28749925512 472138060 37616596136 52131896180 25056956981 25321168512 20274603468 27976738248 5616513.8 99134430102 77016053088 35852310054 121238267577 184154.80882353 9939307.8823529 35524329.666667 47395676.787879 24119696.962963 28521646.896552 2669459817 172005000453 92439903906 42685565.904762 13409798382 190249589257 82191708522 21819730.428571 3792822.9333333 19696676.806452 64146350778 11499130302 60526958.909091 22503310.786517 6810291.8877551

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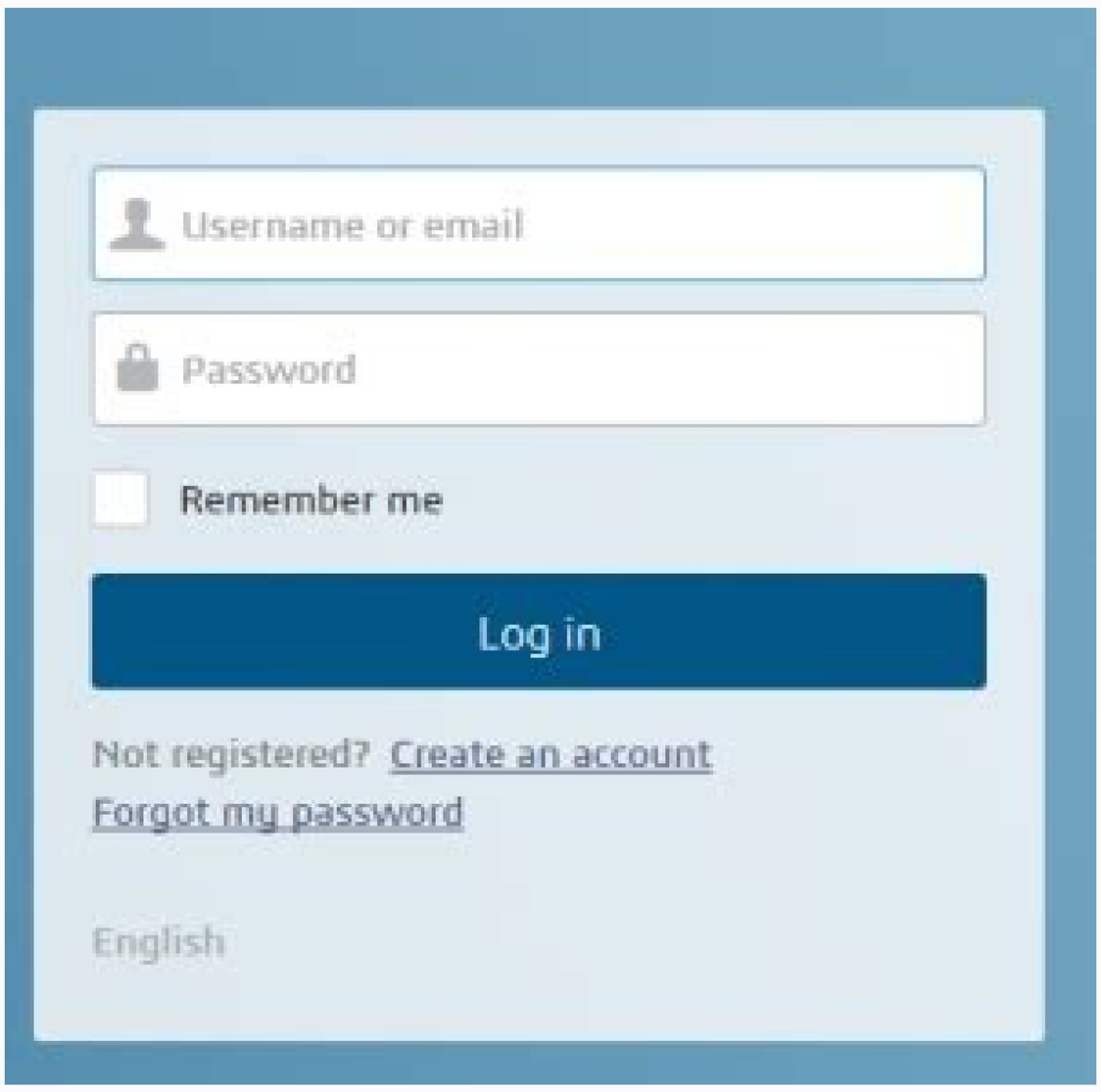

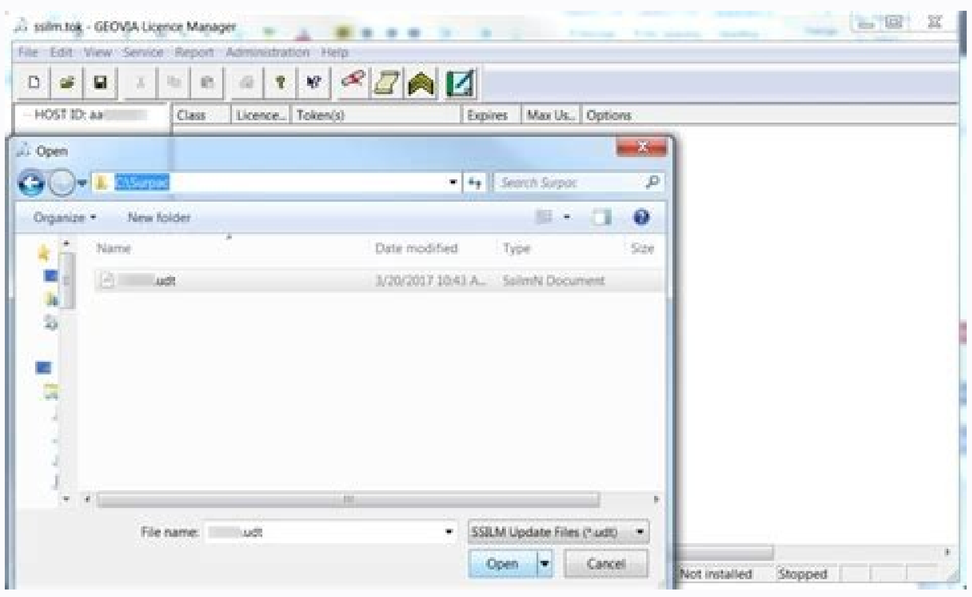

Click the Preview button again to close the Preview pane. Click the string in und_layout.str. Select Set as work directory. The second line contains the axis record. When the pane is undocked, it floats so you can move it to any part of the Surpac window. 25. Note: When you hold the CTRL key and drag a file into Graphics , the cursor is displayed with a plus sign (+) . To rotate the data, choose Planes > 2D planes mode, then click and drag in Graphics. Click Cancel. Surpac™ 6.6 Page 104 of 207 Introduction Creating data Task: Create a simple pit design 23. Double-click Without moving the mouse, click the left button twice rapidly. Many graphical operations are quicker and easier to perform using the data-centric approach. Surpac™ 6.6 Page 206 of 207 Introduction References Task: Produce a plot of a pit using autoplot References For further information on this topic and related articles, log onto Gemcom's Knowledge Base at www.gemcomsupport.com Surpac™ 6.6 Page 207 of 207 Introduction 10. Enter the information as shown to select the drawing method, colour, marker type, and text properties for displaying the four spot height strings. Description fields are named in the format D, such as D1, D2, D3. It provides a method for estimating volume, tonnage, and average grade of a 3D body from sparse drillhole data. Note: marker,d1 instructs Surpac to draw a marker for each point, using the d1 field as a label. In the Toward field, type 50. String 30005 is closed, since the first and last points are the same. Click Reset graphics . Right drag Press and hold down the right mouse button. Surpac™ 6.6 Page 66 of 207 Introduction Viewing and saving data Task: Change display style d. The Y, X, and Z values of each of the two end points of the axis are stored in the following order: Y(1), X(1), Z(1), Y(2), X(2), Z(2). Open topo1.dtm and pit_design1.dtm in Graphics. Surpac™ 6.6 Page 166 of 207 Introduction File tools Task: Colour points by sample values The D1 value for each point is displayed. Note: If the installation menu does not appear, use Windows Explorer to navigate to the DVD and double-click autorun.exe. 2. Select local, and click Apply. Surpac™ 6.6 Page 100 of 207 Introduction Creating data Task: Create a simple pit design 11. Next, you will colour the blocks by gold values. However, if the text string files are very large (more than 5 MB), it may be worth saving them as binary files to reduce the time it takes to load the data into Graphics. Files used in this tutorial are stored in the folder \demo_data\tutorials\introduction. By clicking once to highlight a field on a form, and then right-clicking, you see options to help you fill in the form. Last value Selecting this item causes the field to keep the last value regardless of the value that Surpac inserts. This typeface indicates one of the following: l l Bold l l A file name, path or URL. Open bench105.str in Graphics. Surpac™ 6.6 Page 71 of 207 Introduction Viewing and saving data Task: Determine bearing and distance between two points 4. The corridor width is equal to the towards distance plus the away distance. Click the Search tab. Block models A block model contains three dimensional spatial data. Surpac™ 6.6 Page 114 of 207 Introduction Managing data in layers Task: Create layers The SWA now contains: Surpac™ 6.6 Page 115 of 207 Introduction Managing data in layers Task: Append data to a layer with the Navigator Appending data to a layer You can append data to a layer by holding the CTRL key when dragging a file into Graphics. Surpac™ 6.6 Page 9 of 207 Introduction Introduction Mouse conventions Mouse conventions Action Description Click Quickly press and release the left mouse button without moving the mouse. Surpac™ 6.6 Page 98 of 207 Introduction Creating data Task: Create a simple pit design 4. In order for a DTM file to remain valid, the string file from which it was created must remain unchanged from the time when you created the DTM. Therefore, if you modify the string data, you must also recreate the DTM. You can open and edit them in the Surpac plotting window or send them to a plot device such as a plotter. Where the D1 value is greater than 10, the D2 value has been topcut to 10. The help for the Licence Manager is displayed. The Plotting Tutorial describes how to create complex plots. The clipped strings are displayed. Right-click anywhere in Graphics and select Connect points from the shortcut menu. In the Status bar, click the surpac button, and select Close. Geological database surpac.ddb Drillhole database (DDB) files are used to connect to relational drillhole databases. Click the surpac database icon on the Status bar and select Display drillholes. Click Apply in the Save File form. Surpac™ 6.6 Page 201 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model Note: To add a new report attribute row, right-click below the row and selectAdd. With this in mine, you can append data from different files into one layer, and create a new file. All layers are contained within the Surpac Work Area (SWA). Page 158 of 207 Introduction File tools Task: Convert section coordinates to real-world coordinates The strings in ore_sections1.str are sectional interpretations of ore zones that have been digitised from a digitising tablet. Drag the pit_design toolbar to a location where you can clearly see it. The file ore_pit_topo.swa is created. You can also use an option on the Open File form to append data to a layer. Open transformed_pit1.str in Graphics. From the Selection menu on the Tools toolbar, click Select String/Object. Surpac™ 6.6 Page 54 of 207 Introduction Planes Task: Creating planes using Quick planes 2. Choose Display > Dynamic 2D grid . Surpac™ 6.6 Page 39 of 207 Introduction Getting help Task: Find support office contact details The contact details of the regional office are displayed. A new page opens. Page 62 of 207 Introduction Viewing and saving data Task: Work with multiple viewports Four viewports with different views of the data are displayed. Open block_model.mdl in Graphics. Click Copy. Surpac™ 6.6 Page 171 of 207 Introduction File tools Task: Calculate the area of an ore zone within a pit Task: Calculate the area of an ore zone within a pit You will intersect closed, clockwise ore zone strings at a midbench elevation (105) with a closed, clockwise midbench contour of a pit design at the same elevation. Surpac™ 6.6 Page 149 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model The solid is now closed at the end segment. Legend pane This is the area where you can see the legends for data in Graphics. For example, you can import any file that has one of the following extensions: .dxf, .dwg, .dgn, .dm, .shp, .dgd. Combo box or Drop-down list Closed version of a list box with an arrow next to it. Use the scroll wheel on your mouse to zoom in to a drillhole as shown below. Surpac™ 6.6 Page 138 of 207 Introduction Triangulated surfaces Task: Create a DTM — file-based method 7. 13. Note: Triangulation uses segment numbers. Note: To see all of the steps performed in this task, run 06b_block_model.tcl. Hold the CTRL key, and click points 11 and 14. Surpac™ 6.6 Page 88 of 207 Introduction Viewing and saving data Task: Use string/object mode to delete and clean strings 19. Task: Save a file 1. Choose Display > 2D Grid. Introduction Viewing and saving data Task: Use orbit mode to rotate data Note: To see all of the steps performed in this task, run 02e_saving_data.tcl. Open pit1.str in Graphics. Click OK to finish the colour selection. As part of this process, you will create a new layer where the data is stored. Label Text attached to any option, box, button, or to any other element of a window or form. Task: Clear the message window 1. In the preceding example, if point 105 is selected first, then the resulting string number will be 1. Open solid_model.dtm in Graphics. Click and hold down the left mouse button at point 7, then drag to point 8 and release. For this row... Select this marker type... 1 2 3 4 g. Note: You might need to click and drag the model to see the colours. Next, you use the select tool to select and renumber all segments of string 2 to string 1. In the following example, the plane thickness is a + b. From the shortcut menu, choose Profiles > tutorials. 32. Surpac™ 6.6 Page 175 of 207 Introduction File tools Task: Clip ore blocks inside a pit 5. For example, if you select Last value if blank for the Layer field of the Open File form, the text in the Layer field does not change, but if you select Last value if blank for the Location field, the last file name used is shown. Help Context-sensitive help button. Surpac™ 6.6 Page 203 of 207 Introduction More Surpac functions Task: Produce a plot of a pit using autoplot Plotting with autoplot There are two ways to create plots in Surpac: l l to create simple plots from data displayed in graphics, use Autoplot to create complex plots from files on disk: l use the Plotting > Entity submenu to create or modify entity definitions l use the Plotting > Map submenu to create or modify map definitions l use the Plotting > Process submenu to create the final plot This section describes Autoplot only. When a database is open, the name of the database is displayed on the Status bar at the bottom of the Surpac window. Surpac™ 6.6 Page 179 of 207 Introduction Advanced interface operations Task: Create a customised menu bar The Modify Menus and Toolbars form is displayed. On the Tools toolbar , click the Box selection icon . This means click the File menu, move the pointer over the Open command, and select Block model on the submenu. Home » professional » Gemcom GEMS 6.5 + New Crack September 2, 2020 professional Gemcom GEMS is software in the field of group geology and mining planning. GEMS software provides a solution for professional mining in underground exploration, modeling, mine design, long-term planning and production scheduling. With GEMS 'unique central database, geologists and engineers can access organized and updated geological and mining data. The Status bar in the lower-left corner of the Surpac window shows you the current setting (2D or 3D). three-dimensional solid models (3DMs): A solid model is a set of triangles which represents a three-dimensional shape, such as an ore zone or an underground mine design. If you store planes temporarily, when you exit Surpac, the planes are removed from the planes folders. Open surpac.ddb (a geological database) in Graphics. Then you select the Some non-graphical operations can only be performed using the function-centric approach.. Type the words DTM Maths, and click Search. A maximised copy of the current view on a tab called View 2 is displayed. Start Surpac. Choose Customise > Customise menus/toolbars. Surpac™ 6.6 Page 82 of 207 Introduction Viewing and saving data Task: Use select mode to break, join, and renumber segments 7. Open ore_solid1.dtm in Graphics. This task demonstrates the impact of using strings as breaklines. Surpac™ 6.6 Page 198 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model 13. Right-click anywhere in Graphics and choose Select strings from the shortcut menu. The Y field of ore_sections1.str represents the real-world elevation, or Z value. If a file has this icon next to it in the Navigator, you can open the file in Surpac. Note: To see all of the steps performed in this task, run 05d_apply_boundary.tcl. To install a 64-bit version of Surpac: a. Choose File > Save > Graphics workspace. Note: To fill in the Command box, you have to click the Ellipsis button and navigate to a TCL file. After you type each letter, the help system selects the index entry that is the closest match. Click Select Point/Triangle. Task: View segment properties 1. For example, a closed segment representing an ore zone could have the gold grade, silver grade, and specific gravity stored in separate description fields. If the information is stored in that order, they could be assigned as follows: D1: gold grade D2: silver grade D3: specific gravity Data numbering Strings, segments, and points are identified by unique numbers. To restore a pane that you have closed, select View > Dockable windows, and click the pane that you want to restore. At the bottom of the menu, click the Select tool . Without written permission, you may not sell, reproduce, store in a retrieval system, or transmit any part of this documentation. The log file is a report containing information about the DTM. Surpac™ 6.6 Page 145 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model 4. Using the Navigator, you can manage your files and directories by creating new folders, cutting, copying, pasting, and deleting files and folders. You can use ranges to refer to the ID of filenames. For example, you can refer to the files: geo130.str, geo140.str, geo150.str, geo160.str, geo170.str using the following syntax: Location: geo ID: 130,170,10 String directions When you view closed strings in the XY plane, the points have an order that is either clockwise or anticlockwise. Note: Manually editing string files is not recommended. The following image shows the Main menu bar. In the File Filter in the Navigator, select Surpac Files (.mdl,.dtm,.str). Right-click in the area next to the menu titles and select Toolbars. Note: Make sure you select the Lock X/Y scale check box. Surpac™ 6.6 Page 87 of 207 Introduction Viewing and saving data Task: Use select mode to break, join, and renumber segments 17. It is a text file that tells Surpac which tables and fields to read from and write to in the client database. Press ENTER. This creates a new button on the Pit design toolbar. For example, you can select data in a string file, and right-click to display functions that Surpac can perform on the data. The Tools toolbar now displays Box selection mode: . Point e shows where the drillhole trace exits the plane. Choose Display > Dynamic 2D grid. The installation menu appears. Data ranges You can use a range to refer to groups of data numbers, such as strings, segments, and points. Surpac™ 6.6 Page 58 of 207 Introduction Viewing and saving data Task: Work with multiple viewports Viewing and saving data Multiple viewports You can view data in different ways using multiple viewports. String 8 consists of two segments. Task: Identifying the active plane using the Status bar 1. Point numbers are displayed. l Click the button at the top right corner of the Surpac window. The previous plane is displayed. You can modify the projection distance of a plane. Note: Press TAB to create a new row in the classification table. Note: surpac.ddb connects to the MS Access database surpac.mdb. Press F12. 20. Note: You can find a complete list of aliases in the files SSI_ETC:short.ssi and SSI_ETC:Surpac.mst. Open int_bench105.str in Graphics. The output files are in DWF format. Surpac™ 6.6 Page 192 of 207 Introduction More Surpac functions Task: Open a database, display drill hole data, and create sections 6. The Surpac interface consists of 10 different areas: 1. Select the menus to place in the menu bar: a. Note: When you apply a boundary string to spot heights, only those points that lie inside or on the boundary are saved. Open block_model.mdl (a block model) in Graphics. Log in to the GEOVIA support site. Surpac™ 6.6 Page 79 of 207 Introduction Viewing and saving data Task: Use segment/trisolation mode to reverse segments 2. on the right side of a menu item indicates that you can select it to display a To see the list of menu bars and toolbars you can view, right-click in empty space on the menu bar or in the toolbar region. The renumbered segment is displayed. Survey database ug_ mine.sdb Survey database (SDB) files are used to connect to relational survey databases. In this task you will change the display style for the points to make it easier to see where the concentrations of arsenic are highest. graphics-based method: In this method, you must display the DTMs in Graphics. Selecting this item allows you to enter a value to use for this field every time you use the form. However, you do not have to view the data to run any of the File tools functions. To save the line of intersection, use File > Save> string/DTM. Surpac™ 6.6 Page 52 of 207 Introduction Planes Task: Pinning the Planes panel to Surpac The Planes panel is displayed. Choose Plotting > Autoplot. Click Yes to overwrite the files. In some situations, Surpac might not work correctly if you are using a file that has a space in the file name. The boundary string is displayed in its own Graphics layer. Surpac™ 6.6 Page 146 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model 8. l The rotation is displayed in DDD.MMSS format. On the Select tool drop-down, choose Select Segment/Trisolation. Surpac™ 6.6 Page 96 of 207 Introduction Viewing and saving data Task: Move data in three dimensions 7. Task: Convert section coordinates to real-world coordinates You will use String Maths to convert a string file in which the Y field represents the real-world Z value, and the Z field represents the real-world Y value. A breakline string is a string that represents physical features you can see in the real world, such as a crest of a pit, a fault in a geological model, or a contour in a pit. Spot height strings contain random points that, when connected by a string line, do not represent any physical feature. Open surpac.ddb in Graphics. Calculating cut and fill volume using DTM surfaces Task: Calculate cut and fill volumes between two DTMs One of the most common uses of DTMs is to calculate volumes. Click the topic that is ranked 1 in the list, String Maths. You would want to do this if you have sample data that you want to use for a resource estimation in which you do not want to allow extreme data values to have too much influence on the estimation. Note: If you want to see all of the steps performed in this task, run 02b_view_point_ properties.tcl. When you substitute the text for the variable, do not include the brackets. Choose Block model > Block model > Report. Surpac™ 6.6 Page 106 of 207 Introduction Creating data Task: Create a simple pit design 34. Choose Display > Point > Markers. Surpac™ 6.6 Page 159 of 207 Introduction File tools Task: Adjust coordinates 10. Surpac™ 6.6 Page 183 of 207 Introduction Advanced interface operations Task: Creating a custom button to put on a toolbar 7. This is described in more detail in the chapter Managing Data in Layers. Some examples are installation directories, dates, names and passwords. 7400N is now the active plane. Selection modes There are several ways of selecting data: l l l l l Select mode Point/Triangle mode Segment/Trisolation mode String/Object mode Box selection When you use any of these section tools, Surpac operates in data-centric mode. Where is the directory in which the Surpac shared files were installed. When you view data in 2D mode, a grid with the same position as the active plane is displayed. In Surpac, from the Help menu, select Table of contents. The help text changes as you tab to different fields in the form. Surpac™ 6.6 Page 108 of 207 Introduction Creating data Task: Create a simple pit design 41. Right-click the right viewport, and choose Viewport > Split horizontally. For example: Open pit1.str into Graphics. The comma (,) is used for a range that includes a start, an end, and, optionally, an increment. The profiles are available by right-clicking in the empty space and selecting from the available profiles. Minimum Recommended Windows Microsoft Windows® 32-bit Professional, Enterprise, Ultimate Microsoft Windows® 64-bit Professional, Enterprise, Ultimate Memory 4GB CPU i5 2.3Ghz quad core i7/Xeon 2.2Ghz + quad core HDD 1 x 500GB 7200RPM SATAII 500GB 2700RPM SATA or SAS 10,000RPM (data) + SDD (for Windows and Applications) Graphics card Nvidia NVS 420/Q1000m Nvidia Quadro Q2000/m or Q4000/m 8GB (3.xGB max for Surpac 32-bit process) Note: 8GB allows 3.2+ Windows without paging. License Surpac using a token number and a sentinel 1. Click string 30008 as shown. In the lower left corner, click the Table of Contents tab. Last value if blank Selecting this command causes the field to keep the last value you entered when the application does not supply a value. Features and facilities of Gemcom GEMS: Simple information flow, access to central data, increase compatibility, improve collaboration, provide information when needed to make decisions quickly Microsoft Technology Standard Industry integrates with existing technology infrastructure and scalability assurance system Import block model projects from external sources Work on tasks such as estimating resources in one package and presenting them to another user Reduce workflow steps with the ability to select multiple profiles at the same time Working with large datasets and using more than 100 profiles with special "integration" and reporting Advanced ability to import Optech 3D (.xyz files) and mesh files Extensive ability to import and export Surpac string files Import the Surpac digital terrain model file as surfaces or solids Improved sorting capability in generating GEMS scheduling for more efficient scheduling Maintaining a database of geological data Statistical analysis of geological information Design and planning of mining Construction of HIA model real function according to surveying survey Creation and maintenance of mine and graphic documents Installation guide See the Readme.txt file. Task: Use segment/trisolation mode to reverse segments 1. Use the scroll wheel to zoom out, then click and drag with the left mouse button in Graphics to move the plot outline. Choose Display > Point > Attributes. Naming conventions The objects you create in Surpac are numbered by a system

similar to that of string and string segment numbers. Surpac™ 6.6 Page 45 of 207 Introduction Strings Task: View string data The order of points for string 1 is clockwise in the XY plane. Open pit_design1.dtm in Graphics. The Move tool After you select data, you can use the Move Tool to move it: l l l constrained along an axis constrained in a plane unconstrained Task: Move data along an axis 1. Surpac™ 6.6 Page 49 of 207 Introduction Planes 2D mode 2D mode In 2D mode, all data is projected onto a single active plane; Vertical, Inclined, or Plan. Viewing planes can be useful for a number of tasks. Click and hold down the left mouse button at point 9, then drag to point 10 and release. Task: Change selection modes 1. Repeat steps 4 to 12 for other locations, until you get the final result is as displayed below. The Tools toolbar now displays Orbit view mode 11. l l l l l l Surpac™ 6.6 The first line is known as the header record, and contains these items: file name, date modified, purpose (which is empty in this example), styles file. topo2.dxf styles.ssi Plugins allow you to import files from other software applications directly into Surpac. For example: requires you to substitute a password in place of ''. Task: View point properties The Point properties function displays point attribute information including string, segment, and point numbers, y, x, z coordinates, and description fields. Drag and drop With the pointer over the object, press and hold down the left mouse button to select the object. The boxes on the form where you enter information are known as fields. You could create a toolbar that has only the functions that you need by taking a copy of the Digitise toolbar, removing the functions you don't use and adding the New midpoint function. Insert the DVD into your computer's DVD drive. Click Zoom to data extents . String 30003 in soil1.str is the only spot height string. Each viewport now displays the same view of the same data. In the Legend pane, click on the "+" sign next to Strings under the file samp_classified.str. Open map1.str in Graphics. Right-click in the empty space at the top of the Surpac interface. To install a 32-bit version of Surpac, click the edition you want to install. Surpac™ 6.6 Page 17 of 207 Introduction Getting started Task: License Surpac 4. Next, you create a report of the volume, tonnes, and average gold grade. Tip: An alternative method to show the Save File form is to click the icon Surpac™ 6.6 Page 75 of 207 in the toolbar. Forms Forms contain elements that you will use to provide information to Surpac: Surpac™ 6.6 Page 10 of 207 Introduction Introduction Forms Element Description 1. From the Selection menu on the Tools toolbar, click Select Segment/Trisolation. From the Profiles menu, click Save. Surpac™ 6.6 Page 74 of 207 Introduction Viewing and saving data Task: Save a file 4. Open samp_classified1.str in Graphics. Information about your data is not recorded. 35. Profiles allow you easy access to all of your customisations. The string file contours and the DTM of the topography are displayed. Properties pane This is the area where you see: l l Surpac™ 6.6 the properties of your file data when the Navigator is active information about data loaded in Graphics when Surpac is in select mode and you have data selected Page 30 of 207 Introduction The Surpac interface Task: View changes to the Status bar Layers pane This is the area where you manage your data in layers. Before you have displayed any data in Graphics, the SWA contains one layer, called the "main graphics layer". Notice that where the D1 value is less than 10, the D2 value is equal to the D1 value. The Tools toolbar now displays the Orbit view mode Surpac™ 6.6 Page 77 of 207 . c. Choose File > Open > String/DTM file. Click at a location between two points on the segment that you will renumber. The segments are displayed. In the Start in field on the Shortcut tab, enter \demo_data\tutorials\introduction where is the folder where the Surpac shared files are installed. String 1 is closed, because the first point and the last point are the same. The block model displayed in Graphics. Engineers use planes to view horizontal sections of a block model while creating a pit design. When you use a data-centric approach, you select the data, by opening it and using the selection tools in Graphics, and then select the function. Surpac™ 6.6 Page 22 of 207 Introduction Getting started Task: Modify the Surpac icon so that the work directory is set automatically Windows 7 6. Surpac™ 6.6 Page 172 of 207 Introduction File tools Task: Calculate the area of an ore zone within a pit 7. Task: Create layers 1. From the Selection menu on the Tools toolbar, click Select Point/Triangle. Select Request a licence from the GEOVIA Support web site. Open pit_design1.dtm and topo1.dtm in Graphics. Open high_grade.str in Graphics. 39. You would adjust the coordinates when there are two coordinate systems that are used for a string file or when you need to correct an error made in the coordinate values when the data was created. Surpac automatically assigns segment numbers and point numbers. A menu option, tab, button, check box, list, option button, text box, icon, field, or area of the user interface. , click the Orbit tool . 11. A plane has projection distances on each side: l l toward the view plane away from the view plane The orientation of the plane determines which projection distance is towards and which is away. Click the edition you want to install. 30. Click the check box in the lower left part of the form, and in the Filename box, type ssi_ styles:marker.ssi. Surpac™ 6.6 Page 94 of 207 Introduction Viewing and saving data Task: Move data in three dimensions 7. Next, you will delete some points to make the outline more convex. Surpac™ 6.6 Page 85 of 207 Introduction Viewing and saving data Task: Use select mode to break, join, and renumber segments The points are joined. Select Clear Window . Note: The file kbb135.str contains strings 1,2,3,4, and 5. The new segment directions are displayed in the message window. Surpac™ 6.6 Page 136 of 207 Introduction Triangulated surfaces Task: Create a DTM — file-based method 3. Usually, Surpac displays, selects, and reports data that is inside the projection distance of the active plane. The solid is not closed. Because the plane you have created is saved, it is listed on the Planes panel. Surpac™ 6.6 Page 33 of 207 Introduction Getting help Task: Access online help from a form Online help Online help contains more detailed information than field help and form help. Click in Graphics to create points 1, 2, and 3 as shown. This is usually installed from a DVD, but you can also download the software from the web site. Surpac™ 6.6 Page 113 of 207 Introduction Managing data in layers Task: Create layers 11. Click the Save icon on the toolbar 10. l Shift Y is the difference between Y1 (old) and Y1 (new) as entered on the first form. The table of contents is displayed on the left side of the screen. The Planes panel is pinned to the interface, and the pin icon is oriented down. Close the form help, and click Cancel on the Open File form. Note: This step is optional. Click inside the yellow square at the intersection of the three axes and move the string as shown. Choose File tools > String maths. Press F11. In this way, a Surpac string number is the same as a CAD package "layer". 9. Here are some examples: Surpac™ 6.6 Page 42 of 207 Introduction Strings Task: Find support office contact details Data values Range Description 12345678 1,8 from 1 to 8, at an increment of 1 (implied) 1357 1,7,2 from 1 to 7, at an increment of 2 2000 2200 2400 2000,2400,200 from 2000 to 2400, at an increment of 200 16 1;6 1 and 6 269 2;6;9 2 and 6 and 9 234569 2,6;9 from 2 to 6 at an increment of 1 (implied) and 9 25 50 60 70 80 90 25;50,90,10 25 and from 50 to 90 at an increment of 10 3 6 9 12 15 20 30 3,15,3;20;30 from 3 to 15, at an increment of 3 and 20 and 30 5 10 15 20 40 50 60 5,20,5;40,60,10 from 5 to 20, at an increment of 5 and from 40 to 60, at an increment of 10 String file names Surpac string file names have the following components: Component Description Required? Right-click in Graphics, and choose Viewport > Split vertically. Union Joining two strings together to represent the total area of both strings, for example to represent the shape which will remain after two intersecting pits are excavated. The semicolon (;) is used to identify unique values, or to separate multiple ranges. Open con135.strin Graphics. Choose Planes > Quick planes. The styles are now stored in the file marker.ssi in the styles directory. From the Selection menu on the Tools toolbar, click Select String/Object 2. Choose Display > Point > Numbers. Surpac™ 6.6 Page 21 of 207 Introduction Getting started Task: Exit Surpac Exiting Surpac Task: Exit Surpac Exit Surpac, using either of these two methods: l Choose File > Exit. This is how Surpac worked in previous versions. Select the Tools toolbar. Surpac™ 6.6 Page 13 of 207 Introduction Surpac concepts Data-centric For example, when you right-click a file, the shortcut menu is displayed. Task: View a solid model 1. Surpac™ 6.6 Page 117 of 207 Introduction Managing data in layers Task: Append data to a layer with the open file command Task: Append data to a layer with the open file command 1. DTM l pit1.dtm l A surface is a set of triangles that represent a surface such as topography or a pit design. Open und1.str in Graphics. You can also display the data with different colours or line thicknesses. The Solids Repair panel is displayed. Type CS (for Clear Screen) directly into the function chooser. The coordinates shown in the status area are updated as you move the mouse. From the Selection menu on the Tools toolbar, click Select. Surpac™ 6.6 Page 26 of 207 Introduction The Surpac interface Task: Open a file from the Navigator 3. Task: Adjust coordinates You will use String Maths to adjust the easting, or X value of all data in a string file. You can view the panel by clicking it, and you can unpin the panel to change its location. The output is the same result as the file-based function, but it does not automatically save the new string file. By access Form help, you can get helpful information about the entire form. Toolbars A toolbar is a collection of icons that have related functions. Click and drag in the Preview pane to rotate the data, as shown. Press ESC to finish expanding. Note: If you want to see all of the steps performed in this task, run 02a_change_display_ styles.tcl. Surpac™ 6.6 Page 162 of 207 Introduction File tools Task: Apply a boundary string to a soil sampling file 12. Click the X button in the upper right corner of the help window to close it. Task: Find support office contact details 1. Right-click in an empty area near the toolbars. Choose Display > 3D Grid. If you do not have a valid token number or licence file you can use the self-service licensing function when you start Surpac. 37. Enter a value of 1 for the String range, and click Apply. A suitable computer with a DVD drive. The Vertical Plane Properties form appears. Click pit1.str so that it is highlighted Navigator. Choose Inquire > Report layer extents to show the coordinate extents in the message window. Task: Select the geology_database profile 1. Surpac™ 6.6 Page 155 of 207 Introduction Triangulated surfaces Task: Calculate a volume for a solid model 6. The easting of pit_new1.str is 10,000 meters greater than pit_design1.str. Note: For more information on choosing text sizes, see the Online help. Note: To see all of the steps performed in this task, run 02d_bearing_and_distance.tcl. Enter the information as shown, and click Apply. Task: Viewing and changing plane properties 1. Click Next. Next, you repeat the procedure, but using the Strings to act as breaklines option. The segment properties are displayed in the Properties pane. Working files can be saved locally or to a network location. Surpac™ 6.6 Page 15 of 207 Introduction Getting started Task: Start Surpac Note: If Microsoft .NET Framework 4 or Direct X 9.0c are not installed on your computer, the installer for the missing component appears at the end of the Surpac installation. Task: Access online help from a form 1. You can also create your own customised menu bars or toolbars to group together the functions that you use frequently, or to group together all the functions that you need to use to do a specific task. Click the foresight point. Each menu contains commands (or menu items). Choose Create > Digitise > New point. The plane name has changed to 7400N. However, in Surpac, a layer is an area in memory that contains data displayed in Graphics. Layers can contain strings from one or more string files. Task: Open a database, display drill hole data, and create sections 1. Together, the two projection distances determine the total thickness of the plane corridor. Surpac™ 6.6 Page 78 of 207 Introduction Viewing and saving data Task: Use segment/trisolation mode to reverse segments The point is deleted. Open topo1.str in Graphics. When the file was created, the following values were chosen: D1 = gold (g/t), D2 = silver (g/t), and D3 = SG. String 1 outlines an area of low grade ore with: l a gold value of 1.23 grams/tonne. 3. If the box already contains text, you can select that text and edit it. This is because the function uses graphics layers to determine inputs and outputs. Choose Edit > String > Renumber. Surpac™ 6.6 Page 167 of 207 Introduction File tools 6. Click and drag in Graphics to rotate the data. Surpac™ 6.6 Page 168 of 207 Introduction File tools Task: Transform data to a different coordinate system The points have been classified and are displayed according to the colour of each string. . Right-click the empty space beside the toolbars at the top of the Surpac window. f. Open ore_pit_topo.swa in Graphics. Hold the CTRL key, then drag pit1.str into Graphics. Rotate Use your finger to make the wheel button roll. Gemcom Software International Inc., Gemcom, the Gemcom logo, combinations thereof, and GEMS, Surpac, Minex, MineSched, Whittle, PCBC, Gemcom InSite, and Gemcom Hub are trademarks of Gemcom Software International Inc. The group name is the name of the folder in which the planes are stored. Surpac™ 6.6 Page 69 of 207 Introduction Viewing and saving data Task: View point properties 8. Click Reset graphics Open bench105.str in Graphics. You then choose the operation to be performed, such as Open. To restore the pane to its original position, click again on the Toggle floating button or right-click on the top part of the pane and click Floating. Surpac™ 6.6 Page 160 of 207 Introduction File tools Task: Topcut high grade samples 7. This feature only collects details of the functions you use. Task: Use string/object mode to delete and clean strings 1. Surpac™ 6.6 Page 18 of 207 Introduction Getting started Task: License Surpac The Update licence form is displayed. The report is displayed. Surpac™ 6.6 Page 91 of 207 Introduction Viewing and saving data Task: Move data along an axis 8. Surpac™ 6.6 Page 109 of 207 Introduction Managing data in layers Task: Create layers Managing data in layers Many computer-aided design (CAD) packages use the term "layer" to define a set of information contained within one file. Click the block_model button, and select Close. Afterward, you will display the clipped strings and the area of each segment. More detailed training information is available from within the software and from your local support office. Surpac tutorials are available through the tutorials profile. Function-centric When you run a function first, and then specify the data you want to use, you are performing a function-centric operation. Note: Old points are the coordinates of the two points in the existing coordinate system. From the Tools toolbar, 6. Radio button or Option button Round button you can use to select one of a group of mutually exclusive options. Surpac™ 6.6 Page 27 of 207 Introduction The Surpac interface Task: Open a file from the Navigator bench105.str is displayed. Follow the instructions within the form to request a licence from the GEOVIA Support web site, or to read the licence file. Move the pointer near the end segment, and click to select one point. The solid is displayed. For such permission, or to obtain extra copies please contact your local Gemcom office, or visit www.gemcomsoftware.com. To participate in the product development program, leave the I would like to participate and Provide contact information check boxes selected, and click Next. Strongly emphasized text. Choose Block Model > Attributes > View attributes for one block. The Set Drawing Styles form is displayed. The file pit_and_buildings.str now contains string 2 from pit1.str and strings 2, 12, and 52 from map1.str. This search returns all the help topics that contain both the words "DTM" and "Maths". The Planes panel remains to the right of Graphics regardless of the position of the cursor. The Layers pane shows the two layers: The SWA now contains: 3. Note: This time the Strings to act as break lines check box is selected. In the Legend, double-click string 1. Task: Restoring the default profile 1. Surpac addresses all the requirements of geologists, surveyors, and mining engineers in the resource sector and is flexible enough to be suitable for every commodity, orebody, and mining method. This search returns all the help topics that contain exact phrase "String Maths". Surpac™ 6.6 Page 163 of 207 Introduction File tools Task: Apply a boundary string to a soil sampling file Strings 1 to 99 are labelled and displayed in Graphics. 7400N is the active plane. Its multilingual capabilities allow global companies to support a common solution across their operations. Task: Topcut high grade samples You will use String Maths to set values in a string file that are above a maximum value equal to a given value. Page 173 of 207 Introduction File tools Task: Calculate the area of an ore zone within a pit 9. Right-click in the empty space in the menu bar or toolbar region. Surpac™ 6.6 Page 177 of 207 Introduction Advanced interface operations Task: Clip ore blocks inside a pit Advanced interface operations Menu bars, menus, and commands If you do not understand the meaning of the terms menu bar, menu, and command, you could easily become confused when you try to create a customised menu bar. It is recommended that you back up both your data and user customised files regularly. Hold the CTRL key, and click the points as shown. Keyboard conventions Key Combination + Meaning Press and hold down the first key, then press the second key. Surpac™ 6.6 Page 174 of 207 Introduction File tools Task: Clip ore blocks inside a pit Note: To see all of the steps performed in this task, run 05g_intersect_polygons.tcl. Hold the ALT key, then click and drag in Graphics to rotate the data to expose the other end of the object. Task: Colour points by sample values You will use Classify strings by numbers to display sample values of points in different colours. When you click Toggle auto-hide, the pane is minimised and attached to the side of the Surpac window. In the lower left corner, click the Index tab. Type pit_design and press ENTER. Click in the top right viewport. Tab Labelled group of options used for many similar kinds of settings. Check box Square box that you select or clear to turn an option on or off. Tip: You can create multiple Surpac desktop icons with different properties. 28. Surpac™ 6.6 Page 178 of 207 Introduction Advanced interface operations Task: Create a customised menu bar The following image indicates that the Blast design and the Main Menu menu bars are displayed. Select each segment. The pit extends past the natural topography. Clicking the arrow opens the list. On the Tools toolbar, click the Select tool . Surpac™ 6.6 Page 20 of 207 Introduction Getting started Task: Set the work directory Setting the work directory A work directory is the default directory for saving Surpac files. Look at the Status bar. Save the tokens.ssi file in the Surpac SSI_ETC: directory. Surpac™ 6.6 Page 48 of 207 Introduction Planes Task: View string data in a text editor Planes Planes definitions are "corridors" in space used for displaying data. Enter the following information, and click Apply. , Surpac displays a form. Surpac™ 6.6 Page 204 of 207 Introduction More Surpac functions Task: Produce a plot of a pit using autoplot 6. Choose File tools > Transformations > 2D transformation of string file. Creating and validating a solid model Task: Create and validate a solid model 1. After reviewing or updating the licence details, click Apply. Click and drag the X axis (red), as shown: Before click the Move Tool . At the bottom of the shortcut menu, click the Orbit view tool. You have restored the layers in the Layers pane, as well as the lighting settings and the view direction. On the Select tool drop-down, choose Select Point/Triangle. 22. A default set of colours are displayed. Surpac™ 6.6 Page 35 of 207 Introduction Getting help Task: Search the online help The help for Block Models is displayed. Note: You can use any of the four colour tabs shown below to select the colour of the markers and the d1 field labels. Surpac™ 6.6 Page 65 of 207 Introduction Viewing and saving data Task: Change display style 5. apply a topcut to sample values. To view the tutorials or run the macros for the tutorials, you must first click the menu item to change the directory to your chosen tutorial. Click on a point in Graphics. Task: Create a DTM — graphics-based method 1. Surpac™ 6.6 Page 63 of 207 Introduction Viewing and saving data Task: Change display style Attributes and styles files Styles files control how strings, digital terrain models and solid models (DTM files) are displayed. Surpac™ 6.6 Menus Toolbars Navigator Preview pane Legend pane Graphics Properties pane Layers pane Status bar Message window Page 24 of 207 Introduction The Surpac interface Task: Open a file using the menu Menus The menus organise the functions into groups according to the modules in Surpac, such as the Block Model module. Surpac™ 6.6 Page 134 of 207 Introduction Triangulated surfaces Task: Create a DTM — graphics-based method Creating a DTM surface It is important to understand how a string file relates to a DTM. Click at a location between the two points on the segment to be deleted, as shown. Choose File > Save > string/DTM file. String 30008 is a spot height string with the survey station name in the D1 field. Task: Work with multiple viewports 1. Geologists use planes to view vertical crosssections of drillhole and surface topography data. Orbit mode Orbit mode is the default Graphics mode, where you can rotate data in three dimensions. When you are using the orbit tool, Surpac operates in function-centric mode. Choose File > Licencing > Change/Inspect licence. The selected block is highlighted, and the attribute values for the block are displayed. Click Download. Note: The drill holes and gold values are displayed. Choose Block Model > Display > Edge and face visibility. The Quick Planes form appears. Constant... Choose View > Zoom > In, or use the scroll wheel on your mouse to zoom in. Task: Clip ore blocks inside a pit You will intersect closed, clockwise block model strings at a midbench elevation (135) with a closed, clockwise midbench contour of a pit design at the same elevation. You can combine data from different files by appending them into one layer, and then saving the file. Surpac™ 6.6 Page 72 of 207 Introduction Viewing and saving data Task: Determine bearing and distance between two points 4. Surpac™ 6.6 Page 89 of 207 Introduction Viewing and saving data Task: Use string/object mode to delete and clean strings 3. You need to click Apply on any forms presented. Surpac™ 6.6 Page 190 of 207 Introduction Advanced interface operations Task: Run two functions from the Function Chooser In the example below, the Tool properties pane was closed, so it is not selected as a dockable window. Task: Create a DTM — file-based method You will now create a DTM from the string file pit_design1.str using the file-based DTM creation option. Choose Properties. Hold the CTRL key, and click the segments as shown. Open con135.str in Graphics. The Update Licence Token form is displayed. 21. From the shortcut menu, select Delete. Document conventions Typographical conventions Some text in this manual has special formatting to identify it as a particular element of information. This version was installed with a new crack on March 17, 1995 in 64-bit Windows 10 and was successfully cracked. Surpac™ 6.6 Page 14 of 207 Introduction Getting started Task: Install Surpac Getting started Installing Surpac from a DVD Task: Install Surpac 1. Surpac™ 6.6 Page 103 of 207 Introduction Creating data Task: Create a simple pit design 21. Right-click Press and release the right mouse button without moving the mouse. The lines connecting the points in the spot height string in graphics do not infer a physical line. Surpac™ 6.6 Page 37 of 207 Introduction Getting help Task: Access the tutorials profile Task: Access the tutorials profile 1. The SWA now contains: 3. Surpac™ 6.6 Page 84 of 207 Introduction Viewing and saving data Task: Use select mode to break, join, and renumber segments 11. Surpac™ 6.6 Page 53 of 207 Introduction Planes Task: Identifying the active plane using the Status bar 3. Plane 7500N is displayed with a viewing corridor that contains the data 50 units away from the view, and 100 units towards the view. Surpac™ 6.6 Page 195 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model 4. Surpac™ 6.6 Page 164 of 207 Introduction File tools Task: Apply a boundary string to a soil sampling file 9. When creating a DTM, strings identified as spot heights are interpreted differently to strings identified as breaklines. Click the block_model icon, and select New constraint. This creates a new menu, called Toolbar1. Surpac™ 6.6 Page 31 of 207 Introduction Getting help Task: Access field help and form help Getting help You can use the following resources to help you solve a problem, understand how a function works, or enter data into a form: l l l l l field help and form help online help tutorials support software request Field help and form help When you need to enter information, Surpac will display a form. Every time you save a string file, the associated styles file is also saved so that when the string file is next opened, it will automatically use the correct styles. Type marker,d1 in the Drawing Method cell. On the Tools toolbar, click the Move Tool icon . Choose Help > Table of Contents. Check that the Sentinel Service Driver is set to be installed on your local hard drive, and click Next. Click the Location field, and right-click to display the shortcut menu. In the verification form, click Yes. Use the right mouse button to zoom in and out based on the centre of the image. The waste dump layer is now displayed in black. When the DTM is created, a log file opens in the default text editor. Clip data by a boundary You can use Apply boundary string to remove data inside or outside a closed, clockwise boundary string. If you have not set an active plane, then the view is Plan, and the elevation is zero. Choose Display > Strings > With string numbers. Surpac™ 6.6 Page 193 of 207 Introduction More Surpac functions Task: Open a database, display drill hole data, and create sections The drillholes on section 7280 North are displayed. Click anywhere in Graphics to select the segment for expanding. 6. Buttons have text labels to indicate their purpose. Note: To see all of the steps performed in this task, run 06c_plotting_with_autoplot.tcl. Surpac™ 6.6 Page 182 of 207 Introduction Advanced interface operations Task: Display toolbars and create a customised toolbar 1. Click the button at the lower left corner of the form. Surpac™ 6.6 Page 194 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model 11. The values in the D2 field represent the "topcut" values, and are displayed to the left of the point in Graphics. You will clip the data in soil1.str by string 1 in bdy100.str. You can then either view the tutorial document as a PDF or run the macros that appear in the tutorial. 29. or its wholly-owned subsidiaries. Surpac™ 6.6 Page 25 of 207 Introduction The Surpac interface Task: Use the Reset graphics button from the toolbar The file pit1.str is displayed. Next, use String maths to convert this data to real-world coordinates by swapping the Y and Z values. Surveyors use planes to create cross-sections of areas which have been mined to display the cut for a specified period. The login page for GEOVIAsupport.com opens 6. Task: Display and view data in Graphics 1. Note: To see all of the steps performed in this task, run 03b_create_dtm_file_based.tcl. In the Towards field , type 100, and click out of the field. Task: Creating planes using Quick planes 1. The two files are displayed in Graphics. Description fields are named according to the order they appear. The software delivers efficiency and accuracy through ease-of-use, powerful 3D graphics, and workflow automation that can be aligned to company-specific processes and data flows. Click and drag the red and blue corner to constrain the movement to the XZ plane. The file opens in a text editor. A copy of Surpac v6.6 for installation. Click Next to accept the default directory, or click Change to select and installation directry. Surpac™ 6.6 Page 118 of 207 Introduction Managing data in layers Task: Append data to a layer with the open file command Setting String Range to 2, means that only string 2 from pit1.str is opened in the main graphics layer. Surpac™ 6.6 Page 126 of 207 Introduction Managing data in layers Task: Replace data in a layer using the open file command All the data in pit1.str is displayed in the main graphics layer. Surpac™ 6.6 Page 67 of 207 Introduction Viewing and saving data Task: Change display style With object relative units (oru), the size of the text is set to the same units as the object. 19. Overview This document is designed to help new users install Surpac and start using the software. On the Layers pane, click . It is a text file that tells Surpac which tables and fields to read from the database. String maths You can use String Maths to perform mathematical operations on string files, such as: l l l convert section coordinates to real-world coordinates. Surpac™ 6.6 Click Reset graphics . If data has been modified, Surpac will display a form to allow you to save the file. This is described in more detail in the chapter Viewing and Saving Data. In the Towards field, type 100. Click the block_model icon, and select Colour by attribute. 17. In the File Filter, select All files. Note: Plane 7400N has a check mark on the plane icon to show that it is the active plane. The online help also has examples and troubleshooting information. Choose Planes > Save current plane as. In most cases you will save strings as text files. macro.tcl Macros are custom programs, created to perform a set of repetitive tasks or functionality specific to an operation. Open pit_design1.str in Graphics. Choose Display > Hide everything. To see the tool tip description for an icon on a toolbar, hover the cursor over the icon. Surpac styles files contain information such as drawing styles, colour settings for strings and DTMs, or default Surpac settings. Surpac™ 6.6 Page 135 of 207 Introduction Triangulated surfaces Task: Create a DTM — file-based method 5. Click the surpac database icon at the bottom of the screen, and then click Drillhole display styles. Open und_layout.str in Graphics. Click Edit. 31. l a silver value of 14.23 grams/tonne. In the Away field, type 50. Note: To see all of the steps performed in this task, run 05f_2d_transform.tcl. Right-click and select Delete from the shortcut menu. Surpac™ 6.6 Page 110 of 207 Introduction Managing data in layers Task: Create layers This symbol... indicates that the layer is... active visible selectable The SWA now contains: 3. Expand the Support book, click Email Support, then click your region. In the Planes panel, right-click 7300N. Click and right-click in a field to display the shortcut menu. Exit the text editor without saving any changes. The following table describes the most common file types used in Surpac: File type String Example pit1.str Description A string is a sequence of three-dimensional coordinates representing some physical feature. Open pit150.str in Graphics. Surpac™ 6.6 Page 116 of 207 Introduction Managing data in layers Task: Append data to a layer with the Navigator The SWA now contains: Next, you save the data from both files to a new file. On the Tools toolbar 4. Click Downloads. RGB specifying its Red, Green, and Blue values Crayola selecting the name of the colour from a standard list of colour names. Hold the CTRL key and click several points as shown. Click Reset graphics . pit_str.dwf Files for printing that are generated using the Plotting module. The message window displays the point properties for all of the selected points. In the Planes panel, right-click 7200N and select Set active. To restore the pane to its original position, click Toggle auto-hide again. Choose Design > Pit design > Set slope gradient. When you hold the SHIFT key and drag a file into Graphics, the cursor is displayed with an X. . Right-click in Graphics, and select Triangulate. Changes may be made in products or services at any time without notice. A constraint can be thought of as a filter which selects blocks that meet a set of conditions. For example: you must select an item from the list to continue. 188 Application 188 Configuring windows and panes in the interface 188 Toggle floating 189 Toggle auto-hide 190 Close 190 More Surpac functions 192 Drillhole database 192 Task: Open a database, display drill hole data, and create sections Block models Task: Display, constrain, and report a block model Plotting with autoplot Task: Produce a plot of a pit using autoplot References 192 195 195 204 204 207 Introduction Typographical conventions Introduction Surpac GEOVIA Surpac™ is the world's most popular geology and mine planning software, supporting open pit and underground operations and exploration projects in more than 110 countries. You will be provided with the coordinate values of the two points in each of the two systems, as well as a Z correction. The following image shows the Properties pane attached to the side of the Surpac window. Surpac™ 6.6 Page 191 of 207 Introduction More Surpac functions Task: Open a database, display drill hole data, and create sections More Surpac functions Drillhole database You can display drillhole data, stored in a database, in any orientation such as plan or section view. Note: To see all of the steps performed in this task, run 05e_classify_strings.tcl. You need to click Apply on any forms presented. The file bench105.str is displayed. The data set accompanying this tutorial. A set of menus for the tutorials are displayed. Task: Replace data in a layer with the Navigator 1. Surpac™ 6.6 Page 90 of 207 Introduction Viewing and saving data Task: Use string/object mode to delete and clean strings 5. Note: The terms "Graphics workspace" and "SWA" both refer to the Surpac Work Area. When you save a workspace, you create a file with a .swa extension. A string file contains coordinate information for one or more points, as well as optional descriptive information for each point. Choose Create > Digitise > By following a segment. Click the setup point. Polygon intersection You can use Intersect polygons to perform an intersection, outersection, or union of two or more closed segments. Set the selection mode to Select Point/Triangle. The Layers pane now shows two layers, the main graphics layer and a new layer called pit1.str that becomes the active layer. Move the slider and click at 7400.00. The closed segment is displayed. Open pit2.str in Graphics. Move the mouse until the pointer is in the position you want and then release the mouse button. Surpac™ 6.6 Page 196 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model 6. Open kbi135.strin Graphics. The green check mark means that the solid is valid. You can assign string numbers to represent particular features, such as string 1 for toes in a pit, string 2 for crests, and string 99 for spot heights. This information is stored in a description field. Click OK. Make sure that Surpac is displaying the menu bars and toolbars that you use frequently, and that the menu bars and toolbars that you do not need are hidden. Choose View > Surface view options > Lighting options. Choose File Tools > Intersect polygons. The icon now displays Segment/Trisolation selection mode 4. Note: You must accept the terms of the license agreement or the installation will not continue. From the shortcut menu, select Field Help. Click Toolbar1 and clickEdit. Click the point as shown. To create a new menu bar, in User Menus/Toolbars, click Menubars, and click New. l l l l String 8 is open, since the first and last points are different. Hold the CTRL key and click to select any four points. Choose View > Data view options > Long section view. Data-centric When you select data first, and then specify the function to be applied to the data, you are performing a data-centric operation. Surpac™ 6.6 Page 154 of 207 at the top of the panel Introduction Triangulated surfaces Task: Calculate a volume for a solid model Calculating a volume using a solid model Task: Calculate a volume for a solid model 1. The boundary string is displayed. You will now use String Maths to "topcut", or convert values that are above 10 to the value of 10. The blocks are coloured by gold values. In our example, the text size for range 1 is set to 8.5 oru. The text size will be equivalent to an object that is 8.5 metres high and so will appear larger when you zoom in and smaller when you zoom out. For example, to calculate volumes between two DTM surfaces, you must use the function-centric approach, selecting Cut and Fill between DTMs from the Volumes submenu, on the Surfaces menu. Plane 7250N is now active. Task: Use orbit mode to rotate data 1. Clockwise segments are regarded as an area of inclusion, and give expected results when you intersect them with other clockwise segments. Button Rectangular or square button that initiates an action. If the Surpac interface is displayed, you already have a valid licence. Exit this procedure . If you use the graphics-based method you must save the boundary string to a file after it is generated. From the Status bar at the bottom of the Surpac window, click the Design string button . The sample values in the D1 field are displayed in Graphics. Right-click anywhere in Graphics to display a shortcut menu. From the shortcut menu, select Viewport, and choose Copy view. Displaying and customising menu bars You can activate most Surpac functions using the menu system. Spot height strings contain points which represent non-linear or point features, such as hill peaks, surface low points, gridded points, borehole collars etc. Click in Graphics and drag to rotate into the position shown below. Surpac™ 6.6 Page 199 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model 15. In the table of contents, expand Modules, then Licence Manager, and click Introduction. Surpac™ 6.6 Page 112 of 207 Introduction Managing data in layers Task: Create layers The new layer is now the active layer. If you want to open a SWA file on another computer, you need to make sure that the files that are referenced by the SWA file are available on the alternate computer, using the same folder structure. Note: To see all of the steps performed in this task, run 05c_string_maths3.tcl. Storing planes You can create, view, and interact with a group of planes and store them temporarily or permanently to planes files in the Plan view, Vertical sections, or Incline sections folders. Surpac™ 6.6 Page 29 of 207 Introduction The Surpac interface Task: Display and view data in Graphics Graphics Known as the graphics area, or simply Graphics, this is the area where you perform most of the work in Surpac. Surpac™ 6.6 Page 64 of 207 Introduction Viewing and saving data Task: Change display style A point with an arsenic concentration of 350 parts per million (ppm), for example, forms part of string 3. Select the colour — blue, green, orange and red for each of the four rows respectively. By looking at the colours, you can quickly see the areas of lowest arsenic concentration (blue), intermediate concentration (green and orange) and highest concentration (red). Surpac™ 6.6 Page 147 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model The 3DM orebody is displayed. Click three points at the northern end of the segment as shown, to create points 4, 5, and 6. Surpac does not automatically save the boundary string. Surpac™ 6.6 Page 156 of 207 Introduction Triangulated surfaces Task: Calculate a volume for a solid model Note: To see all of the steps performed in this task, run 04b_solid_volume.tcl. Click Lock plane corridor . Surpac™ 6.6 Page 169 of 207 Introduction File tools Task: Transform data to a different coordinate system 6. Planes viewing modes You can view your data in Graphics in two-dimensional (2D) or three-dimensional (3D) mode. Task: Save a workspace 1. Both segments of string 2 are selected. Choose to accept the licence agreement , and click Next. For many string files this is not required; when it is not required, values of zero are used for all coordinates. In the Planes panel, click the Next Plane and Previous plane buttons 2. In the text box at the top, slowly type each letter of the word Block Model. Surpac™ 6.6 Page 151 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model The solid is now closed at the end segment. Surpac™ 6.6 Page 131 of 207 Introduction Triangulated surfaces Task: Save a workspace Triangulated surfaces Surpac supports two types of triangulated surfaces: l l digital terrain model surfaces (DTMs): A DTM surface is a set of triangles which represent a surface, such as topography or a pit design. A prompt to select the setup point is displayed. The Layers pane still shows both layers: Surpac™ 6.6 Page 123 of 207 Introduction Managing data in layers Task: Replace data in a layer with the Navigator However, the contents of the map1.str layer has been replaced by the data in pit1.str: The SWA now contains: Surpac™ 6.6 Page 124 of 207 Introduction Managing data in layers Surpac™ 6.6 Task: Replace data in a layer with the Navigator Page 125 of 207 Introduction Managing data in layers Task: Replace data in a layer using the open file command Task: Replace data in a layer using the open file command 1. Drag Press and hold down the left mouse button. Select the Enable auto help check box. Type "String Maths"(including the quotation marks) in the Search box, and click Search. 1. Choose File tools > Classify strings by numbers. Note: If you want to see all of the steps performed in this task, run 02c_view_segment_ properties.tcl. Digital Terrain Model (DTM) files are generated from .str files and can represent surfaces or solids. Click Apply. 26. Italics A word or phrase to which the author wants to give emphasis. Task: Apply a boundary string to a soil sampling file You will use Apply boundary string to remove data outside a boundary string. Select the new pit_design toolbar, and click Paste. h. Right-click in Graphics to display the shortcut menu. Message window The message window shows the information, warnings, and error messages that Surpac produces while it is executing functions. All data in the main graphics layer is replaced by the data in map1.str. Choose Display > Dynamic 2D Grid. Open ore150.str in Graphics. The Layers pane now shows three layers, and map1.str is the active layer. Right-click anywhere in Graphics and select Clean from the shortcut menu. License Surpac using the self-service licensing service and a sentinel Note: You must have an active Internet connection to use the self-service licensing feature. In this task, you will display the strings as spot heights to show the areas that have the highest concentration of arsenic. The transformation parameters are displayed. Surpac™ 6.6 Page 50 of 207 Introduction Planes Task: Creating a temporary plane for graphical validation 4. Plane 7300N is now listed last in the group. From the shortcut menu, select Reverse. Customising toolbars and buttons Task: Display toolbars and create a customised toolbar You might find that you only are using only a small number of the digitising functions, for example, Start new string, Start new segment, Digitise New Point at Mouse Location, New midpoint, and Close current segment. Note: Strings 1,2, and 3 will be intersected by string 30005. Surpac™ 6.6 Page 200 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model 19. From the Navigator, right click high_grade.str, and select Edit. Typically, you can expect a saving of up to 15% in the size of the string file and up to 30% in the time to load the data into Graphics. Surpac™ 6.6 Page 202 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model The report contains volume, tonnes, average gold (grams per tonne) and aggregate gold (total grams of contained metal) for each grade range. Because the plane you have created is temporary it is not listed in the Planes panel. The file opens in your text editor. Click and drag your mouse to rotate the solid and view the ore body from different angles. Task: View string data in a text editor 1. Under GEOVIA Surpac, click Surpac Downloads. Representing the data in this way does not help you to see where the arsenic concentration is high or low. Surpac™ 6.6 Page 19 of 207 Introduction Getting started Task: License Surpac The Update Licence Token form is displayed, pre-filled with the token number. Hole the CTRL key, and click the two points as shown. Afterward, you will display the clipped strings. In theSave Profile As box, type pit_design. Hold the ALT key, then click and drag in Graphics to rotate the data to the view shown below. Click the Select tool again. Choose Database > Sections > Define. Page 12 of 207 Introduction Surpac concepts Function-centric Function-centric and data-centric operations You can perform nearly all operations in Surpac using either a function-centric or a data-centric approach. Navigator The Navigator works like Windows Explorer. String number Segment number Data Type D1 D2 D3 1 1 Low grade ore Closed Gold (g/t) Silver (g/t) SG 2 1 Medium grade ore Closed Gold (g/t) Silver (g/t) SG 3 1 High grade ore Closed Gold (g/t) Silver (g/t) SG 8 1 Footwall trace Open footwall 8 2 Hangingwall trace Open hangingwall 30005 30005 Pit design toe Closed 30008 30008 Survey stations Spot height Station name 5. To open the file, drag pit_design1.str into Graphics. Enter the information as shown below, and then click Apply. Note: To see all of the steps performed in this task, run 05b_string_maths2.tcl. 14. Task: Append data to a layer with the Navigator 1. Each submenu contains more commands. Right-click anywhere in Graphicsand select Connect points from the menu. Two buttons have been added to the status area, indicating that a database named surpac and a block model named block_model are loaded: 3. Surpac™ 6.6 Page 59 of 207 Introduction Viewing and saving data Task: Work with multiple viewports 6. Choose Surfaces > Clip or intersect DTMs > Line of intersection between DTMs. Surpac™ 6.6 Page 142 of 207 Introduction Triangulated surfaces Task: Calculate cut and fill volumes between two DTMs 4. This occurs when you have changed data in a layer, but you have not saved it to that layer. Surpac™ 6.6 Page 60 of 207 Introduction Viewing and saving data Task: Work with multiple viewports The left viewport is split horizontally as displayed. Any data beyond the projection distances from this plane (that is, outside the corridor) is hidden. Select Toolbars to see which toolbars are currently displayed. This means that segment 1 will triangulate to segment 2, segment 2 will triangulate to segment 3, and so on. Select the Legend tab, and expand the Strings legend for samp_classified1.str as shown below. If the Preview pane is not displayed, click the Preview button at the top of the Navigator. This means that when samp_classified1.str is next opened, this styles file will also load. In this way it is possible to have a collection of styles files suitable for a range of display purposes. Open top_cut.str in Graphics. Press the ESC key. This tab... allows you to choose a colour by ... Swatches clicking in a box on the display. In the Away field , type 50. String data hierarchy Data in a string file is classified into: l l l points segments strings All points in a string file are grouped into segments, which are further grouped into strings. Task: Creating a custom button to put on a toolbar 1. The data is shown in an oblique view. Note: GEOVIA would appreciate your participation to help us improve Surpac. Notes: l l Surpac™ 6.6 Do not press ESC. Notice that plane 7250N is still 50 units wide. Use the wheel button, or both mouse buttons, to pan the image. In Surpac Menus/Toolbars, expand Menubars, and then expand the Surface design toolbar. Choose Planes > Vertical > Looking north. The X field is the real-world easting. Working with forms You control how a function works by entering parameters into a form. Press TAB several times. Select one of the markers (a spot height string). For the tasks within this section, the data is displayed in Graphics to help you understand how the functions work. b. The topics that contain the most occurrences of these words are ranked higher in the list. In User Menus/Toolbars, click Toolbars, and click New. You can easily record and edit TCL scripts in Surpac. Choose File tools > Intersect polygons. The legend shows that string 1 is white, string 2 is blue, string 3 is blue-green, and string 4 is green. Tip: Sometimes the message window also contains information such as coordinates of selected points or properties of files in Graphics. Surpac™ 6.6 Page 55 of 207 Introduction Planes Task: Moving between planes The first plane in the sequence is displayed in Graphics. If you have multiple sentinels attached to your computer, select the sentinel you want to use for the licence. The projection distance towards is b. Classify strings You can use Classify strings to assign a string number based on the value of the Y, X, Z, or description field. Text box Rectangular box in which you can type text. The example below shows conceptually how a string file contains strings, which contain segments, which contain points. The Status bar also shows whether a database or block model is loaded into memory. For example, "It is very important to save the data […]". Next, you will save the DTM file. To show the pane when it is minimised, move the cursor over the minimised pane. Click the segment as shown. , click the drop-down triangle The Select tool now displays the Point/Triangle selection mode 3. Right-click in the message window to display a shortcut menu. Right-click the View 2 tab, and choose Close . 33. The commands are located on the menu or on a submenu. Before you run this function, you must know what the coordinates of two points are in each of the two systems. Page 99 of 207 Introduction Creating data Task: Create a simple pit design 7. The Z field of all points on each segment of ore_sections1.str represents the real-world northing, or Y value. All layers in the SWA are displayed in the Layers pane, at the lower left corner of the Surpac window: Creating layers When you open a file by dragging it from the Navigator into Graphics, you create a new layer with the same name as the file. Surpac™ 6.6 Page 32 of 207 Introduction Getting help Task: Access field help and form help A window with help that is specific to the field you selected appears. Click Add to add the constraint, and then click Apply. This file contains a series of points that show the concentration of arsenic in the soil. The default style settings showing the strings as coloured lines is displayed. Open ore_section1.str in Graphics. Surpac™ 6.6 Page 133 of 207 Introduction Triangulated surfaces Task: View a DTM in Graphics The waste dump is displayed. Surpac™ 6.6 Page 101 of 207 Introduction Creating data Task: Create a simple pit design Note: When you create closed segments in the XY plane (plan view), you will usually create them in a clockwise direction. Click Install. Click the Plan View button . Planes panel The Planes panel is available on start-up at the upper right of Graphics. Surpac™ 6.6 Page 185 of 207 Introduction Advanced interface operations Task: Saving your customisations to a profile The menus and toolbars in the geology_database profile are displayed. Select the Apply transition when scanning check box. l a specific gravity of 2.7. Page 47 of 207 Introduction Strings Task: View string data in a text editor 2. Page 102 of 207 Introduction Creating data Task: Create a simple pit design The numbered points on the segment are displayed. Choose View > Zoom > All. Enter the information as shown, and then click Apply. Select the line colour by clicking the line in the line cell and selecting Properties. The pit strings and the Dynamic 2D grid are displayed. 2. Click Restore. Next, you will expand the segment horizontally by a distance of 100. Open ore1.str in Graphics. Click the icon to view the data in the YZ plane. Using and creating profiles A profile is a set of menus and toolbars grouped together into modules. Press the DELETE key. Zoom in and you will see numbers and symbols displayed. To determine the volume of the pit, you need to define the boundary where the topography cuts the pit design. You do this by creating a boundary string of the intersection between both DTMs. 3. Open intersection1.str in Graphics. Anticlockwise strings represent an area of exclusion. This function removes all the data that is displayed in Graphics. add a constant value to a coordinate (such as the northing) of all strings. The pit and 3D grid are displayed. Select the new pit_design menu bar. The area of the segment is shown in the bottom row of the Properties pane. A null record indicates the end of a segment. Surpac™ 6.6 Page 122 of 207 Introduction Managing data in layers Task: Replace data in a layer with the Navigator Replacing data in a layer You can replace data in a layer by holding the SHIFT key when dragging a file into Graphics. Right-click the new Surpac icon, and select Properties. The points are deleted. For example, when you click the icon to Open a file file you want opened. Open soil1.str in Graphics. Hold the CTRL key, and select two points to be joined (105 and 216). Click the Planes tab. Surpac™ 6.6 Page 120 of 207 Introduction Managing data in layers Task: Append data to a layer with the open file command Setting String Range to 2;12;52 means that only those three strings are opened. Also, because the Replace current data check box was cleared, the data is appended to the main graphics layer. In the Surpac Navigator, right-click the introduction folder. Progress is reported in the message window. Surpac™ 6.6 Page 46 of 207 Introduction Strings Task: View string data in a text editor String file structure Sometimes it is helpful to view the contents of a string file in a text editor. The data-centric approach is often faster because you do not have to wait for your data to display in Graphics to perform the function. Open cfill_volume.not. Surpac™ 6.6 Page 127 of 207 Introduction Managing data in layers Task: Replace data in a layer using the open file command 5. Click the block_model icon, and select Display. Right-click and select the Move Tool from the shortcut menu. Choose Inquire > Bearing and distance between 2 points. Click the Select tool (not the drop-down triangle). l Note: Surpac™ 6.6 Page 170 of 207 Introduction File tools Task: Transform data to a different coordinate system If the grids are plane metric grids, the scale should be very close to 1.0. In this example, there is an error of 0.5 mm in per meter. The waste dump layer is now displayed in red, and it is preceded by an asterisk (*). From the menu, select Break segments at selected points. 18. In Constraint type, select BLOCK and fill in the three input boxes below so that the constraint is "gold > 0". HSB specifying its Hue, Saturation, and Brightness. Task: Create a boundary string – file-based method Note: To help you understand the purpose, and result, of this task, you will open the DTMs in Graphics. Different sample values are displayed using different colours. These colours are controlled by a styles table in the database. Neither will be held liable for any damages caused or alleged to be caused from the use of the information contained herein. Task: View string data 1. Click the Legend tab to show the Legend pane. Task: Move data in three dimensions 1. You can copy this information and paste it into text files or documents. The strings in ore_plan1.str represent the real-world coordinates. Gemcom publishes this documentation for the sole use of Gemcom licensees. Enter the information as shown and click Apply. The projection distance away is a. Perform the following steps: a. Close the help window. Clear Reset graphics . The definitions are created by defining a flat plane (horizontal, vertical, or inclined) with a "towards" and "away" distance. Right-click the left viewport, and choose Viewport > Split horizontally. Use the left mouse button to rotate the image. Internet download You can also download the complete set of tutorials. Choose Display > Hide grid. Choose Surface > Create DTM from layer. D1 is the drillhole trace, and D2 is the trace orthogonally projected onto the plane. Hold down the right mouse button and drag down or to the left to zoom out. Press ESC to exit the fuction. 15. Planes projection distance When you set up planes, you define the default thickness of the corridor. A solid model is a set of triangles that represents a 3D shape, such as an ore zone or an underground mine design. Task: Search the online help 1. The message window displays the bearing, distance and gradient between the two points in the order in which they were selected. Select Local, and click Apply. Surpac™ 6.6 Click in the lower left viewport. Product Surpac™ 6.6 Last modified: Monday, 12 August 2013 Table of Contents Introduction 8 Surpac 8 Overview 8 Requirements 8 Document conventions 8 Typographical conventions 8 Keyboard conventions 9 Menu conventions 9 Mouse conventions 10 Forms 10 Surpac concepts 12 Overview 12 Surpac data types 12 Function-centric and data-centric operations 13 Function-centric 13 Data-centric 13 Getting started Installing Surpac from a DVD Task: Install Surpac Starting Surpac Task: Start Surpac Licensing Surpac Task: License Surpac 15 15 15 16 16 16 16 License Surpac using a token number and a sentinel 16 License Surpac using the self-service licensing service and a sentinel 18 Setting the work directory Task: Set the work directory Exiting Surpac Task: Exit Surpac Modifying the Surpac desktop icon Task: Modify the Surpac icon so that the work directory is set automatically The Surpac interface Menus Task: Open a file using the menu Toolbars Task: Use the Reset graphics button from the toolbar Navigator Task: Open a file from the Navigator 21 21 22 22 22 24 25 25 26 26 26 Preview pane Task: Display a string file in the Preview pane 29 29 Legend pane 29 Graphics 30 Task: Display and view data in Graphics 30 Properties pane 30 Layers pane 31 Status bar 31 Task: View changes to the Status bar Message window Task: Clear the message window Getting help Field help and form help Task: Access field help and form help Online help 31 31 31 32 32 32 34 Task: Access online help from a form 34 Task: Access help from the help menu 34 Task: Use the index to search for information 35 Task: Search the online help 36 Tutorials Task: Access the tutorials profile Support Task: Find support office contact details Strings 37 38 39 39 41 String data hierarchy 41 Types of strings 42 Description fields 42 Data numbering 42 Data ranges 42 String file names 43 String directions 43 Viewing string data 44 Task: View string data String file structure Task: View string data in a text editor Planes 44 47 47 49 Active plane 49 Planes panel 49 Storing planes 49 Planes viewing modes 49 2D mode 50 3D mode 50 Planes groups 50 Planes projection distance 50 Task: Creating a temporary plane for graphical validation 50 Task: Saving a plane 52 Task: Pinning the Planes panel to Surpac 53 Task: Loading a plane from the Planes panel 53 Task: Identifying the active plane using the Status bar 54 Task: Creating planes using Quick planes 54 Task: Moving between planes 56 Task: Viewing and changing plane properties 56 Task: Changing the viewing corridor using the Planes panel 58 Viewing and saving data Multiple viewports Task: Work with multiple viewports Attributes and styles files 59 59 59 64 Task: Change display style 64 Task: View point properties 70 Task: View segment properties 71 Task: Determine bearing and distance between two points 72 Saving data Task: Save a file Orbit mode Task: Use orbit mode to rotate data Selection modes 74 74 76 76 76 Task: Change selection modes 76 Task: Use point/triangle mode to delete points 78 Task: Use segment/trisolation mode to reverse segments 79 Task: Use select mode to break, join, and renumber segments 81 Task: Use string/object mode to delete and clean strings 89 The Move tool 92 Task: Move data along an axis 92 Task: Move data in a plane 94 Task: Move data in three dimensions 95 Creating data Create a simple pit design Task: Create a simple pit design Managing data in layers Layers and the Surpac work area 98 98 98 110 110 Creating layers Task: Create layers Appending data to a layer 110 110 116 Task: Append data to a layer with the Navigator 116 Task: Append data to a layer with the open file command 118 Replacing data in a layer 123 Task: Replace data in a layer with the Navigator 123 Task: Replace data in a layer using the open file command 126 Saving workspace settings 129 Task: Save a workspace 129 Triangulated surfaces 132 Naming conventions 132 Breaklines and spot heights 132 DTM conventions 133 Viewing a DTM surface 133 Task: View a DTM in Graphics Creating a DTM surface 133 135 Task: Create a DTM — graphics-based method 135 Task: Create a DTM — file-based method 136 Creating a boundary string between two DTM surfaces 141 Task: Create a boundary string – file-based method 141 Task: Create a boundary string – graphics-based method 142 Calculating cut and fill volume using DTM surfaces Task: Calculate cut and fill volumes between two DTMs Viewing a solid model Task: View a solid model Creating and validating a solid model Task: Create and validate a solid model Calculating a volume using a solid model Task: Calculate a volume for a solid model File tools String maths 143 143 145 145 145 145 155 155 158 158 Task: Convert section coordinates to real-world coordinates 158 Task: Adjust coordinates 160 Task: Topcut high grade samples 161 Clip data by a boundary Task: Apply a boundary string to a soil sampling file Classify strings Task: Colour points by sample values 2D transformations 163 163 166 166 169 Task: Transform data to a different coordinate system Polygon intersection 169 171 Task: Calculate the area of an ore zone within a pit 172 Task: Clip ore blocks inside a pit 175 Advanced interface operations 178 Menu bars, menus, and commands 178 Displaying and customising menu bars 178 Task: Create a customised menu bar 179 Customising toolbars and buttons 182 Task: Display toolbars and create a customised toolbar 182 Task: Creating a custom button to put on a toolbar 184 Using and creating profiles 185 Task: Select the geology_database profile 185 Task: Saving your customisations to a profile 186 Task: Restoring the default profile 186 Using the Function Chooser Task: Run two functions from the Function Chooser Working with forms 186 187 187 Last value if blank 188 Last value 188 Constant... Move your pointer near the end segment, and click to select one point. They are shown on the images so you know the order in which to create the points. Each directory contains a tutorial in PDF format, as well as a data directory containing the files required to perform the exercises outlined in the tutorial. Surpac™ 6.6 Page 150 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model 16. Right-click the icon you have just modified, and select Rename. Right-click in Graphics and select Triangulate. The Tools toolbar now displays Select selection mode . Task: Access help from the help menu 1. Click the pin icon. The next plane is displayed. At an angle of 45 degrees, this will create a pit crest 100 meters above the base, at an elevation of 250. Enter the information as shown, and click Apply 9. Surpac™ 6.6 Page 152 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model The results are also written to the valid1.not file. The graphics area is a three-dimensional work area. The hierarchy of triangles, trisolations, and objects of a .dtm file is analogous to the points, segments, and strings of a string file. Contact your local support office if you do not have this information. From within a form you can access the Field help and Form help. Click Reset graphics Surpac™ 6.6 . This chapter describes how to using use strings to act as break lines. Using the Function Chooser A quick way for you to run a function is to use the Function Chooser. New points are the coordinates of the same two points in the coordinates system to which you are transforming the data. In the Planes panel, right-click 7400N, and choose Set active. Task: Change display style The dataset in this task represents a soil sampling study that measured arsenic concentrations at various locations. Choose Create > Digitise > Close current segment. Ensure that your sentinel is inserted into an appropriate port on your computer. Double-click this icon to start Surpac. Surpac™ 6.6 Page 161 of 207 Introduction File tools Task: Topcut high grade samples 5. Hold the CTRL key, and then drag map1.str into Graphics. Surpac™ 6.6 Page 57 of 207 Introduction Planes Task: Changing the viewing corridor using the Planes panel The Vertial Plane Properties form appears. When you use a function-centric approach, you select the function, then specify the data it is going to act on. l At the top of the screen you can see both pits in the same coordinate system. From the Toolbars menu, select pit_design. Surpac™ 6.6 Page 41 of 207 Introduction Strings Task: Find support office contact details Types of strings There are three types of strings: l l l open closed spot height The table below explains these terms. Operation Example of Usage Intersection Determining the area which is common to two closed strings. Choose Inquire > Point properties. The validation status is written to the message window. When you open Surpac again, you can choose the profile you just saved to reload your customised settings for menus, toolbars and buttons and automatically configure your workspace. Type 1100 for the Sequence number, and click Apply. You use the following format to specify such a range in Surpac: ,, Note: When the increment is 1, you can use , without specifying the increment. Surpac™ 6.6 Page 61 of 207 Introduction Viewing and saving data Task: Work with multiple viewports Four viewports are now displayed. Surpac™ 6.6 Click the Reset graphics icon . Task: Set the work directory 1. Surpac™ 6.6 Page 111 of 207 Introduction Managing data in layers Task: Create layers The SWA now contains: Next, you create a circular area, which is the boundary of a waste dump, and save the data to a separate file. You have not finished creating the string. 2D mode locks the data to the active plane, so you can digitise onto the active plane, zoom in or out, or pan, but you cannot rotate the data. When a block model is open, the name of the block model is displayed on the Status bar at the bottom of the Surpac window. From the shortcut menu, select Copy Here. Task: License Surpac If you already have a token number, or a licence file, complete the following steps. Open samp1.str in Graphics. Note: To see all of the steps performed in this task, run 05a_string_maths1.tcl. The GEOVIA Surpac Setup Wizard appears. Surpac term Common term Example Open string Line Drill hole trace Closed string Polygon Property boundary Spot height string Points not associated with a line or polygon Blast hole collar locations Description fields Points, strings, and segments can have one or more pieces of descriptive information associated with them. d. You can type an "alias" into the Function Chooser to run a function. Surpac™ 6.6 Page 34 of 207 Introduction Getting help Task: Use the index to search for information 2. Task: Moving between planes 1. 8. Expand the sample tree and the gold field to see the display attributes for gold. Some of the ore blocks are outside the pit boundary. Open ore_plan1.str in Graphics. The help text does not change. Surpac™ 6.6 Page 189 of 207 Introduction Advanced interface operations Task: Run two functions from the Function Chooser Toggle auto-hide The Toggle auto-hide button enables you to hide the pane so that you have more workspace for other panes. Clear the Enable auto help check box. Press ESC to finish using the function. Open survey1665.str in Graphics. The work directory is automatically set when Surpac starts up. In Windows Vista, Windows 7, and Windows 8, the default path is C: \Users\Public\GEOVIA\Surpac\66\demo_data\tutorials\introduction. You can do a phrase search by enclosing your search in quotation marks. Starting Surpac Task: Start Surpac Start Surpac, using either of these methods: l l Double-click the Surpac icon on your desktop. Running the Clear Screen function makes the graphics viewport empty but, unlike the Reset graphics function, it leaves the data in the layer. The New plane form appears. 3D mode In 3D mode, the data is displayed in Graphics in three dimensions. Rotate the data as shown in the image in step 6 below. You can restore all of the information saved opening the SWA file. Surpac™ 6.6 Page 97 of 207 Introduction Creating data Task: Create a simple pit design Creating data Create a simple pit design You will design a pit base around an ore zone at an elevation of 150, and then extend it up to an elevation of 250 with a pit wall angle of 45 degrees. Click a menu bar to switch between displaying and hiding it. The file con135.str contains strings 1. The report opens in the default text editor. Right-click in the blank area to the right of the main menus. Choose Inquire > Point Properties. Type Surpac Introduction, and press ENTER. Surpac™ 6.6 Page 92 of 207 Introduction Viewing and saving data Task: Move data along an axis 4. On the Tools toolbar Select tool . A boundary string file is used for: l l l delineating cut and fill material for calculating volumes finding the intersection of a fault plane with a surface finding where a pit design breaks the natural surface There are two methods of creating the boundary string in Surpac: l l file-based method: In this method, you do not need to display the DTMs. Surpac automatically saves the boundary string to the nominated file. Surpac™ 6.6 Page 176 of 207 Introduction File tools Task: Clip ore blocks inside a pit The blocks inside the boundary are displayed. Surpac™ 6.6 Page 153 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model Tip: You can also validate your solid using the solids repair functions (Solids > Validation > Solids repair). After releasing the mouse button, the Layers pane still only shows one layer, the main graphics layer. The file samp_classified1.str is associated with the styles file marker.ssi. Click Tutorials. 24. Note: To see all the steps performed in this task, run 01a_viewing_string_data.tcl. Tutorials Tutorials are designed to teach you how specific functions work within a practical, task-based environment, by working through exercises using a specific dataset. This procedure can be useful for determining the limits of a block model. Next, you will create a DTM from this data. Hold down the right mouse button, drag and release. Choose File tools > Apply boundary string. You can also add or subtract a constant value to the Z coordinates between the two systems. Choose Surfaces > DTM File functions > Create DTM from string file. Surpac™ 6.6 Page 129 of 207 Introduction Managing data in layers Task: Save a workspace Four layers exist in the Layers pane. 12. For example, the Plotting menu contains the Autoplot, Plotting window, Plotting sheet setup window, and Print plot file commands, and it also contains the Entity, Map, Process, and Plotting colours submenus. Task: View changes to the Status bar 1. Note: To see all of the steps performed in this task, run 04a_create_and_validate_ solid.tcl. Close To close a pane, click the X button in the top right corner. e. Right-click the file bench105.str in the Navigator. A sample of the points is displayed below. In Surpac Menus/Toolbars, expand Menubars, and then expand the Surface design menu bar. Right-click anywhere in Graphics and select Delete from the shortcut menu. 16. Task: Creating a temporary plane for graphical validation 1. An alias is an abbreviation of the function name. l l By accessing Field help, you can get helpful information about each field. Surpac™ 6.6 Page 130 of 207 Introduction Managing data in layers Task: Save a workspace Note: SWA files are text files that store information about other files. Status bar The Status bar shows the coordinate position of the mouse pointer as well as the string number and design gradient. This is only done to clearly identify points that you will select in the following steps. Tip: The information offered on the support site may be more recent than those from the DVD installation. From the shortcut menu, select Open. Most of the data values are between 1 and 10, but there are a few values above 10. pit_design1.str is displayed in Graphics. While every precaution has been taken in the

preparation of this manual, neither the authors nor Gemcom assumes responsibility for errors or omissions. Introduction Viewing and saving data Task: Change selection modes 5. l Shift X is the difference in easting between X1 (old) and X1 (new). Surpac must be installed on the local computer and your user customisable files saved locally in the share folder. Note: To see all of the steps performed in this task, run 06a_display_drillholes_and_ create_sections.tcl. All the layers are deleted except the default main graphics layer. Right-click in Graphics to display a shortcut menu, and select Delete. Plane 7450N is displayed with the default viewing corridor. Surpac™ 6.6 Page 16 of 207 Introduction Getting started Task: License Surpac If you see the Update licence form, a valid licence does not exist. Planes groups Planes groups are a collection of one or more parallel planes saved to the Plan, Vertical, or Inclined folders in the Planes panel. Choose Display > Strings > With string and segment numbers. Choose Edit > Segment > Expand/Contract. Surpac™ 6.6 Page 83 of 207 Introduction Viewing and saving data Task: Use select mode to break, join, and renumber segments 9. In this mode you can zoom in and out, pan, and rotate the data. Surpac™ 6.6 Page 139 of 207 Introduction Triangulated surfaces Task: Create a DTM — file-based method The pit is displayed. Task: Saving a plane 1. In the lower left corner, click Table of Contents. Click the centre of the circle, drag to the location shown, and then release the mouse button. The points have been classified into four levels of concentration, each represented by a separate string. Use the wheel button to zoom in or out in relation to the current location of the pointer. You can see a horizontal slice of ore zones at an elevation of 150. When Surpac is installed, click Finish. Breaklines and spot heights Breakline strings are those which represent linear physical features that you can see in the real world e.g. crest of a pit, a fault in a geological model, a contour in a pit. From the Navigator, right-click bench105.str, and select Edit. When a plane is active, data within the corridor is displayed, and data outside the corridor is hidden. The interface now contains a new set of menus and toolbars that cover the functionality for processing data from a geological database. However, if you store planes permanently, the planes will be available for future sessions in Surpac. Several triangles in the DTM do not reflect the desired results. Configuring windows and panes in the interface You can modify panes in the interface using the three buttons on the top right side of the pane: l l l Surpac™ 6.6 toggle floating toggle auto-hide close Page 188 of 207 Introduction Advanced interface operations Task: Run two functions from the Function Chooser Toggle floating The Toggle floating button aloows you to “dock” or “undock” the pane. The icon now displays Select selection mode . The Save function saves the contents of the active layer to a file. For strings that are not defined as spot height strings, new points are created where the boundary string intersects the line. 10. The lighting is reset to its original state. Modifying the Surpac desktop icon All of the files in this tutorial are stored in a specific directory. Each time you start Surpac, you will need to have the working directory set to that folder. The following steps describe how to create an icon that automatically sets the working directory when you start Surpac. Surpac™ 6.6 Page 11 of 207 Example Introduction Surpac concepts Forms Surpac concepts Overview In this chapter, you will learn about: l l Surpac data types function-centric versus data-centric operations Surpac data types Surpac uses many different file types. Move the pointer over the Surpac icon on your desktop. Task: Modify the Surpac icon so that the work directory is set automatically 1. Before After Only the X and Z values in the Status bar change as you move the segment. On the Tools toolbar, click Box Select Points . Note: GEOVIA recommends that you use the default locations. Click the Select tool icon again. To validate the solid, choose Solids > Validation > Validate object/trisolation. Click Scan. Menu conventions In this documentation, the following example demonstrates the syntax used for menus and submenus: Choose File > Open > Block model. Note: To see all of the steps performed in this task, run 03a_create_dtm_graphics.tcl. The Status bar shows you the name of the active plane. When the pane is docked, it is fixed to an area of the Surpac window. The third line is the start of string data, and is stored as String number, Y, X, Z, D1, D2, D3, ... D100. Choose File > Save > String/DTM file. The data rotates in three dimensions. If point 216 was selected first, the resulting string number will be 8. You can see the text “String Maths” is highlighted. Open kbb135.str in Graphics. Surpac™ 6.6 Page 132 of 207 Introduction Triangulated surfaces Task: View a DTM in Graphics DTM conventions l l DTMs cannot model overhangs or vertical surfaces. Surpac™ 6.6 Page 148 of 207 Introduction Triangulated surfaces Task: Create and validate a solid model 12. The corridor thickness is also known as the projection distance. Click Start, select All Programs, and GEOVIA, and Surpac 6.6. Licensing Surpac The instructions below are for installing a single user licence. In order to proceed, you will need: l l l Surpac v6.6 installed, as previously described a USB or parallel sentinel a valid token number or licence file If you do not have Surpac or a sentinel, please contact your local support office. 40. The Plane Position form appears. The SWA now contains: Surpac™ 6.6 Page 121 of 207 Introduction Managing data in layers Task: Append data to a layer with the open file command 6. Click the topic that is ranked 2 in the list, DTM Maths. Click in the Text cell, select Properties, and enter oru for the Units and 8.5 for the size. By default, if you have not selected a plane, the initial plane that is active when you start Surpac is a horizontal plane that has an elevation of zero with projection distances of 10000 above and below. Task: Display a string file in the Preview pane 1. Task: Pinning the Planes panel to Surpac 1. The Layers pane still only shows one layer, the main graphics layer. Choose View > Zoom > Out. Open pit_new1.str in Graphics. Click Using the Internet. The plane group is listed in the Planes panel. A temporary plane is created at 7400 N. Surpac™ 6.6 Page 86 of 207 Introduction Viewing and saving data Task: Use select mode to break, join, and renumber segments 15. You can use DTM VOLUMES to compute the volume between two DTM surfaces, contained within a boundary string. Planes definitions are simply referred to as planes. Task: Display, constrain, and report a block model 1. Task: Create a boundary string – graphics-based method Note: When using the graphics-based method you must open the DTMs in Graphics. Choose Surfaces > DTM File functions > Line of intersection between two DTMs. Surpac™ 6.6 Page 141 of 207 Introduction Triangulated surfaces Task: Create a boundary string – graphics-based method 4. The plane is saved. Application Selecting this item causes the field to display the value supplied by Surpac. Task: Open a file using the menu 1. Choose Surfaces > Volumes > Cut and fill between DTMs. Surpac™ 6.6 Page 143 of 207 Introduction Triangulated surfaces Task: Calculate cut and fill volumes between two DTMs 3. In Windows XP, the default path is C:\Documents and Settings\All Users\Public\GEOVIA\Surpac\66\demo_ data\tutorials\introduction. Note: If two segments of different string numbers are connected, the string number of the first point selected is used for the result. Notice transformed_pit1.str has been shifted north and east, and it has also been rotated. The online help for the DIGITISER function is displayed. Select Profiles > geology_database. Otherwise, use the self-service licensing method that is described in the second procedure. Then move the mouse in the direction that the text specifies. The change you made was to the width of only plane 7200N. Drag the pit_design menu bar to a location where there is some space at the top of the Surpac window. This happens because the Enable auto help check box is selected. Click any block. Choose Create > Digitise > Properties. Specifically, do the following steps for each of the Custom Styles rows 1 to 4: a. This is a two-point line used in some sectioning functions. The Design string button displays the current design string number . When you install the software from the DVD, the tutorials are installed to the following folder location: \demo_data\tutorials where is the folder where the Surpac shared files are installed. 5. Task: Use the index to search for information You can use the Index to find the information you need. Surpac™ 6.6 Page 93 of 207 Introduction Viewing and saving data Task: Move data in a plane Task: Move data in a plane 1. Surpac refers to the object by the object and trisolation number that you assigned. The object number must be an integer within the range of 1 to 32000. The trisolation number must be a positive integer. Surpac™ 6.6 Page 119 of 207 Introduction Managing data in layers Task: Append data to a layer with the open file command 5. The blocks that have a gold value greater than zero are displayed. Page 43 of 207 Introduction Strings Task: View string data Viewing string data Here is an example that demonstrates the previous concepts. Hold the CTRL key, and select two points to be joined (130 and 25). Text that a procedure has instructed you to type. The DTM file is saved automatically as pit_design1.dtm. Move the pointer within Graphics . Requirements Before proceeding with this tutorial, ensure you have the following items: 1. Enter the token number, and click Validate. The file pit_design1.str is displayed. For example, specific gravity, rock type, and estimated sample values. Similarly, to fill in the Image box, you must click the Ellipsis button navigate to an icon file in the icons folder. Introduction Viewing and saving data Task: Use point/triangle mode to delete points Task: Use point/triangle mode to delete points 1. Note: The new pit_design menu bar “floats” above the Surpac window. The view corridor is changed to display the data 50 units away from the view, and 100 units towards the view. Surpac™ 6.6 Page 181 of 207 Introduction Advanced interface operations Task: Display toolbars and create a customised toolbar 6. Task: Produce a plot of a pit using autoplot 1. The Planes panel shows a check mark next to the active plane. Choose File > Save > string/DTM. Task: Changing the viewing corridor using the Planes panel 1. The following list describes the different formats and their meanings: Surpac™ 6.6 Page 8 of 207 Introduction Introduction Keyboard conventions Text Format Meaning Text or data that varies with each input is shown in italic font and enclosed in angle brackets. Clear the Display block edges check box, and click Apply. Open waste_dump.dtm in Graphics. A prompt to select the foresight point is displayed. Layers and the Surpac work area When Surpac starts, it creates an area in memory called the Surpac Work Area (SWA). Surpac™ 6.6 Page 44 of 207 Introduction Strings Task: View string data The data in this file represents a horizontal view, also known as a plan view, of a pit design, the survey stations, and the geology for one level in a pit. The data is organised as follows. For example, randomly surveyed points or borehole collars. Viewing a DTM surface Task: View a DTM in Graphics 1. Enter your GEOVIA Support user name and password. Block model Plot files Macros Plugins Styles file Surpac™ 6.6 block.mdl A block model is a form of spatially-referenced database that provides a means for modelling a 3D body from point and interval data such as drillhole sample data. Close the log file window. By default, the panel is collapsed. Surpac™ 6.6 Page 81 of 207 Introduction Viewing and saving data Task: Use select mode to break, join, and renumber segments 4. However, for the file-based method to work, you do not need to open any files in Graphics. Surpac™ 6.6 Page 157 of 207 Introduction File tools Task: Convert section coordinates to real-world coordinates File tools The File tools menu contains several different functions that you can use to filter, classify, transform, split, combine, intersect, and perform mathematical operations on string files. By intersecting two closed strings you produce a string which has one or more segments which represent the area common to the two strings. Strings 1, 2, 3, and 30005 are displayed. Surpac™ 6.6 Page 107 of 207 Introduction Creating data Task: Create a simple pit design 38. To enable you to work more efficiently with strings, it is important that you understand how Surpac organises and uses data stored within a string file. Choose File > Open > String/DTM. The icon now displays String/Object selection mode Surpac™ 6.6 Page 76 of 207 on the . Task: Colour points by sample values Click Reset graphics . Task: Create a customised menu bar 1. The Design grade button displays the current design gradient. Next, you will set the string number for the top of the pit. A black triangle submenu. Note: You will need login credentials to enter the GEOVIA Support site. Surpac™ 6.6 Page 165 of 207 Introduction File tools Task: Colour points by sample values Data in soil2.str is contained within the boundary. Any file loaded into Graphics has Y, X, and Z coordinates. Choose Surfaces > Create DTM from Layer. l l Surpac™ 6.6 Clockwise strings represent an area of inclusion. Click and drag in the upper left viewport to rotate the data. Surpac™ 6.6 Page 180 of 207 Introduction Advanced interface operations Task: Create a customised menu bar 2. Surpac™ 6.6 Page 186 of 207 Introduction Advanced interface operations Task: Run two functions from the Function Chooser Task: Run two functions from the Function Chooser 1. This software and documentation is proprietary to Gemcom and, except where expressly provided otherwise, does not form part of any contract. Choose Create > Circle by drag. Click pit1.str in the Navigator. Surpac™ 6.6 Page 23 of 207 Introduction The Surpac interface Task: Modify the Surpac icon so that the work directory is set automatically The Surpac interface So that you can see the Surpac interface with some data files in the Navigator, ensure that you have started Surpac and set the work directory as described in the Setup for This Tutorial chapter. Task: Determine bearing and distance between two points 1. Active plane The "active plane" is the plane on which the data is projected in Graphics. All data that is displayed in Graphics is stored within one or more layers, which are located within the SWA. Task: Access field help and form help 1. Numbers 1, 2, and 3 are not displayed in Graphics. In the Modify Menus and Toolbars form, select the pit_design toolbar and click New. After The Status bar displays coordinate values as well as the movement. Scroll down in the file to see the data as shown. Surpac™ 6.6 Page 28 of 207 Introduction The Surpac interface Task: Display a string file in the Preview pane Preview pane The Preview pane displays string data without the need to load it into Graphics. In the Planes panel, right-click 7200N. You can also dock the pane by moving it to one of the edges of the screen, or to an existing pane. 27. The plane is Dynamic. For example, if you select Last value in the Layer field of the Open File form, the Layer field displays the name of the layer that you used on the last occasion you used this form. Surpac™ 6.6 Page 38 of 207 Introduction Getting help Task: Find support office contact details Support You can contact your local support office by phone or email. Select the segment as shown. Right-click in Graphics, and select Select segments. To rename the menu bar: a. Type the alias PS (for Plot Strings) into the Function Chooser. The spot height string number 30003 is displayed in the message window. Surpac™ 6.6 Page 184 of 207 and Introduction Advanced interface operations Task: Select the geology_database profile Note: If you have installed Surpac in the default directory, the full path to the TCL command scripts folder is: C:/Users/Public/GEOVIA/Surpac/66/share/resource/scripts/toolbars/ 4. Surpac™ 6.6 Page 36 of 207 Introduction Getting help Task: Search the online help 4. Choose Solids > Solids tools > Report volume of solids. Page 70 of 207 Introduction Viewing and saving data Task: View segment properties 6. Next, you will set the slope wall angle to 45 degrees. Surpac™ 6.6 Page 68 of 207 Introduction Viewing and saving data Task: Change display style If you double click a string in the Legend pane, the Set Drawing Styles form will now look like the following. Task: Use the Reset graphics button from the toolbar 1. By clicking on Tool properties, you can restore the pane to its original position. Surpac™ 6.6 Page 105 of 207 Introduction Creating data Task: Create a simple pit design The segments representing the top and bottom of the pit are displayed. Title Title of the form. Click Install 64-bit version. To restore the whole interface to its default state, right-click an empty area in the toolbar region, and click Restore. Open soil2.str in Graphics. Click and drag in Graphics to rotate the data as shown. Hold the SHIFT key, and then drag pit1.str into Graphics. Alternatively, you can use the F2 key as a shortcut. Surpac™ 6.6 Page 197 of 207 Introduction More Surpac functions Task: Display, constrain, and report a block model 11. Surpac™ 6.6 Page 128 of 207 Introduction Managing data in layers Task: Save a workspace Saving workspace settings You can save all the data, layers, and settings in a Surpac Work Area (SWA) file. Open bdy100.str in Graphics. Select gold for the Attribute to colour by. You can also create a new layer using the New button on the Layer pane. Click Paste. The file map_and_pit.str contains all data from pit1.strand all data from map1.str. Click and drag to create a box around all of the segments. download link Download Gemcom_GEMS 6.5 Download Gemcom_GEMS 6.5 New Crack file password link Copyright © 2013 Dassault Systèmes GEOVIA Inc. Task: Transform data to a different coordinate system You will transform pit1.str into the same coordinate system as pit2.str using 2D transformation. In the Navigator, right click top_cut.str, and select Edit. The plane corridor is now 100 units wide. Right-click in Graphics and select Point. Open lev1665.str in Graphics. Surpac™ 6.6 Page 144 of 207 Introduction Triangulated surfaces Task: View a solid model Viewing a solid model A 3DM, or solid, is a closed shape that represents a closed structure. Surpac™ 6.6 Page 40 of 207 Introduction Strings Task: Find support office contact details Strings A string file is the most common file format used to store information in Surpac. Click the icon to view the data in the XZ plane. The name of the work directory is displayed in the title bar of the Surpac window. On the Select tool drop-down, choose Select Point/Triangle. Surpac™ 6.6 Page 137 of 207 Introduction Triangulated surfaces Task: Create a DTM — file-based method 4. Task: Saving your customisations to a profile If you are an experienced Surpac user, you might want to create your own profile to get faster access to the toolbars, menus, and commands that you need for your work. This time ensure that the Strings to act as break lines check box is selected. String 2 Segment 1 is now Anti-clockwise String 2 Segment 3 is now Anti-clockwise Surpac™ 6.6 Page 80 of 207 Introduction Viewing and saving data Task: Use select mode to break, join, and renumber segments Task: Use select mode to break, join, and renumber segments With select mode, you can select either points or segments. This mode allows you to perform many string editing tasks quickly. 7. In your web browser, type . Move it forward, that is in a clockwise direction, or backward, that is in an anticlockwise direction. By using toolbars, you can access commonly used functions directly without having to search through the menus. Task: Loading a plane from the Planes panel 1. Only the block faces are displayed. All three coordinates in the Status bar change as you move the string. Open ore_solid1.dtm. This direction is important when calculating areas and volumes. Click and drag the mouse to rotate the data and view it from different angles. A copy of the original icon is created: 4. Surpac™ 6.6 Page 73 of 207 Introduction Viewing and saving data Task: Save a file Saving data You can save a file to a text or binary format. The view in Graphics is perpendicular to this plane. Select the Accept these adjustmentscheck box, and click Apply. The terms form and dialog box mean the same thing. You can also use an option on the Open File form to replace data in a layer. Note: It is not necessary to display point numbers. Click the Reset graphics icon . Surpac™ 6.6 Page 95 of 207 Introduction Viewing and saving data Task: Move data in three dimensions 4. Right-click in Graphics, and select Select Segment. Choose File > Save as. When the plot border is positioned where you want it, Press F2. Hold the CTRL key, and select several of the surface design commands as shown. Note: To see all of the steps performed in this task, run 05h_clip_ore_blocks.tcl. Task: Create a simple pit design 1. Surpac™ 6.6 Page 140 of 207 Introduction Triangulated surfaces Task: Create a boundary string – file-based method Creating a boundary string between two DTM surfaces You will now create a boundary string at the location where a pit intersects the topography. Note: To modify the properties for every plane in the group in one action, right-click on the plane group and choose Properties. (Gemcom) All rights reserved. You can change them to suit your needs. With styles files, you can specify many attributes, such as line colour, marker size, and drawing method (lines, markers, attributes, values). Hold the CTRL key, and select the Pit Design, Expand segment, and Expand string folders. Surpac™ 6.6 Page 51 of 207 Introduction Planes Task: Saving a plane The Planes panel is displayed. Location Any combination of characters and numbers Required ID Numbers only Optional Extension Always .str Required Here are some examples of file names: File name Location ID Extension pit.str pit bench105.str bench 2007design.str 2007design 2007design2.str 2007design 2 .str grade_control135.str grade_control 135 .str dhcomp2_50.str dhcomp2_ 50 .str level-300.str level -300 .str .str 105 .str .str Spaces in file names are not recommended. 2D transformations You can use 2D transformations to transform data from one coordinate system to another. To review licence details, or type a new token number: a. Task: Open a file from the Navigator 1. Outersection Determining the material which might remain after an excavation is completed, for example the excavation of an open pit. Click MenuBar_1. For example: CTRL+Z means hold the CTRL key down, then press Z. Surpac™ 6.6 Page 187 of 207 Introduction Advanced interface operations Task: Run two functions from the Function Chooser The Open File form and its components is a typical form. You can find out which plane is active in Graphics by looking at the Status bar or the Planes panel. Click Apply to restore to the default profile. Surpac™ 6.6 Page 205 of 207 Introduction More Surpac functions Task: Produce a plot of a pit using autoplot The plot is displayed in the plot preview window. All strings are at the same elevation. Each file type is represented by a unique icon in the Navigator. If the format becomes corrupt, Surpac may not work correctly when using the file. The icon will appear with the new name. From the menu, select Form Help A window with help about the function Open file is displayed. l The Z coordinates of the new system are 750 meters below the Z value of the existing system. 36. Surpac™ 6.6 Page 56 of 207 Introduction Planes Task: Viewing and changing plane properties Notice that the sequence number for the plan is 400, and that the plane is the fourth in the group. 4. Click the Markers cell, select Properties and then select the marker type. Next, you will display only those blocks which have a gold value greater than zero, using a "constraint". Right-click in the empty space at the top of the Surpac window. Note: This time the Strings to act as break lines check box is not selected. Open ore1.dtm in Graphics. String => Object Segment => Trisolation Point => Triangle When you define an object, you explicitly assign it both an object number and a trisolation number. Click string 1, as shown. This is a common approach used when data on a cross section has been digitised from a tablet.

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