Survey Sharing Workflow

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[Installdir]\Documentation\Third_Party.pdf

Contents

Survey Sharing Workflow

Software Applications Needed

- COMPASS™
- OpenWells®
- WELLPLAN™

Overview

The Survey Sharing Workflow is a typical workflow that can be used to compare planned and actual trajectories.

This example workflow used in this section includes uses the COMPASS, OpenWells, and WELLPLAN applications in the following manner.

1. COMPASS software: This workflow begins in the COMPASS application. COMPASS software is used to create define targets, create a wellbore, and then create a plan.

2. OpenWells software: OpenWells software is used to create several Daily Operations reports. For each report, the current measured depth, fluid, and a few actual survey stations are entered.

3. COMPASS software: COMPASS software is again used. The surveys entered using OpenWells software are assigned to an actual design in COMPASS software. A 3D plot of both the planned and actual trajectories is viewed to compare the trajectories.

4. WELLPLAN software: WELLPLAN software is used to demonstrate actual survey data is available for analysis in WELLPLAN software. Actual survey data can not be edited within the WELLPLAN application unless you create another case

and copy/paste the data from the actual design case to the new case.

This workflow does not demonstrate all the functionality of the software.

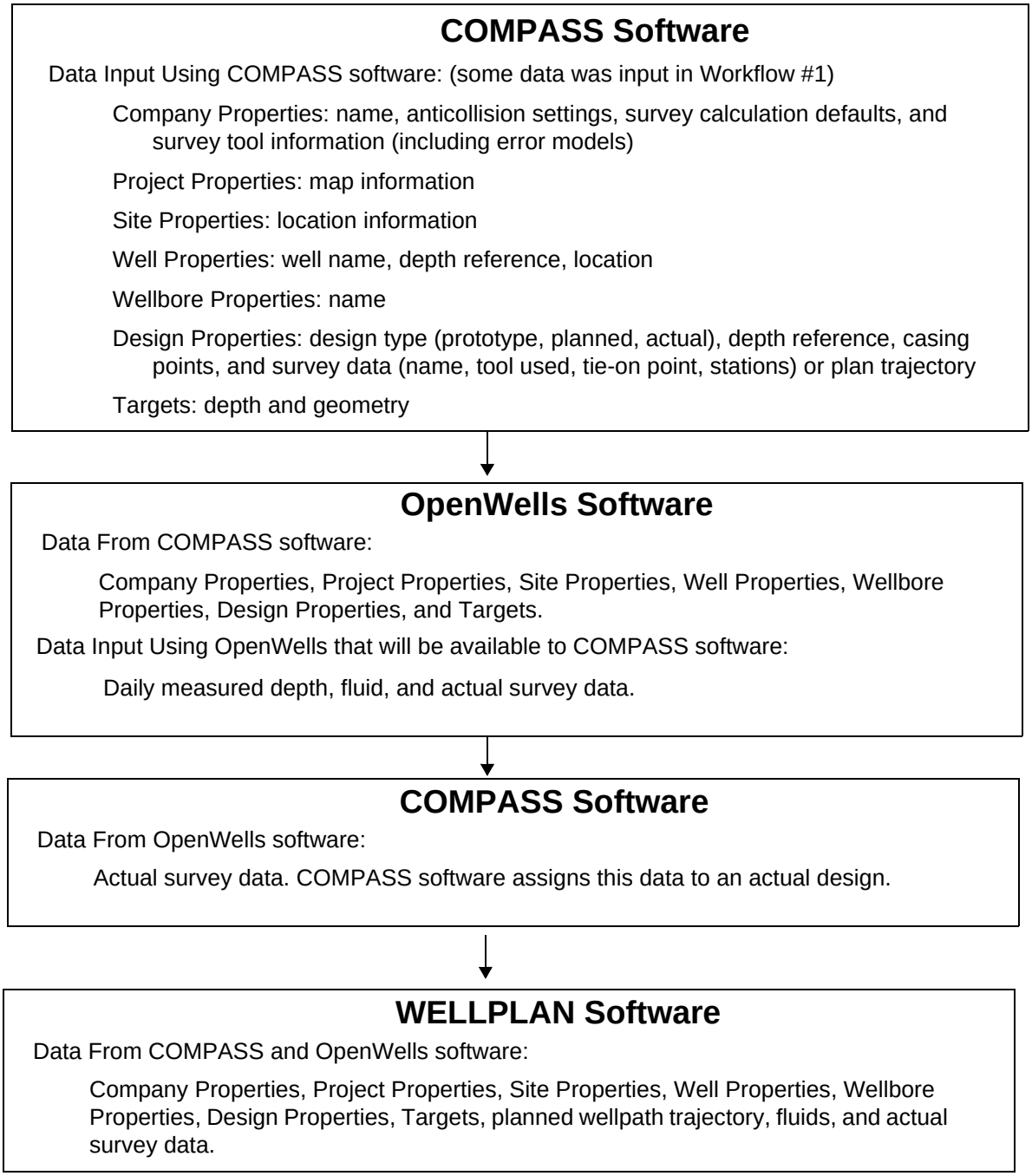
The intent of this workflow is to demonstrate integration between the applications and does not include all of the software's functionality. There are other possible ways the applications could be used together, as well as separately. Refer to the individual product's online help for more information.

Symbols Used in the Workflows

This symbol indicates data input in one application is shared with another application.

This symbol indicates important steps in the integration process.

Data Flow


COMPASS Software
Data Input Using COMPASS software: (some data was input in Workflow #1)
Company Properties: name, anticollision settings, survey calculation defaults, and survey tool information (including error models)
Project Properties: map information
Site Properties: location information
Well Properties: well name, depth reference, location
Wellbore Properties: name
Design Properties: design type (prototype, planned, actual), depth reference, casing points, and survey data (name, tool used, tie-on point, stations) or plan trajectory
Targets: depth and geometry
OpenWells Software
Data From COMPASS software:
Company Properties, Project Properties, Site Properties, Well Properties, Wellbore Properties, Design Properties, and Targets.
Data Input Using OpenWells that will be available to COMPASS software:
Daily measured depth, fluid, and actual survey data.
COMPASS Software
Data From OpenWells software:
Actual survey data. COMPASS software assigns this data to an actual design.
WELLPLAN Software
Data From COMPASS and OpenWells software:
Company Properties, Project Properties, Site Properties, Well Properties, Wellbore Properties, Design Properties, Targets, planned wellpath trajectory, fluids, and actual survey data.

Workflow Steps

1. Launch COMPASS software (**Start > Programs > Landmark Engineer's Desktop 5000.1 > COMPASS**) if it is not already active.

2. If the login screen appears, enter the appropriate User ID and Password.

Create Data Hierarchy

3. Create a company, project, and site if they are not already created.

4. Create a well.

   a) Using the Well Explorer, right-click on the site you want to add the well to, and select **New Well** from the menu.

   b) Using the **Well Properties > General** tab, specify the name of the well.

   c) Use the **Well Properties > Depth Reference** tab to define Depth Reference Datums relative to the System Datum specified on the **Project Properties > General**.

   d) Specify the wellhead location relative to the site using **Well Properties > Location**.

5. Create a new wellbore when prompted. Using the **Wellbore Properties > General** tab, name the well.

6. Do not create a plan or design at this time.

Create Targets

7. Create targets for this well by right-clicking on the project in the Well Explorer, and selecting **Targets** from the menu.

   a) Create and specify the location of a target.

   b) Define other targets as required.

8. Assign created targets to the well and wellbore you created. Using the Well Explorer, right-click on the project and select **Targets** from the menu. Check the boxes associated with the targets you want to assign to the well or wellbore.

Create Plans

9. Create a plan for the well and wellbore you created.

   a) Using the Well Explorer, right-click on wellbore, and select **New Plan** from the menu.

   b) Using the **Plan Design Properties** > **General** tab, name the plan**.**

   c) Using the **Plan Design Properties** > **Vert Section** tab to define the vertical plane or planes to measure the well displacement. Make a note of the default azimuth displayed. You will need it in the next step.

   d) Use the **Plan Design Properties** > **Tie-on** tab to specify the starting azimuth.

10. Design the plan.

Define Survey Tools

11. Import or define survey tool information.

12. Close the COMPASS application.

Create OpenWells Reports and Enter Survey Data

13. Launch OpenWells software (**Start** > **Programs** > **Landmark Engineer's Desktop 5000.1** > **OpenWells**) if it is not already active.

14. Enter the appropriate User ID and Password.

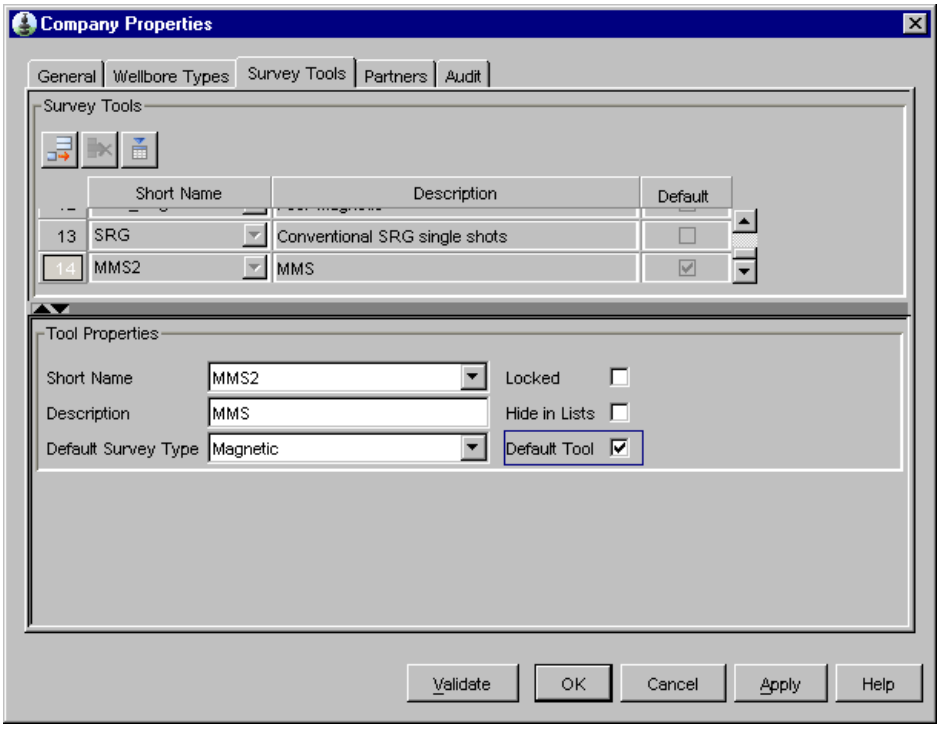
15. Define company properties necessary for the OpenWells application. This includes information such as reporting standard, reporting time, etc.

    a) Specify reporting standards using **Company Properties** > **General**.

    b) Review survey tool properties using **Company Properties** > **Survey Tools**. Notice that OpenWells software does not include the survey tool error model information that COMPASS

software does. The COMPASS and OpenWells applications recognize survey tools input in either application and they can be edited in either application. Survey tool error models must be input using COMPASS software. If error model information is entered for a survey tool in the COMPASSapplication it will not be displayed in the OpenWells application. OpenWells software does not use survey tool model data because it doesn't calculate positional uncertainty. OpenWells software only calculates survey trajectory.

c) Input a new survey tool using **Company Properties** > **Survey Tools**. Make this tool the default tool.

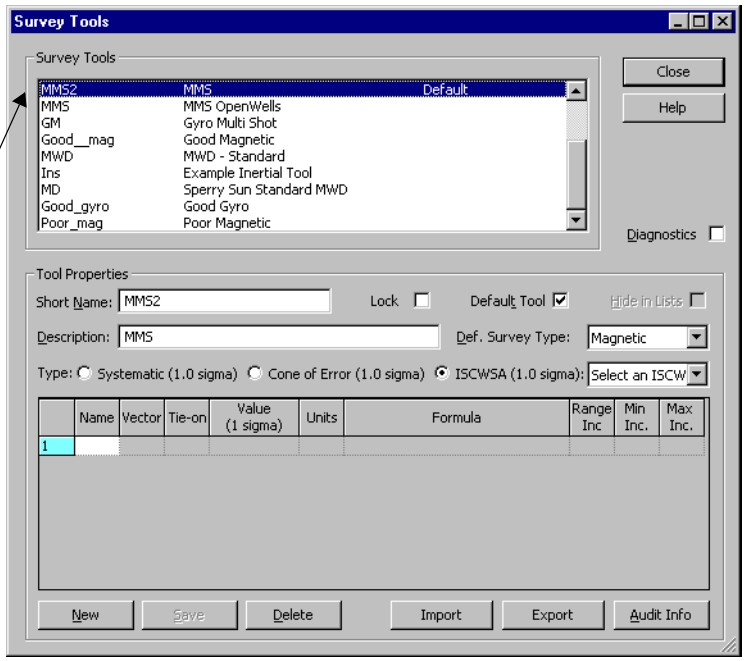


Review Survey Tool Data in COMPASS Software

16. Return to the COMPASS application. Review survey tool properties for the survey tool that was input using OpenWells software, and was marked as the default tool in the OpenWells

software. Notice this designation is also displayed now in the COMPASS application.

Highlight the tool **MMS2**. Notice that survey tool model data is not input because this tool was created using the OpenWells software and OpenWells software does not allow input of survey tool model information.



17. Change the default tool to another tool, if desired.

18. Close the COMPASS application and return to the OpenWells application.

Create OpenWells Reports and Enter Survey Data

19. Create a new event for the well by highlighting the well name using the Well Explorer, and selecting New Event from the menu. Use **Event Properties > General** tab to specify the event and start date.

20. Create a new daily operations report by right-clicking on the event you created and selecting **New Report** from the drop-down menu. Select **Daily Operation** and click the **Next** button. Specify the date. Click **Finish**.

21. Using the **General** section of the report, specify the MD and the rotating hours.

22. Add a new fluid using the **Fluid** section of the report.

23. Add survey data.

    a) Access the **Survey** section of the report. Click the **Add Row** button and then click the **Survey Properties** button. Name the survey.

    b) Add survey data in the **Today's Survey Stations** section of the report.

24. Close the report using **File > Close**. When prompted, save changes to the Daily Operations report.

Use COMPASS Software to Create Actual Design

25. Open the COMPASS application. Using the Well Explorer, determine if the COMPASS software has initiated the creation of an actual design based on the OpenWells survey data. Recompute the wellpaths and plans when prompted.

26. Attach the OpenWells surveys to the actual design. Right-click on the actual design using the Well Explorer. Select **Properties** from the menu. Using the **Actual Design Properties > Survey Program** tab, click on the **Survey (Wellbore)** column and select the survey from the drop-down list.

27. Observe that the survey data in the COMPASS application is the same as that in the OpenWells application. Open the **Survey Editor** by double-clicking on the survey icon for the survey.

28. Close the COMPASS application.

Create Another OpenWells Report and Enter Survey Data

29. Using OpenWells software, create a new daily operations report using **File > New > Report** and select **Daily Operations**.

    a) Specify the MD in the **General** section of the report.

    b) Add survey stations to the existing survey.

    c) Save and close the report.

Add Surveys to Actual Design in COMPASS Software

30. Open the COMPASS application. Notice the message indicating that surveys have been edited using another application. Click **OK** to recompute the surveys. Double-click on the survey icon to view the survey. Observe the additional surveys are automatically added to the COMPASS actual design because the survey was part of the definitive path on a previous day. You will not need to add them to the survey program as you did previously.

31. Close the COMPASS application.

Create Another OpenWells Report and Enter Survey Data

32. Using OpenWells software, create a new daily operations report using **File > New > Report** and select **Daily Operations**.

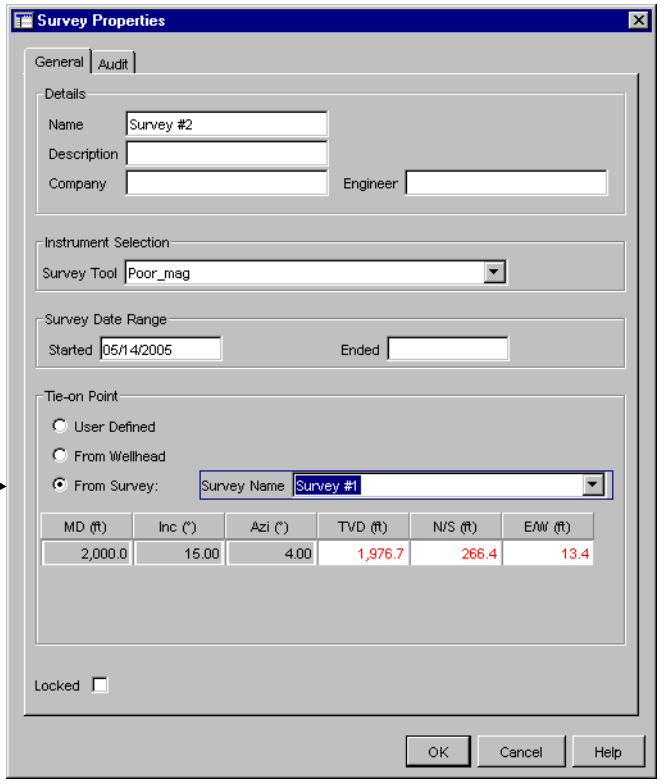
    a) Specify the MD as in the **General** section of the report.

    b) Add a new fluid. Move to the fluids section of the report by clicking on **Fluids** in the list of report sections located on the left-side of the window. Name the fluid and specify fluid properties.

    c) Create a new Survey. Add survey header information. Move to the survey section of the report by clicking on **Survey** in the list of report sections located on the left-side of the window. Using **Survey Properties**, name the survey. (Click the **Survey**

Properties button to access **Survey Properties**.) Tie this survey on to the last survey you created.

Tie-on to the previous survey data.



d) Specify survey stations.

e) Save and close the report.

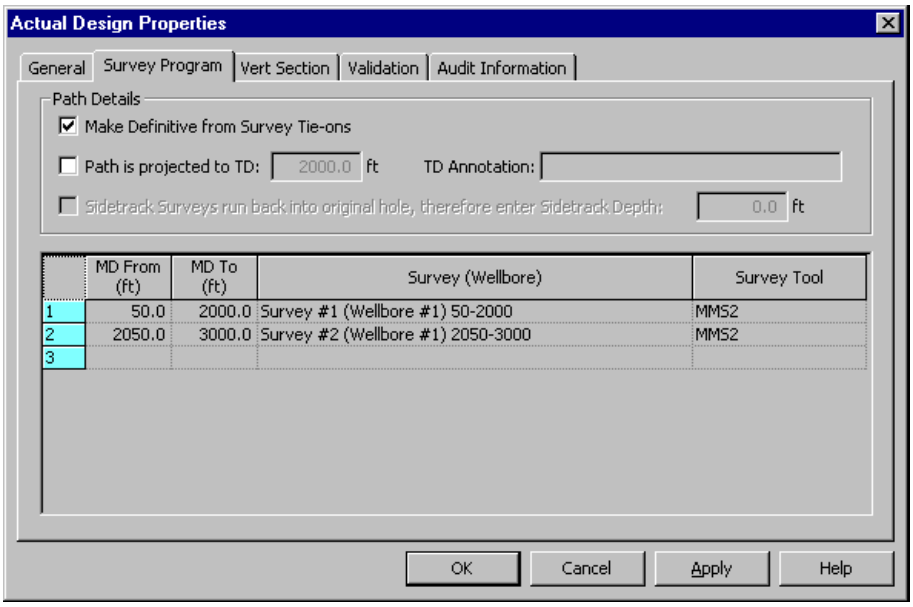
Add Surveys to Actual Design in COMPASS

33. Open the COMPASS application. Click **OK** to recompute surveys when prompted.

34. The survey data entered in OpenWells software are added to the actual design in COMPASS software. Right-click on the actual

design label in the Well Explorer and select **Properties** > **Survey Program** tab. The surveys are added to the survey program.

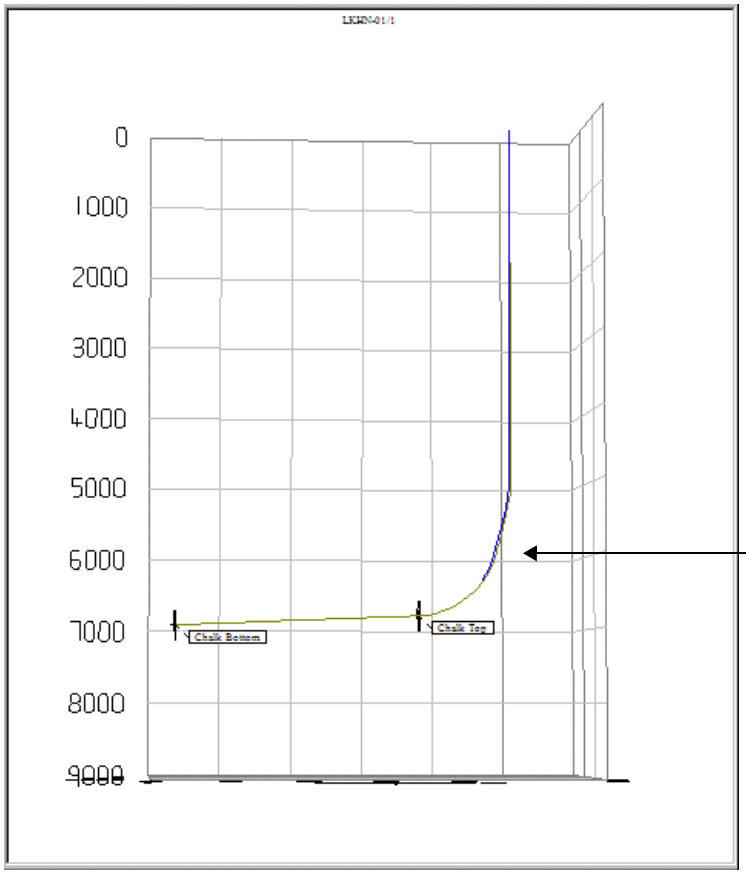
Be sure to check the **Make Definitive from Survey Tie-ons** box to have COMPASS software automatically manage the survey program.



35. Review the actual wellpath for the actual design. In the Well Explorer, double-click on the actual design. The actual wellpath will be displayed.

View a 3D Display of the Data Using COMPASS Software

36. Using **Analysis > Select Offset Designs** to select the plan. View the **3D View** by clicking the **3D View** toolbar button. Click on the **Targets** toolbar button to display the targets.



Notice the relationship between the actual wellpath and the planned wellpath. You may need to zoom. (Hold the right mouse button down to zoom.)

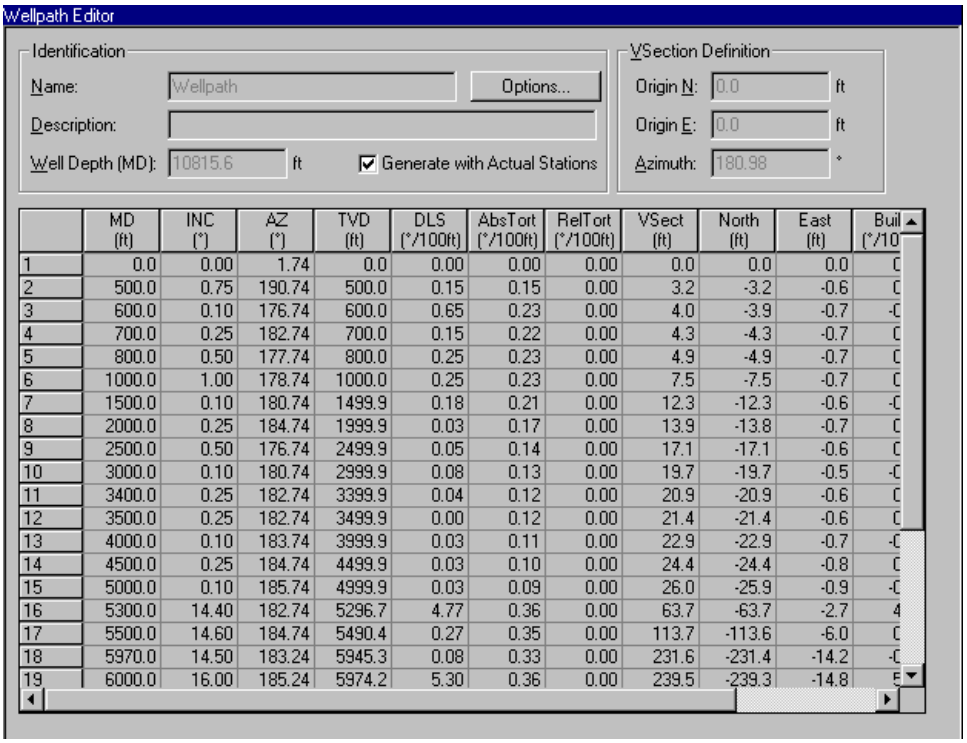
37. Close the COMPASS application.

Use WELLPLAN Software to Analyze Data

38. Open the WELLPLAN application. Right-click on the actual design. Select **New Case** from the menu. Name the case.

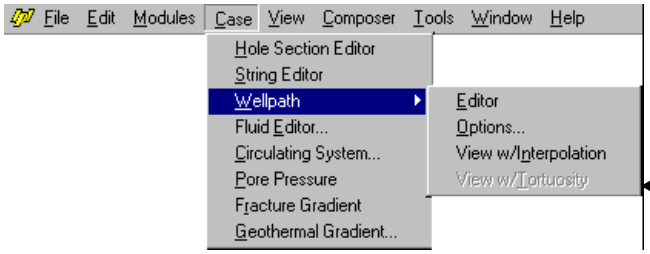
39. Review the trajectory using **Case > Wellpath > Editor**. Notice the data is the same as that entered using the COMPASS and

OpenWells applications. You cannot edit this wellpath data because it is an actual design.



	MD (ft)	INC (°)	AZ (°)	TVD (ft)	DLS (°/100ft)	AbsTort (°/100ft)	RelTort (°/100ft)	VSect (ft)	North (ft)	East (ft)	Buil (°/10
1	0.0	0.00	1.74	0.0	0.00	0.00	0.00	0.0	0.0	0.0	0
2	500.0	0.75	190.74	500.0	0.15	0.15	0.00	3.2	-3.2	-0.6	0
3	600.0	0.10	176.74	600.0	0.65	0.23	0.00	4.0	-3.9	-0.7	-0
4	700.0	0.25	182.74	700.0	0.15	0.22	0.00	4.3	-4.3	-0.7	0
5	800.0	0.50	177.74	800.0	0.25	0.23	0.00	4.9	-4.9	-0.7	0
6	1000.0	1.00	178.74	1000.0	0.25	0.23	0.00	7.5	-7.5	-0.7	0
7	1500.0	0.10	180.74	1499.9	0.18	0.21	0.00	12.3	-12.3	-0.6	-0
8	2000.0	0.25	184.74	1999.9	0.03	0.17	0.00	13.9	-13.8	-0.7	0
9	2500.0	0.50	176.74	2499.9	0.05	0.14	0.00	17.1	-17.1	-0.6	0
10	3000.0	0.10	180.74	2999.9	0.08	0.13	0.00	19.7	-19.7	-0.5	-0
11	3400.0	0.25	182.74	3399.9	0.04	0.12	0.00	20.9	-20.9	-0.6	0
12	3500.0	0.25	182.74	3499.9	0.00	0.12	0.00	21.4	-21.4	-0.6	0
13	4000.0	0.10	183.74	3999.9	0.03	0.11	0.00	22.9	-22.9	-0.7	-0
14	4500.0	0.25	184.74	4499.9	0.03	0.10	0.00	24.4	-24.4	-0.8	0
15	5000.0	0.10	185.74	4999.9	0.03	0.09	0.00	26.0	-25.9	-0.9	-0
16	5300.0	14.40	182.74	5296.7	4.77	0.36	0.00	63.7	-63.7	-2.7	4
17	5500.0	14.60	184.74	5490.4	0.27	0.35	0.00	113.7	-113.6	-6.0	0
18	5970.0	14.50	183.24	5945.3	0.08	0.33	0.00	231.6	-231.4	-14.2	-0
19	6000.0	16.00	185.24	5974.2	5.30	0.36	0.00	239.5	-239.3	-14.8	5

40. Notice that you cannot add tortuosity to the wellpath data. This too is because it is an actual design.



The tortuosity menu option is not available because the wellpath data pertains to an actual design.

41. You can now use the wellpath data in any WELLPLAN analysis.