



## Practical Techniques for Surpac Macros

### An Intermediate Course in Tcl/ScI

#### Course Outline

Unit Concepts	Activities
<b>Things you should know</b>	Using the <code>_action</code> switch in macros Variables and variable substitution Command substitution
<b>Basic user forms</b>	The different grouping constructs Creating simple forms containing fields, combo boxes, checkboxes, radio buttons and file browsers Using GUIDO switches Creating a form using all these GUIDO elements
<b>Useful TCL commands</b>	Using <code>Expr</code> and <code>ScIExpr</code> to work with numbers Using the <code>string</code> command to manipulate text strings Using the <code>file</code> and <code>glob</code> command to copy / delete files The <code>ScISelectPoint</code> function to select coordinate data Assorted exercises to use these commands
<b>Flow control in TCL</b>	The various forms of the <code>if</code> command to make decisions The <code>while</code> loop to repeat indefinitely The <code>for</code> loop to repeat a known number of iterations
<b>Working with Surpac ranges</b>	Macro exercises using branching and looping Using the various SCL range functions Create a basic macro range processing template
<b>Reading and writing text files</b>	Commands to read and write text files Exercise to read and convert external data into a string file
<b>TCL arrays</b>	Using arrays to store similar data Using <code>GuidoTables</code> and <code>GuidoScrollPanels</code> with arrays Macro exercises
<b>Creating a plot spooler application</b>	Create a plot spooler application to send multiple plot files to a printer queue

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<b>TCL Lists</b>	Using lists and the various TCL list commands
	Creating data structures with lists and arrays
	Macro exercises
<b>Reusing code with procedures</b>	Creating your own commands with procedures
	Returning information from procedures
	Passing procedure arguments by reference
	Build a library of utility procedures
<b>Creating professional forms</b>	Using panels and layout managers
	Labels and fillers
	Using tabbed panes
	Using action call backs in forms
<b>Accessing data in the graphics viewpoint</b>	Overview of data organisation in Surpac
	Using SWA handles to access data
	Overview of object commands
	Overview of point commands
<b>Building a library of useful procedures</b>	Create a library of procedures for accessing and creating point data in Surpac
	Create high level procedures to copy layers, strings and segments
<b>Using library procedures to solve problems</b>	Use your library to create a moveable plot within boundary macro
	Use your library to create an intersection/outersection macro to create a CSV file of points inside or outside a boundary
<b>A macro style writing guide</b>	Guidelines and conventions for structuring macros and formatting TCL code
<b>Compiling macros to tbc files</b>	Using the Procomp TCL compiler to create un-editable macros