SEP3D Output—A ProMAX/SeisSpace Utility

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ABSTRACT

In order to overcome the restrictions on trace header information inherent in SEG-Y or SEG-D, I have written a a ProMAX/SeisSpace module to write directly into SEP3D format, preserving all numeric-valued trace headers. One feature of this module is that it does not need any SEP software environment in order to operate.

INTRODUCTION

Almost all of the field data at the Stanford Exploration Project arrives in a form created by and compatible with commercial seismic processing software. When those seismic files do not contain key information such as coordinates in their headers, they are supplemented by auxiliary files in formats such as SPS or P1-90 detailed by the SEG Technical Standards Committee[1] that do contain that information. In that event, the path of least resistance is to import the seismic and auxiliary files into a commercial system, in the case of the Stanford Exploration Project, the ProMAX/SeisSpace software, and subsequently export the fully populated data to, say, SEG-Y so that it can be read and stored in the SEP3D internal format. Because SEG-Y headers often cannot carry all the information that one might like to export, I created a ProMAX/SeisSpace module to write directly into SEP3D format, preserving all numeric-valued trace headers.

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[1]http://www.seg.org/resources/publications/misc/technical-standards

<div align="center">**DOCUMENTATION**</div>

SEP3D Output

SEP3D Output converts *ProMAX* data to a format developed by the Stanford Exploration Project.

Theory

SEP3D datasets consist of up to six parts:

- Text file containing global parameters such as sample rate (.H)

- Binary trace data file containing the seismic samples (.H@)

- Text file describing the trace header entries (.H@@)

- Binary trace header file containing a header for each trace (.H@@@)

- Text file describing the format of a trace binning grid (.H@@@@)

- Binary grid file with binning locations for each trace (.H@@@@@)

SEP3D Output currently creates the first four files, assuming that ProMAX input data are already a regularly sampled 3D volume. Should this not be the case, an output dataset will still be created and the user may subsequently employ the Stanford Exploration Project "SEPlib" software library tools for binning within that system.

Usage

The locations of the components of a SEP3D dataset are normally split between two directories, one for textual information and the other for the binary traces and trace headers. The binary data directory is known in the SEP system as the *datapath*, and it can be selected via a runtime command line *datapath=* argument, a *.datapath* file in the current or home directory, or a *DATAPATH* environment variable. For portability to non-SEP environments, **SEP3D Output** requires the two directories to be specified in the setup menu, but will honor the *DATAPATH* environment variable if present.

Parameters

Text file directory
Enter the name of the directory where you would like the two text files to be created.

Browse for path to text file directory
Select the directory where the .H and .H@@ text files will be stored.

Data file directory
Enter the name of the directory where you would like the two binary data files to be created.

Browse for path to data file directory
Select the directory where the .H@ and .H@@@ binary data files will be stored.

File name prefix
Enter the prefix you want to use for naming the output files. For example, if the prefix is *MyData*, then the output files will be named *MyData.H*, *MyData.H@*, *MyData.H@@*, and *MyData.H@@@*.

Verbose output?
Select **Yes** for more detailed information in the job output log.

DISCUSSION

Because the output volume dimensions are initially set from the internal ProMAX number of samples per trace (numsmp), traces per record (maxdtr), and number of records encountered, there may well be a discrepancy between these apparent dimensions of the output data and the actual number of traces. S̲EP3D Output detects this situation and resets the output dimensions to *n2=actual number of traces* and *n3=1*. For this reason, SEP users are urged to check these values, either by reading the *.H* file directly or using the SEPlib tool *In*, and then employ appropriate seplib tools (e.g. Sort3d, Fold3d, Grid_fold) to manage the actual geometry and binning.