10.9.16. 17/03/10.
- 6) **SATLOOK** – The option “-1 - SKIM TIME, DISTANCE AND TOLLS ALTOGETHER” within the Forest Skimming Menu will crash with an error message of non-increasing DA codes with multiple user classes networks if you have explicitly selected a single user class (under menu choice 3). Corrected in 10.9.16 and later versions of 10.9.12. 28/03/10.
- 7) **SATALL** – A crash may occur under elastic assignment, referencing routine PRINT\_TOP\_TEN. This happens if, when the program calculates the ten worst O-D pairs in terms of convergence to the demand model, one of the origins is the highest numbered zone. So if you have, say, 1,000 zones the chances of



the last zone being amongst the top ten is only 1 in 100, hence the error does not always occur. Corrected in 10.9.16. 14/04/10.

- 8) **SKIM\_ALL (SATLOOK)**. The program may terminate with a SATURN Fatal Error to the effect that an output DA code exceeds 99,993 if the number of zones times user classes exceeds (approximately) 9,900. Corrected in 10.9.16. 28/04/10.
- 9) **SATPIJA** – The program gives highly unreliable PIJA data whenever UFC109 = T, It is recommended that any users wishing to use **SATPIJA** with UFC109 = T switch to a very recent (10.9.17+) version or, alternatively, make sure that UFC109 = F in their network files. Corrected in 10.9.17. 14/05/10.
- 10) **SATPIG** – The same problem as above with UFC109 = T also applies to **SATPIG**. Corrected in 10.9.17. 18/05/10.
- 11) **MX** – Stacking matrices where the **total** number of matrix rows, i.e., the number of zones times the number of levels, exceeds the maximum number of zones permissible in your release version (e.g., 2,000 in the largest versions) may result in (some of) the zone names on the output .ufm file being set to zero. The error does not however affect the matrix cells themselves so that the stacked matrices may be used happily enough for assignment purposes. It also only appears to occur in exe's produced under FTN95 (the norm) rather than FTN77. This is a long-standing error. Corrected in 10.9.17. 21/05/10.
- 12) **SATNET** – Inputting pre-load flows from a text file with PLODFF = T along with the various sub-options provided by PLFF3 = T or F should be used with great caution; basically it works with some combinations of data formats and options but not others. Corrected in 10.9.17. 11/06/10.
- 13) **P1X** – Actual vehicle class flows are the calculated the same as demand vehicle flows for annotation. N.B. User class flows are correct. Corrected in 10.9.17. 14/06/10.
- 14) **SATSTAT** – The embedded macros within the Excel Spreadsheet do not function in Excel 2007. Corrected in 10.9.17. 22/06/10.
- 15) **SATSTAT** – The executable is not compatible with long filenames using "." As part of the filename. Corrected in 10.9.17. 22/06/10.
- 16) **P1X** – The subscripted namelist variables included within the "re-create a .dat file" option may contain unwanted spaces within the brackets; e.g., MCGILL(1) might well be written as MCGILL( 1) with a blank between ( and 1. This may cause the namelist data to be misinterpreted on input to **SATNET**. Corrected in 10.9.18. 24/06/10.
- 17) **SATNET** – Subscripted namelist variables which contain a space – see the example above – were not correctly interpreted as subscripted variables. Corrected in 10.9.18. 24/06/10.



- 18) **P1X** – GIS-based crow-fly distances as calculated along curved links defined in .GIS files and used in link annotation are correct in one direction (the direction coded in the 77777 .GIS data file) but not the other. Equally the data variable which is the difference between crow-fly and coded distances is calculated as coded minus crow-fly, not the other way around as documented. Corrected in 10.9.18. 19/07/10.
- 19) The simulation routines in **SATALL** and/or **SATSIM** in release 10.9.17 fail with certain network geometries containing dummy nodes. The problem is associated with the new “trick” introduced in 10.9.17 of treating simulation nodes in a form of topological ordering rather than purely numerical. An extra logical parameter, SIM109, has now been added such that if SIM109 = T then the new (improved?) topological order is adopted whereas with SIM109 = F the old (safe) numerical order is used. Full runs with 10.9.17 are therefore **not** recommended – which was effectively the same advice, though for slightly different reasons, as given at the time of the release. All 10.9.17 analysis programs are however still recommended for use. Corrected in 10.9.20. 06/09/10.
- 20) SKIM\_ALL in 10.9.17 fails if the network contains 44444 time penalties (as opposed to monetary tolls) which are output as the 4<sup>th</sup> matrix. A crash message appears to the effect that a DA code 93 is being output and is less than 103. Corrected in 10.9.20. 07/09/10.
- 21) **SATALL** (and/or **SATSIM**) may hang under certain fairly obscure circumstances, most probably associated with simulation links with stacking capacities in excess of, say, 100 PCUs and possibly after a large number of loops as the run nears convergence. Corrected in 10.9.20. 07/09/10.
- 22) The batch procedures **STACK** and **UNSTACK** which use **MX** to stack /unstack matrices may fail with the most recent versions of **MX**. Alternative procedures such as **MXSTACK** or **UFMUNSTACK** are not affected. Corrected in 10.9.20. 28/09/10.
- 23) If **MX** is used to create an internal **stacked** matrix from an input .csv data file where the zone names are included in the data file then the name for the **last (highest)** zone is set equal to its sequential number, not its zone name. While this does not affect the cell values, so that a matrix so created may be used perfectly happily for assignment purposes, it does invalidate certain **MX** options where a row or column has to be identified by its name as opposed to its sequential position. N.B. The problem does not occur when the .CSV file is used to update cell values in an existing .ufm matrix, e.g., in the batch file CSV2UFM. Corrected in 10.9.21. 05/10/10.
- 24) Producing SLA matrices for **all** user classes in **P1X** using OBA does not work – basically the option had not been included. Added in 10.9.21. 09/10/10.
- 25) Cordoning a stacked trip matrix for multiple user classes in **P1X** using OBA **only** works correctly for user class 1. Corrected in 10.9.21. 13/10/10.

- 26) The latest version of SKIM\_ALL based on 10.9.17 **SATLOOK** does not correctly skim time penalties if: (a) there are no monetary tolls and (b) the parameter NUSKIM on the preferences file = T (its default). In these circumstances the output matrix is all zero. The problem can be corrected by setting NUSKIM = F in the default preferences file SATLOOK0.DAT. Alternatively, though not documented, a “temporary” alternative preferences file may be defined by using a keyword KR on the command line, as in SKIM\_ALL net mat KR mylook0, where mylook0.dat sets NUSKIM = F. There are no problems with any of the other three skimmed matrices. N.B. The same problem occurs with SATTUBA which uses the same basic subroutines. Corrected in 10.9.21. 31/10/10.
- 27) **MX** may crash when printing row and column totals for stacked matrices if one or more totals are less than 1.0. Corrected in 10.9.22. 06/12/10.
- 28) **SATLOOK**: skimming forests for, e.g., time using the interactive options for OBA plus multiple user classes fails in that it only skims the first user class. However batch procedures such as skvertime work perfectly well in these situations. Corrected in 10.9.22. 06/12/10.
- 29) **MX**: The new option to print all zone names from within the Files menu has been assigned the fixed option number 9 which may conflict with the option number to open the 9<sup>th</sup> input matrix. It has therefore been changed in 10.9.22 to option 14. 06/12/10.
- 30) Offset optimisation (**SATOFF** or **SATALL** with SATOFF = T) fails (possibly crashes) if any signalised nodes have cycle times in excess of 256 seconds. Corrected in 10.9.22. 13/01/11.
- 31) **SATSUMA** is likely to crash with the most recent .ufs files. Corrected in 10.9.23 (unfortunately just too late for the release of 10.9.22). 22/01/11.
- 32) **SATPIJA** may run extremely slowly under OBA for user classes which (a) have (relatively) high numbers and (b) may have a large proportion of “missing” origins (i.e., with zero trips which have therefore not been analysed for best routes within OBA). The problem is due to having to rewind and reread the .UFO file each time such an origin is encountered. N.B. There are no problems with the output .UFP file, just the time it takes to correct it. Corrected in 10.9.23. 21/01/11.
- 33) **SATALL**: The use of the offset optimiser SATOFF = T coupled with the use of a fixed reference offset node MANOFF **may** (but not necessarily) cause the program to hang if the signalised nodes do not all have a common cycle time. Corrected in 10.9.23. 30/01/11.
- 34) **P1X**: The complete list of link variables that may be annotated and which is displayed as a “selection box” is not long enough to hold the **maximum** set of variables which occurs when there 3 or more user classes, fixed flows, bus flows, etc. etc. Thus certain variables such as BBF may “fall off the end”. The



problem does not occur with sub-lists such as flows, times etc. etc. Corrected in 10.9.23. 30/01/11.

- 35) **SATALL** may (possibly) give seriously incorrect results if the input .UFN file was created by a **later** release version of **SATNET**; i.e., the two programs are not backwards compatible. In particular 10.9.17 **SATALL** does not work properly with .UFN files produced by 10.9.23 **SATNET**. Previously this was a non-fatal error 127 in **SATALL** but it has now been upgraded to a Fatal Error. Corrected. 31/01/11.
- 36) **SATALL** will not output a correct .UFC file with UFC109 = T and elastic assignment. Corrected in 10.9.23. 14/02/11.
- 37) **P1X** The banner menu may **temporarily** disappear during Node Graphics Editing if the mouse is clicked "incorrectly", i.e., not on a valid item in the banner or a valid "box" within the node plot. Running the mouse over where the banner should be will reveal the available option lines but none of the "supplementary" lines. Corrected in 10.9.23. 15/02/11.
- 38) **SATNET**. The FILERL option to read in an existing .ERL file is likely to fail if the file has had an extra "title line" inserted at the top of the file. Since the title line is now always included on output .ERL files this means that the program will only work if (a) the title line is deleted or (b) the .ERL file is from a much earlier version of **SATNET**. Corrected in 10.9.23. 25/02/11.
- 39) **P1X**. The option within PMAKE to "split" a link does not work if the link is between an external and an internal simulation node. A long-standing problem. Corrected in 10.9.23. 05/03/11.
- 40) **P1X**. There may be certain problems in deleting multiple simulation zones from the 22222 data set under Network Editing / PMAKE. A long-standing problem. Corrected in 10.9.23. 05/03/11.
- 41) **P1X**. Dumping .dat files from .ufs files may run into problems in the 88888 dumped records with a \$ toll charge multiplier for a KNOBS record which is numerically greater than 10.00 since the field gets dumped as \$\*\*\*\*. Corrected in 10.9.23. 07/03/11.
- 42) **P1X**. A "glitch" has been corrected whereby, at present, if you select an option from a pull-down menu from the Window Bar and that option "sits on top of" one of the green arrows then the arrow is obeyed rather than the pull down option. The pull down menu item now takes precedence. Corrected in 10.9.24. 18/03/11.
- 43) **SATALL**. The program may crash under MUC OBA with a Divide By Zero error (which may actually appear on the screen as something else) if one of the user classes has zero trips in total in the stacked .UFM matrix. Corrected in 10.9.23. 15/03/11.



- 44) **SATALL**. A modelling “glitch” has been detected in the modelling of flared lanes at priority junctions whereby, if the queue in either the flared lane or the lane from which it originates is near the flare length, then it is possible for two apparently stable solutions to exist which, inter alia, can badly affect simulation-assignment convergence. Basically with an identical set of flows if the simulation assumes initially that the lane is “blocking back” (queue exceeds flare) then the outcome is that it does but if the initial assumption is that it doesn’t then the outcome is that it doesn’t. A small change in flows may cause the model to flip-flop between the two alternative solutions. Corrected in 10.9.23. 16/03/11.
- 45) **P1X**. The program will not run for buffer only networks (it reports an error for a missing DA code 1993). Corrected in 10.9.23. 12/04/11.
- 46) **PMAKE**. Deleting nodes and/or links where there were comment cards **before** the initial node record in the .dat file may lead to errors. Corrected in 10.9.24. 20/05/11.
- 47) **SATCH**. It is possible that if the original network contained very high 4-digit zone numbers, e.g., up to 9901, then the newly created zone numbers at cordon points will be 5-digit starting with 10001. While 5-digit zones may be OK with simulation 22222 connectors, they do create problems with 33333 buffer networks if DUTCH = F. Detected as an error in 10.9.24. 20/05/11.
- 48) **MX**. When building stacked matrices from “one record per cell” input files which contain: (a) sequential O-D numbers, (b) not their names, (c) the level and (d) the cell value the level values are in fact ignored. Thus **MX** interprets the sequential origin number as being the “stacked” value; i.e., if a record refers to sequential origin, say, 5 cell in level 2 **MX** expects the input origin to be  $N_{zones} + 5$ , **not** a sequential number in the range 1 to  $N_{zones}$ . Whether level is input as 1 or 2 is irrelevant. This is probably counter-intuitive although it is the rule that is adopted when a ufm matrix is dumped to text with one record per cell. The simplest work-around is to keep the level defined but interpret the O-D inputs as zone “names” in the range 1 to  $N_{zones}$  rather than sequential, in which case the level is applied correctly. This is a long-standing problem, no change has yet been applied. 16/06/11.
- 49) **P1X**. Select Link Analysis fails in release 10.9.24 if two or more networks are currently defined. The problem is that a box that requires a Yes/No return after a link has been defined does not have enough space to include all the printed data so the Yes/No boxes don’t appear and the program crashes. Corrected in 10.9.25. 17/06/11. N.B. A corrected **P1B** exe will be released.
- 50) **P1X**. The program crashes with a SATURN Fatal Error 29 when performing a Joy Ride if the route goes through a banned turn. Corrected in 10.9.25. 23/06/11.
- 51) **P1X**. Editing 55555 network co-ordinates runs into a problem, essentially an infinite loop trying to create an infinitely big data file, if the 55555 data includes an **old** \$include record commented out as \*\$INCLUDE (i.e., with \* (correctly) in

column 1). So if you need to comment out a \$INCLUDE record use, say, \*\* instead of \*, delete it entirely, etc. The same problem may possibly, but not necessarily, occur in other data segments as well. This is a long standing problem corrected in 10.9.25. 24/06/11.

- 52) **P1X**. Further to 51) **P1X** editing of 55555 records may also get stuck in an infinite loop if \$INCLUDE is entered in **lower case**, i.e., \$include. So use upper case \$INCLUDE throughout – although the problem is probably only related to 55555 co-ordinate inputs. This is also a long standing problem corrected in 10.9.25. 24/06/11.
- 53) **MX**. When using a network .ufs file to rename, say, sequential row names in a stacked (multiple level) .ufm matrix with, say, non-sequential zone names from the network the transformation is only applied to the base level, **not** the higher levels. In practical terms this may make very little difference, e.g., it does not affect the assignment, but in some circumstances it might. It has therefore been corrected in 11.1. A long standing error. See 10.3.3. 01/07/11.
- 54) **P1X**. Editing signal settings at simulation nodes does not work if applied **after** extra lines have been added to the main body of the node .dat file by either screen editing (add comment lines) or by adding second link records (e.g., by defining flares). Basically internal pointers are not correctly updated. You may however update signals **prior** to adding extra records. Corrected in 10.9.25. 17/07/11.
- 55) **P1X**. The 10.9.24 as-supplied preferences file P1X0.dat may contain a misleading value for the parameter XYFORM = '2F10.1'. Ideally this should be the same value as that used by **SATNET** when building networks, for which the default is 215 although, in terms of values to be recommended as defaults, 2F10.1 is preferable. If the values of XYFORM differ between that used to build a network and that used by default within **P1X** then problem arise in editing X,Y co-ordinates and dumping them to a new .dat file in that the new 55555 entries will be in a different format (i.e., 2F10.1) from the old (e.g.,215) The simplest solution is simply to edit P1X0.DAT and replace 2F10.1 by a a more appropriate local value. Corrected in 10.9.25. 17/07/11. N.B. Also available in SATLOOK Beta within 10.9.24 as released 19/08/11.
- 56) **P1X**. Joy rides which start at an external “spigot” node (i.e., a node which has only one arm leading to a mid-link node plus one or more zone connectors) and for which the second node selected is the mid-link node will fail to identify that first link correctly. Instead the joy ride finds the second node correctly but then adds an illegal U-turn at an adjacent node so that it creates three links rather than one. There is a simple workaround which is to define the second node further away than the mid-link node, in which case the joy ride will correctly interpolate through second node. Corrected in 10.9.25. 25/07/11.
- 57) **SATLOOK**. The option to print turning flows at buffer nodes does not work at all in release 10.9.24 (and possibly some slightly earlier releases). The numbers printed are essentially random, probably zeros. Corrected in 10.9.25. 25/07/11.



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- 58) **P1X/SATDB.** The input of actual link flows (e.g., user class flows based on the 3808 convention) from alternative networks may assign an incorrect data column **title**, probably "Queue Reduction Factor". This only affects the title, not the content of the data read in. Corrected in 10.9.25. 02/08/11.
- 59) **SATNET.** The default value of NITA\_S, documented as 99 in the Manual, is actually 25. Upgraded to 99 in release 11.1 and in 10.9.25. 05/08/11.
- 60) **SATALL.** The combination of QUIET and REFFUB = T gives rise to a fatal error of writing to an unopened file. Corrected in 10.9.25. 02/08/11. 05/08/11.
- 61) **SATLOOK.** Incorrect skim matrices are produced with SKIM\_TIME, SKIM\_DIST, SKIM\_PEN and/or SKIM\_TOLL batch files when both SPIDER **and** Multi-core are used together. Skim matrices from SKIM\_ALL.bat are not affected. Corrected in 10.9.25. 13/08/11. N.B. Also available in SATLOOK Beta within 10.9.24 as released 19/08/11.

## E.7 Version Control

JOB NUMBER: 5101396		DOCUMENT REF: App E.doc				
Revision	Purpose / Description					
		Originated	Checked	Reviewed	Authorised	Date
1	Re-formatted (Final to DVV)	TF / BG	NS	IW	IW	06/05/06
3	Upgrade to V2 Template	DVV	IW	DVV	IW	28/06/06
3.1	Additions to 10.6.17	DVV				10/07/06
3.2	Web release – Sept 06	DVV	NP	IW	IW	08/09/06
3.3	Web release – Jan 07	DVV	NP	IW	IW	04/01/07
3.4	SATURN v10.7 Release	DVV	NP	IW	IW	12/03/07
3.5	Web Release for Jul 07	DVV	NP	IW	IW	20/07/07
3.6	SATURN v10.8 Release	DVV	NP	IW	IW	25/03/08
	E.6 started for 10.8 bugs	DVV				26/04/08
3.7	Web Release for Jul 08	DVV	NP	IW	IW	07/07/08
3.8	Web release – Dec 08	DVV	NP	IW	IW	12/12/08
3.8.21	Web release – Feb 09	DVV	NP	IW	IW	16/02/09
3.8.22	Web release – Jun 09	DVV	NP	IW	IW	16/06/09
10.9.10	SATURN v10.9 Release	DVV	DG	IW	IW	04/09/09
10.9.12	SATURN v10.9 Release (Full)	DVV	DG	IW	IW	22/10/09
10.9.17	Web release – Jun 10 Bugs v10.3.9 removed	DVV	NP	IW	IW	22/06/10
10.9.22	Web release – Dec 10	DVV	AG	IW	IW	07/12/10
10.9.24	Web release – May 11	DVV	AG	IW	IW	24/05/11
	Beta Update – Aug 11	DVV	AG	IW	IW	19/08/11