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## Usage Note 46944: New SAS® transport format and tools available

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The SAS Version 5 (V5) transport file format is an open standard developed by SAS to support data transfers between systems, especially those running different operating systems. SAS has recently developed a new transport file format specification, along with three macros, that extends the older V5 transport file format and provides new capabilities.

- The new specification, similar to the SAS V5 transport specification, is also nonproprietary.
- The new macros, available on the **Downloads** tab, can read or write the new extended transport format as well as the older specification. These macros can run equally well in SAS® 8 and SAS® 9. From [SAS Technical Paper TS-140: Record Layout of a SAS Transport Data Set](#), you can click on either the SAS V5 or SAS V8 transport specifications. This link takes you to the public specification for the [Record Layout for a SAS® Version 8 or 9 Data Set in SAS® Transport Format](#).

The SAS V5 transport file is widely used in the biopharmaceutical industries. The availability of these new macros does not change the expectation that the FDA should receive clinical trial data in SAS Version 5 (V5) transport files.

The new SAS transport format and tools support the following:

- Variable names can be up to 32 characters, and they are stored in their original case (upper or lower). The previously released transport file format only allows up to 8 characters.
- Character variables can have lengths up to 32,767 bytes. The previously released transport file format only allows lengths up to 200 bytes.
- Variable names can contain any characters other than null ('00x'). The previously released transport file format only allows alphanumeric and underscore as characters. Note that a variable name cannot be completely blank. Any variable name that contains characters other than alphanumeric or underscore would be represented in the SAS language as an n-literal (for example, 'a b'n). Starting in SAS® 9.3, using the VALIDMEMNAME=EXTEND option, variable names can contain embedded blanks and these additional characters:

```
.~!@#%&^&()_+={}[];';,
```

These characters are allowed in the new transport file format, although you must be running SAS 9.3.

- Variable labels can be up to 256 characters. The previously released transport file format only allows 40-character labels.

The macro **LOC2XPT** (from local session to xport) can identify whether the data set you are reading in has any extended data set features named above. For example, if the data set has long variable names, a new transport file is created. Otherwise, the older V5 transport file is made. You can specify the type of transport file that you want to create using the **FORMAT=** parameter. A sample invocation of the **LOC2XPT** macro is:

```
%loc2xpt(libref=your_libref, memlist=dataset_name, filespec=your_filespec)
```

The macro **XPT2LOC** (from xport to local session) can convert older V5 transport files and the new transport file format. There are no restrictions regarding which version of SAS you are running in order to import the new transport file, as long as you are not running SAS Version 6. An example of calling the macro **XPT2LOC** macro follows:

```
%xpt2loc(libref=your_libref,filespec=your_filespec)
```

The **XPTCOMMN.SAS** file contains common code used by both macros.

Using a filename extension, you can differentiate between the transport file types. Any extension can be used, but we are using **.v9xpt** as the extension in the sample program because long format names exist, which is a new feature in SAS 9. If you receive a file ending in **.v9xpt** and want to convert it to a SAS data set using **%XPT2LOC** (assuming that you have submitted the programs from the **Downloads** tab in your SAS session), you would simply use the following statement:

```
%xpt2loc(libref=work, filespec='c:\trans.v9xpt')
or
%xpt2loc(libref=work, filespec=fileref) /* where fileref is unquoted */
```

The **XPORT** engine is restricted to reading the older V5 transport files but the macro **XPT2LOC** can read both the older V5 transport files and the new transport file format. If you attempt to use the **XPORT** engine to read a new transport file, an error is generated. Instead, use the macro **XPT2LOC**.

### Operating System and Release Information

Product Family	Product	System	SAS Release	
			Reported	Fixed*
SAS System	Base SAS	Microsoft Windows NT Workstation	8.1 TS1M0	
		Microsoft Windows 2000 Server	8.1 TS1M0	
		Microsoft Windows 2000 Professional	8.1 TS1M0	
		Microsoft Windows 2000 Datacenter Server	8.1 TS1M0	
		Microsoft Windows 2000 Advanced Server	8.1 TS1M0	
		Microsoft Windows 95/98	8.1 TS1M0	
		OS/2	8.1 TS1M0	
		OpenVMS VAX	8.1 TS1M0	

		z/OS	8.1 TS1M0	
		Microsoft Windows XP Professional	8.1 TS1M0	
		Windows Millennium Edition (Me)	8.1 TS1M0	
		ABI+ for Intel Architecture	8.1 TS1M0	
		AIX	8.1 TS1M0	
		HP-UX	8.1 TS1M0	
		IRIX	8.1 TS1M0	
		OpenVMS Alpha	8.1 TS1M0	
		Solaris	8.1 TS1M0	
		Tru64 UNIX	8.1 TS1M0	

\* For software releases that are not yet generally available, the Fixed Release is the software release in which the problem is planned to be fixed

The SAS Version 5 (V5) transport file is an open standard developed by SAS to support data transfers between systems, especially those running different operating systems. SAS has recently developed a new transport file format, along with a series of macros, that extends the older V5 transport file format and provides new capabilities. These capabilities are described on the **Details** tab.

The only step necessary to run the code below is to save the programs from the **Downloads** tab to the C:\TEMP directory. The sample program uses %INCLUDE statements to locate them in this directory and then automatically compiles the macros to the Work library when you submit the code. Alternatively, you can copy and paste the programs into your SAS Enhanced Editor and run them individually. In this case, you are manually compiling the macros to the Work library, so to avoid errors, you need to comment out the %INCLUDE statements. The advantage of using the %INCLUDE statements is that you retain a copy of the macros rather than losing them when you exit your SAS session.

Additional instructions are given below the sample program for making the macros readily accessible using the AUTOCALL facility. With the AUTOCALL facility, you no longer need to compile the macros by using %INCLUDE statements or submit them as SAS programs in any future SAS session. A one-line statement is all that is required to read and write the new transport files.

[illegible]

\*\*\*\*\*

## How to add the macros to your Autocall library

Simply add the path where you stored the extended transport macro programs to the list of paths specified in the SASV9.CFG file under -SET SASAUTOS. This makes using the macros as simple as specifying the macro name.

Alternatively, if you do not have the ability to modify the SASV9.CFG file, add the statements below to the AUTOEXEC.SAS file or submit them when you first open your SAS session.

These statements will help you find your current SAS Autocall library and add your folder to it.

```
filename testauto 'path-to-folder-containing-the-downloaded-macros';
/* Check the current path to your autocall library*/
%put %sysfunc(getoption(sasautos));
/* Add testauto to the current sasautos setting */
options sasautos=('C:\Program Files\SAS\SASFoundation\9.2\core\sasmacro' testauto) mautosource mrecall;
```

#### Additional documentation for use of extended transport file macros

```
%loc2xpt(libref=your_libref,memlist=your_memlist,filespec=your_filespec,
        format=your_format);
```

Where:

**your\_libref** indicates the libref where the members reside. If the LIBREF= option is omitted, the default is WORK.

**your\_memlist** indicates the list of members in the library that are to be converted. The default is that all members will be converted.

**your\_filespec** indicates either a fileref (not quoted) or a path name (single quoted) which is the location where the Version 8 transport file will be written. This argument is required and has no default value.

**your\_format** indicates the format of the transport file. It can be V6 (Version 6 transport), V8 (Version 8 transport file), or AUTO (determined by data). If your data set contains no long variable names, long labels, or character variables over 200, and you used AUTO, then a Version 6 transport file is written. You will receive an error if you use V6 and any of these attributes are present.

```
*****;
```

```
%xpt2loc(libref=your_libref,memlist=your_memlist,filespec=your_filespec);
```

Where:

**your\_libref** indicates the libref where the members will be written. If the LIBREF= option is omitted, the default is WORK.

**your\_memlist** indicates the list of members in the transport file that are to be converted. The default is that all members will be converted.

**your\_filespec** indicates either a fileref (not quoted) or a path name (single quoted) which is the location where the Version 8 transport file resides. This argument is required and has no default value.

```
*****;
```

#### Comparison showing that SAS 8 data set features are retained

9.3 - [Output - (Untitled)]

File Edit View Tools Solutions Window Help

Compare before and after data set attributes

The COMPARE Procedure  
Comparison of TEST.THISISALONGDATASETNAME with WORK.THISISALONGDATASETNAME  
(Method=EXACT)

Data Set Summary

Dataset	Created	Modified	NVar	NObs
TEST.THISISALONGDATASETNAME	12OCT12:14:51:30	12OCT12:14:51:30	1	1
WORK.THISISALONGDATASETNAME	12OCT12:14:51:30	12OCT12:14:51:30	1	1

Variables Summary

Number of Variables in Common: 1.

Observation Summary

Observation	Base	Compare
First Obs	1	1
Last Obs	1	1

Number of Observations in Common: 1.  
Total Number of Observations Read from TEST.THISISALONGDATASETNAME: 1.  
Total Number of Observations Read from WORK.THISISALONGDATASETNAME: 1.

Number of Observations with Some Compared Variables Unequal: 0.  
Number of Observations with All Compared Variables Equal: 1.

NOTE: No unequal values were found. All values compared are exactly equal.

[LOC2XPT.SAS](#) is used to export SAS 8 and SAS 9 data sets into extended transport format.

[XPT2LOC.SAS](#) is used for importing both traditional Version 5 transport files or extended transport files.

[XPTCOMMN.SAS](#) is used by both %LOC2XPT and %XPT2LOC.

Variable names longer than eight characters and other unsupported data set features in the XPORT engine are supported. This availability does not change the expectation that the FDA should receive clinical trial data in SAS Version 5 (V5) transport files.

**Type:** Usage Note

**Priority:**

**Topic:** Common Programming Tasks ==> Reading and Writing External Data  
Common Programming Tasks ==> Reading and Writing External Data ==> File Options  
Common Programming Tasks ==> Reading and Writing External Data ==> with PROC EXPORT  
Common Programming Tasks ==> Reading and Writing External Data ==> with PROC IMPORT  
Data Management ==> Data Sources ==> CEDA (Cross-environment Data Access)  
Data Management ==> Data Sources ==> SAS Data Sets/Tables  
Common Programming Tasks ==> Reading and Writing SAS Data

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