Appendix: Using TSTool with Platte River Power Data

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This appendix summarizes how to use **TSTool** with Platte River Power data from the Rawhide Energy Station. Currently this software has only been installed on Paul Schulz' personal computer but it can be installed on other machines using the installation instructions below.

Installation

TSTool uses two main software components. The first component is the JRE (Java Runtime Environment), version 1.1.8, a free software package from Sun Microsystems (available as a self-extracting executable called *jre_1_1_8-2in.exe*). This software installs by default to *C:\Program Files\JavaSoft\JRE\1.1* but was installed on the *D:* drive on Paul's machine.

TSTool is written in the Java language and is executed by the JRE software. RTi originally implemented TSTool for the State of Colorado and has made numerous enhancements to the original product. TSTool has been installed on Paul's machine and consists of the following directories and files (typically supplied in a WinZip file or expanded on a CD):

D:\Program Files\RTi	*bin*	*HB.jar*	
		HBGUI.jar	
		Informix.jar	
		RTi.jar	
		SMUtil.jar	
		Symantec.jar	
		tstool.bat	
		tstool.jar	
		Una2000.jar	
	doc	*manuals*	*tstool*
	logs	*tstool.log*	
	system	*DATAUNIT*	

The *tstool.bat* file is used to start the software and has been edited to use the directories mentioned above. The ***Start…Programs…RTi…TSTool*** menu has been configured to use this batch file.

To install the software on another machine, run the JRE self-extracting executable and copy the TSTool files to the directory structure shown above. If necessary, update the tstool.bat file to use the proper directories. See the **Troubleshooting** section of the **User Manual** if errors occur. If copying files from a CD, make sure that the *logs* directory in particular is not set to read-only.

Using TSTool at Rawhide

TSTool was originally written to use water resources and other data. Over time the software has been updated to be more generic. The main function of TSTool is to analyze, view, and manipulate time series data. As indicated in the user manual, TSTool relies on data conventions such as time series identifiers and standard units. Consequently, data used by TSTool have more complexity than a simple spreadsheet grid.

In order to use TSTool with Rawhide data, the `hourutil` program was written for the CEM system to export the CEM data as a *DateValue* file. This utility is described in the **Rawhide CEM System User Manual** supplied by RTi. A summary of how to generate data for TSTool is as follows:

1. On the UNIX machine, run the following command to create a *DateValue* format time series file:

```
hourutil -d MM/DD/YY -e MM/DD/YY -dv
```

2. FTP the */opt/foxind/cem/rep/hourutil_1_dv.txt* (or *hourutil_2_dv.txt*) file to the PC (ASCII mode).
3. Start TSTool and cancel the HydroBase database login.
4. Open the file either by using the ***TS Commands…Create/Convert/Read Time Series…readDateValue()*** menu and read the *DateValue* file OR press the ***Get Time Series List*** button and select the *DateValue* file.

TSTool can read DateValue time series files two ways.

If you use the ***Get Time Series List*** button, you are prompted to select a *DateValue* format file. You are then shown a list of the time series from the file in the upper right of the TSTool interface. You can select all the time series or select one or more time series. The advantage of using this method of selection is that you can apply time series commands (e.g., `filling`, `normalizing`) to individual time series, resulting in not only raw data being available for display, but also manipulated data. The disadvantage is that each time series that is read requires the entire time series data file to be read again because only one time series at a time is read from the file.

If you use the `readDateValue()` command, then every time series in the data file is read into memory. The advantage of this method is that it is simple to select and read the time series. The disadvantage is that the individual time series cannot be identified or manipulated with time series commands using the command editors. This is not a limitation if only views and reports are used. In the future it is likely that the command dialogs will also be enabled for bulk processing. If you know the identifiers for time series (use the time series properties on the output time series list) you can manually edit time series commands to perform manipulations.

In either case, once commands have been created in the middle window of the TSTool interface, they can be saved using ***File…Save Commands File***. The commands file can then be opened later using ***File…Open Commands*** File and executed to process time series. This is particularly useful if a large number of command edits has occurred.

Although the features of TSTool have been developed primarily for water resources data, many of the views, reports and analytical tools that are available are also useful for other data. Future updates of TSTool will continue to provide more generic features suitable for all time series data.