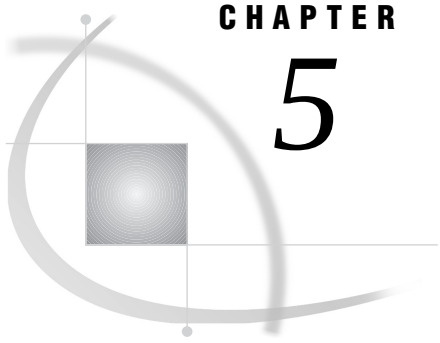

CHAPTER

5

Using SAS Engines

SAS Library Engines

The SAS System provides different engines that enable you to access and, in most cases, to update files of different types and different formats. See *SAS Language Reference: Dictionary* for a complete discussion of the types of engines that SAS provides on all host operating environments.

When you use the LIBNAME statement to assign a libref to a SAS data library, you use the *engine* parameter to specify the appropriate engine for each SAS data library that you want to access. (See "LIBNAME Statement Syntax" on page 31.) If you don't specify an engine, then SAS determines which engine to use by following the procedures described in "How SAS Assigns an Engine When No Engine Is Specified" on page 45 .

If you use the CMS FILEDEF command to assign a libref to a SAS data library, then SAS assigns an engine to the library. You can override the default by subsequently using the LIBNAME statement to associate a different engine with the library.

Table 5.1 on page 54 lists the library engines that have CMS-specific aspects and tells you where to look for more information about them.

Table 5.1 SAS Library Engines for CMS

Engine	Description
V8	accesses SAS files in Version 8 disk format. You can also use the alias BASE to specify this engine.
V8TAPE	accesses SAS files in Version 8 sequential format on tape or disk. The sequential file format is common among IBM host environments, and sequential libraries can be shared among the CMS and OS/390 operating environments. You can also use the alias TAPE to specify this engine.
V7	accesses SAS files in Version 7 disk format.
V7TAPE	accesses SAS files in Version 7 sequential format on tape or disk.
V6	accesses SAS files in Version 6 disk format. You can also use the aliases V612, V611, V610, V609, V608, and V607 to specify this engine.
V6TAPE	accesses SAS files in Version 6 sequential format, including sequential format on tape and sequential format on disk. The sequential file format is common among IBM host environments, and sequential libraries can be shared among the CMS, OS/390, and VSE operating environments. You can also use the alias V6SEQ to specify this engine.
V5	accesses in READ-only mode SAS files that were created under Version 5 releases of SAS. You can also use the alias V5TAPE to specify this engine.
BMDP	provides READ-only access to BMDP files.
OSIRIS	provides READ-only access to OSIRIS files.
SPSS	provides READ-only access to SPSS and SPSS-X files. SPSSX is an alias for SPSS.
REMOTE	is used by SAS/CONNECT and SAS/SHARE software to access remote files.
XPORT	transports SAS files from one operating environment to another.

Acessing V606 Libraries through Version 8

If you have libraries that were created with the V606 engine, follow these steps to access those libraries:

1. Invoke SAS Release 6.07 or later.
2. Use the COPY procedure to copy the library.
3. Access the output of the COPY procedure in SAS Version 8.

SAS View Engines

SAS view engines enable SAS to read SAS data views and data step views that are described by the SQL procedure or by SAS/ACCESS software. These engines support the SAS data set model only and are not specified in the LIBNAME statement.

Under CMS, the following view engines are supported:

ADB
: accesses ADABAS database files.

DDB
: accesses CA-DATACOM/DB database files.

IDMS
: accesses CA-IDMS database files.

IMS
accesses IMS-DL/I database files.

ORACLE
accesses ORACLE database files.

SQLDJ
accesses data sets that are described by the SQL SQLVIEW procedure.

For more information about the SQL view engine, see *SAS Procedures Guide*. For information about the other view engines, see the appropriate SAS/ACCESS software documentation.

The BMDP, SPSS, and OSIRIS Engines

Interface library engines, which read from files formatted by other software, include the following:

BMDP
reads BMDP save files.

OSIRIS
reads OSIRIS data and dictionary files that have not been translated from EBCDIC to ASCII.

SPSS
reads SPSS files that were generated in SPSS Releases 1 through 9 and SPSS-X files in either compressed or uncompressed format. The engine can also read the SPSS Portable File Format, which is analogous to the transport format for SAS data sets.

You can use these engines in any applications that do not require random access. The engines are especially useful with the CONTENTS procedure and its _ALL_ option to determine the contents of an entire system file at once. These engines are automatically invoked by the CONVERT procedure. See “Procedures in the CMS Environment” on page 183 for more information about PROC CONVERT.

Restrictions on the Use of These Engines

Because these are sequential engines, they cannot be used with the POINT= option in the SET statement, or with the FSBROWSE, FSEDIT, or FSVIEW procedures in SAS/FSP software. You can use PROC COPY or a DATA step to copy an OSIRIS, BMDP, or SPSS file to a SAS data set, and then use the POINT= option, or you can browse or edit the file with SAS/FSP software.

Also, because these engines are READ-only engines, some procedures, such as PROC PRINT, warn you that you are using a sequential engine because the observation number must be determined by the procedure, not by the engine.

Accessing BMDP Files

The BMDP engine is a READ-only engine that enables you to access BMDP files as if they were SAS data files.

This engine can read only BMDP save files that were created in the same operating environment. For example, BMDP files that are created in an OpenVMS operating environment cannot be read with the BMDP engine under CMS.

Assigning a Libref to a BMDP File

To assign a libref to a BMDP file so that you can access the file, use this form of the LIBNAME statement:

LIBNAME *libref* BMDP *physical-name*;

This form of the LIBNAME statement takes the following arguments:

libref
is a SAS libref.

BMDP
specifies the BMDP engine.

physical-name
specifies the physical location of the library.

The LIBNAME statement has no options for the BMDP engine.

You do not need to use a LIBNAME statement before running PROC CONVERT on a BMDP file.

Referencing BMDP Files

Because there can be multiple save files in a single physical BMDP file, you use the value of the BMDP CODE= argument as the name of the SAS data file. For example, if the BMDP save file contains CODE=ABC and CODE=DEF, and the libref is XXX, you reference the files as XXX.ABC and XXX.DEF. All BMDP CONTENT types are treated the same, so if file DEF has CONTENT=CORR under BMDP, it is still treated by the SAS System as CONTENT=DATA.

If in your SAS program you want to access the first BMDP save file, or if there is only one save file, you can refer to the file as _FIRST_. This approach is convenient if you do not know the BMDP CODE= name.

Examples of Accessing BMDP Files

- Suppose the physical file TEMP BMDPDATA contains the save file ABC. The following statements assign a libref to the physical file, then run PROC CONTENTS and PROC PRINT on the file:

```
libname xxx bmdp 'temp bmdpdata';
proc contents data=xxx.abc;
proc print data=xxx.abc;
```

- The following example uses the LIBNAME statement to associate the libref MYLIB2 with the BMDP physical file. Then it prints the data for the first save file in the physical file.

```
libname mylib2 bmdp 'temp bmdpdata';
proc print data=mylib2._first_;
```

Accessing SPSS Files

The SPSS engine is a READ-only engine that enables you to access SPSS files as if they were SAS data files. Both the SPSS Release 9 (and prior releases) and the SPSS-X file formats (both native and import/export) are supported. The engine determines which format is used and reads the file accordingly.

This engine can read only SPSS save files that are created in CMS and OS/390 operating environments. For example, SPSS files that were created in an OpenVMS operating environment cannot be read with the SPSS engine under CMS. The exception is an SPSS import file, which can originate from any operating environment.

The engine automatically determines which type of SPSS file it is reading.

Assigning a Libref to an SPSS File

To assign a libref to an SPSS file so that you can access it, use this form of the LIBNAME statement:

LIBNAME *libref* SPSS *physical-name*;

This form of the LIBNAME statement takes the following arguments:

libref
is a SAS libref.

SPSS
specifies the SPSS engine.

physical-name
specifies the physical location of the library.

The LIBNAME statement has no options for the SPSS engine.

You do not need to use a LIBNAME statement before running PROC CONVERT on an SPSS file.

Referencing SPSS Files

SPSS files created under Release 9 or prior releases have filenames. You should use the filename as the member name in your SAS programs. You can also use _FIRST_ in your SAS programs to refer to the first save file.

SPSS-X save files do not have names. Therefore, you can use a member name of your choice in SAS programs for SPSS-X save files. You can also use _FIRST_ with a save file created under SPSS-X or under SPSS Release 9, because save files under these releases have only one logical member per file.

Example of Accessing SPSS Files

Suppose you want to read the physical file TEMP SPSSDATA. The following statements assign a libref to the physical file, then run PROC CONTENTS and PROC PRINT on the SPSS file:

```
libname xxx spss 'temp spssdata';
proc contents data=xxx._first_;
proc print data=xxx._first_;
```

Accessing OSIRIS Files

The OSIRIS engine is a READ-only engine that enables you to access OSIRIS data and dictionary files as if they were SAS data files.

Assigning a Libref to an OSIRIS File

To assign a libref to an OSIRIS file so that you can access it, use this form of the LIBNAME statement:

LIBNAME *libref* OSIRIS *data-filename* DICT='*dictionary-filename*';

This form of the LIBNAME statement takes the following arguments:

libref
is a SAS libref.

OSIRIS
specifies the OSIRIS engine.

data-filename
specifies the physical filename of the data file.

dictionary-filename
specifies the physical filename of the data dictionary.

If the libref also appears as a fileref, the *data-filename* can be omitted in the LIBNAME statement. However, you must still use the DICT= option because the engine requires both files.

You do not need to use a LIBNAME statement before running PROC CONVERT on an OSIRIS file.

Referencing OSIRIS Files

OSIRIS data files do not have individual names. Therefore, you can use a member name of your choice in SAS programs for OSIRIS files. You can also use the member name _FIRST_ for an OSIRIS file.

You can also use the same dictionary file with different OSIRIS data files. In this case, specify a separate LIBNAME statement for each data file.

The contents of the dictionary file determine the file layout of the data file under OSIRIS. A data file has no other specific layout.

The layout of an OSIRIS data dictionary is consistent across operating environments. Although OSIRIS software runs only under OS/390 and CMS, the OSIRIS engine in the SAS System accepts a CMS data dictionary in any other operating environment that is running the SAS System. The data dictionary and data files should not be converted from EBCDIC and ASCII, however, because the OSIRIS engine expects EBCDIC data.

Example of Accessing OSIRIS Files

Suppose you want to read the data file TEMP OSIRDATA and the data dictionary is TEMP OSIRDICT. The following statements assign a libref to read the data in order, then run the CONTENTS and PRINT procedures on the file:

```
libname xxx osiris 'temp osirdata' dict='temp osirdict';
proc contents data=xxx._first_;
proc print data=xxx._first_;
```

The correct bibliographic citation for this manual is as follows: SAS Institute Inc., *SAS® Companion for the CMS Environment, Version 8* , Cary, NC: SAS Institute Inc., 1999.

SAS® Companion for the CMS Environment, Version 8

ISBN 1–58025–481–0

SAS Institute Inc., SAS Campus Drive, Cary, North Carolina 27513.

1st printing, October 1999