

KellyDown Tips

Periodic tips to help you use KellyDown more effectively

Left/Right/Above/Below Plan vs. X-Offset/Y-Offset

Problem: I am having difficulty understanding the difference Left/Right/Above/Below Plan and X-Offset/Y-Offset to Plan. Neither do the values seem to agree with the values from other directional applications.

Cause: In KellyDown, there two sets of data that compare the survey data against an associated proposal. The difference between the two is that the Left/Right/Above/Below columns show the X and Y distances of the survey data from the proposal perpendicular to the proposal at the closest point whereas the X-Offset/Y-Offset columns show the X and Y distances from the survey to the proposal perpendicular to the survey data. Additionally, both methods differ slightly from other typical directional applications as explained below.

Solution: The X-Offset to Plan and Y-Offset to Plan values are useful for the directional driller to easily correct his survey back to the proposal. If the X-Offset value is positive, it means the proposal is to the right of his survey and he needs to turn right to correct back to the proposal. If the Y-Offset value is positive, it means that the proposal is above his survey and he needs to build angle to correct back to the proposal.

The Left/Right/Above/Below Plan values are useful for telling the directional driller where his survey data is in relation to the proposal. If the directional driller has a travelling cylinder plot down the proposal, he can mark the corresponding surveys on the plot to show him where each survey is in relation to the proposal.

Other directional drilling applications typically show the comparison between the proposal and survey data based on a common vertical section distance.

In the following horizontal section diagram showing an exaggerated depiction of a proposal in blue and the corresponding survey data in red. The proposal builds to the north and then turns east, then continues to build to 90 degrees along 90 degrees azimuth.

The vertical section direction corresponds with the final direction of the proposal, i.e. 90 degrees. Three individual surveys are shown at various depths. The dashed green lines depict the vertical section distance at each of the three survey stations. The dashed green lines are all perpendicular to the vertical section direction.

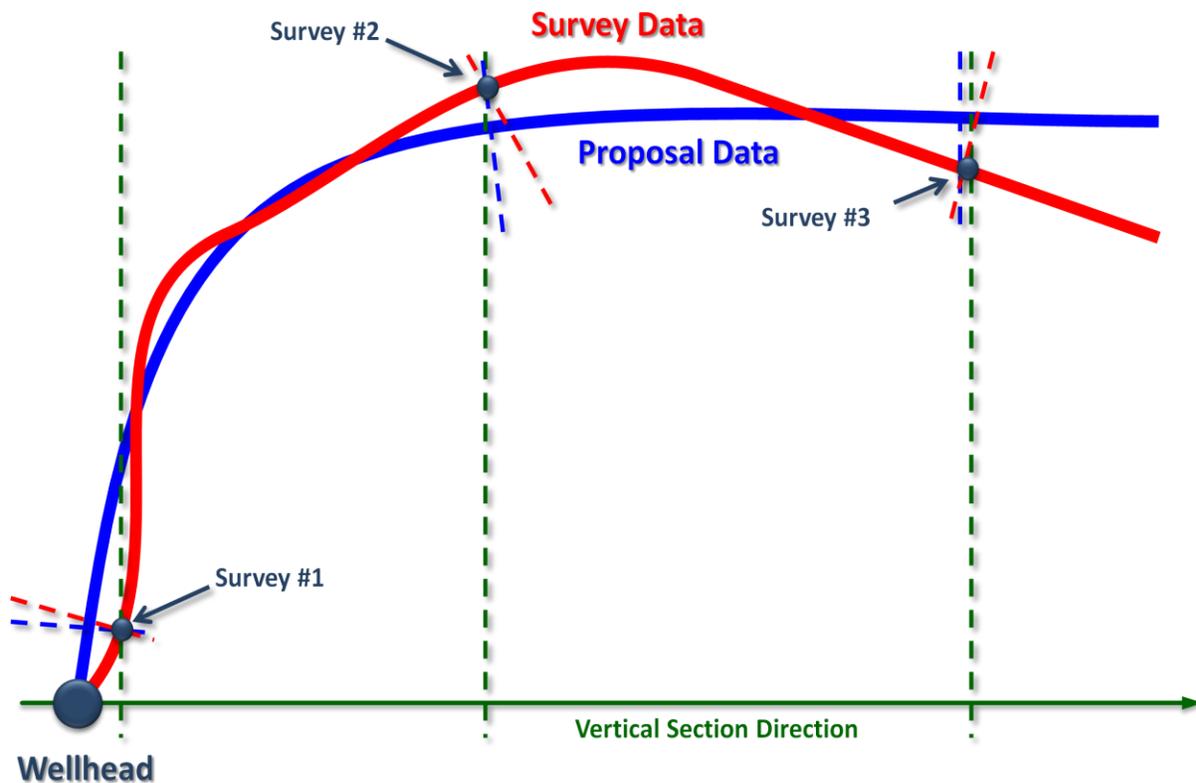
The dashed red lines show the plane perpendicular to the survey azimuth along which the X-Offsets to the proposal are calculated. The dashed red lines are perpendicular to the survey data.

The dashed blue lines show the plane perpendicular to the proposal along which the Left/Right distances from the proposal back to the survey are calculated. The dashed blue lines are perpendicular to the proposal data.

At Survey #1, the survey has begun to build to the north but the kick-off direction is east of the proposed kick-off direction and you can see that the corresponding point on the proposal at the same vertical section distance is a significant distance away from the survey. The survey is to the right of the proposal.

The dashed blue line shows that Survey #1 is to the right of the proposal at the corresponding closest point on the proposal.

The dashed red line shows the proposal is left of the survey station, the X-Offset therefore is a negative value.



At Survey #2, the well has begun to turn to the east but not fast enough to follow the proposal. The survey station is to the left of the proposal data and the distance between the proposal and survey along the dashed green and blue lines are very similar. The distance along the dashed blue line will always be equal to or smaller than the distance along the dashed green line because the blue line always connects to the closest point on the proposal.

The distance from the survey to the proposal along the dashed red line is greater than the distances along the dashed green and dashed blue lines because the dashed red line is perpendicular to the survey data. The value will show a positive X-Offset. It shows that the driller has to turn right to correct back to the proposal. It arguably provides a more realistic indication of the distance back to the proposal because the corresponding point on the proposal will always be perpendicular to the survey direction whereas the two other lines could be behind or in front of the survey station.

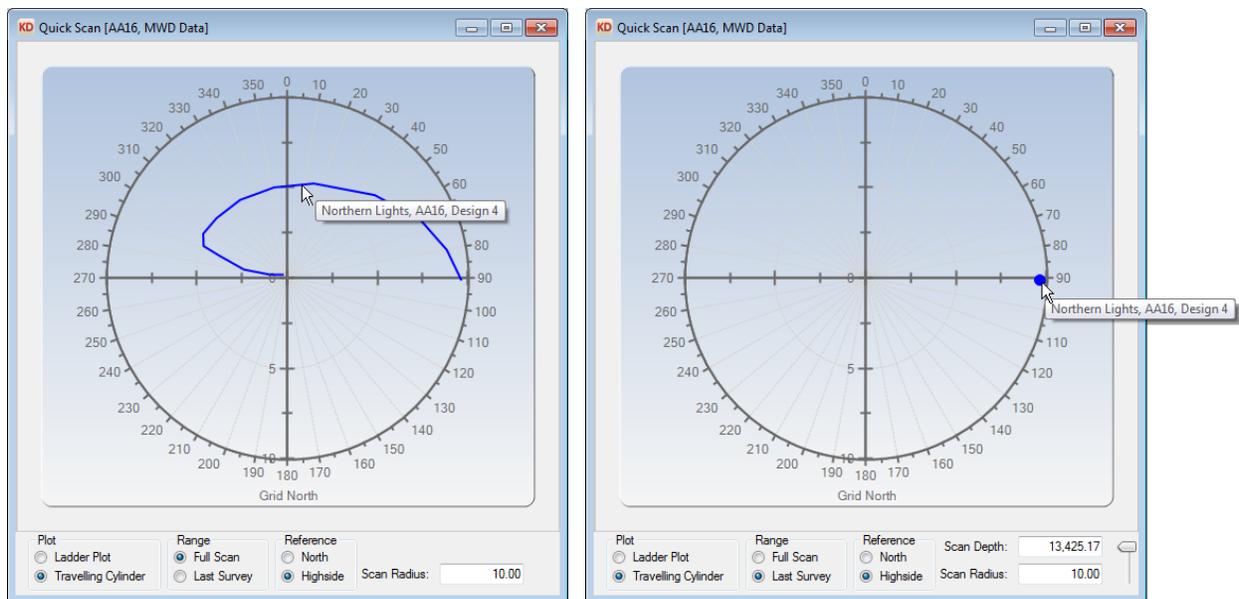
At Survey #3, the proposal azimuth is exactly the same as the vertical section direction so the distances along the dashed green and dashed blue lines will always be the same. In this instance, the Left/Right distances calculated by KellyDown should always correspond with other applications that calculate the distances using the vertical section direction.

The survey data is obviously to the right of the proposal and the driller needs to turn the well to the left to correct back to the proposal.

The red line shows a negative X-Offset back to the proposal and shows the driller that he needs to turn the well to the left to correct back to the proposal.

Tip: Use the **Quick Proximity Scan** feature in KellyDown to show you exactly where the proposal is in relation to the current survey record. Hold down the **Ctrl** key whilst also clicking on the **Quick Proximity Scan** button. This will load the **Quick Proximity Scan** routine with only the corresponding proposal data included as the adjacent well.

Select the **Travelling Cylinder** Plot, **Highside** Reference and a realistic **Scan Radius**. The centre of the plot represents the survey data and the coloured line shows how the proposal relates to the survey down the length of the survey. If you want to view just the current survey record, click on the **Last Survey** option. You can use the slider at the bottom right to traverse through the other survey records.



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