KellyDown Tips

Periodic tips to help you use KellyDown more effectively

Remote Monitoring with Survey Corrections

KellyDown 4.00.02.01 introduced a new process whereby survey data is automatically corrected by a third-party service provider for magnetic interference from the BHA and fluctuations in the earth's magnetic field. The **KellyDown Survey Editor** and the **KellyDown Slidesheet Editor** may both be configured to automatically monitor for corrected survey data as it is processed by the third-party service provider.

Additionally, KellyDown in Remote Operations Centres (ROC) may be configured to automatically update survey, slidesheet and drilling records as they are processed at the rig-site. Several remote instances of KellyDown may be monitored simultaneously on a single ROC computer and tested for proximity and other criteria, which if breached will trigger audible alarms and/or broadcast SMS text messages and email messages to selected company or customer personnel.

This document explains how to set up KellyDown at the rig-site and at the ROC to perform these functions.

Survey Correction

KellyDown first needs to be set up to transmit email and text messages. This may be configured at the rig-site and/or in the ROC, and different personnel may be selected at either location. For example, the rig-site instance of KellyDown may be configured to alert the directional driller if the well diverges from the associated wellplan by a certain distance. The ROC instance of KellyDown may be configured to alert ROC personnel, company or customer representatives if the well comes in close proximity to an adjacent well, thereby avoiding potential problems before they become an issue.

First, we need to provide KellyDown with access to an outgoing email server. Open **Administration**, **System Settings** and if Microsoft Outlook™ is running on the computer, check the box named **Use Default Outlook Account** on the **General** tab. If Microsoft Outlook™ isn't installed on the computer; configure the **Outgoing Email Server** as you would for a mobile phone. Once you have entered the necessary information, click on the **Test Settings** button to check everything is working correctly.
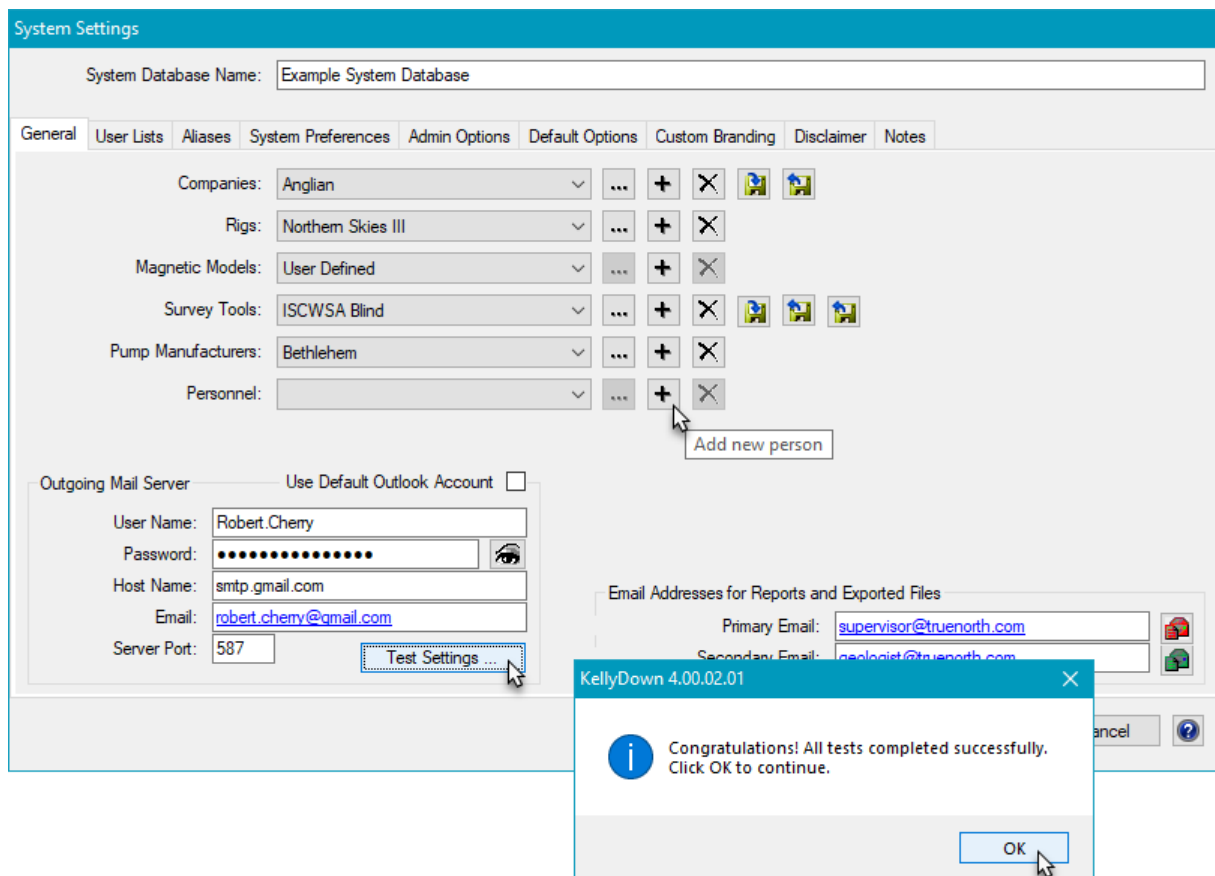
Next, add the contact information for any personnel that you wish to receive alerts from KellyDown. Click on the **Add new person** button and enter the necessary information. At the very least, you need to enter their **Name** and **Email** address and if you wish to send them SMS text messages, enter their **Mobile Number** and select their **Mobile Provider**.
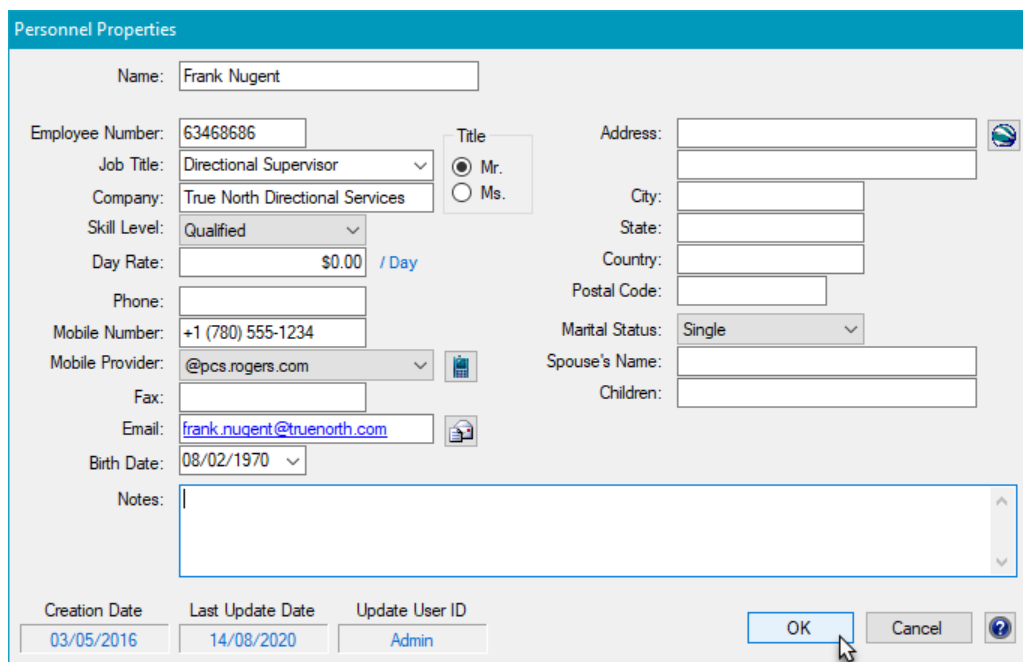
If you also wish to include customer representatives in the list of people who will receive alerts, enter their contact information in **Company Properties**.

Finally, before you start the actual job, set the **Alert Parameters**. Open **Tools**, **Options** and click on the **Proximity Options** tab. Set the maximum allowable **Distance from wellplan** before an alert is issued; the suggested value is 10m or 25ft.

Set the **Closest Well Highlight/Alarm Distance Ratio** to say 10m/1000 (or 10ft/1000). This is the closest distance you wish to come to an adjacent well, based on the measured depth, before the alarm is sounded. For example, if the current measured depth is 2,000m, the alarm will sound and alerts will be issued if the current well comes to within 20m of an adjacent well.

It's always a good idea to define a **Scan Radius** for the closest well scan in order to speed up the calculations; otherwise KellyDown may take an excessive amount of time to scan all the wells in a large project. It is not necessary to scan wells that are more than say 1,000m away from the current well because there is no chance that the offset well would ever become a collision risk. A distance of 1,000m means that no part of the offset well is closer than 1,000m to the current survey.

If you are drilling a sidetrack and you don't wish to be alerted if you are close to the sidetracked hole, check **Exclude parents and children of reference profile**. If the parents of the current profile are laterals, then obviously you would want to be alerted when the current well is too close to one of its laterals. The other options are self-explanatory.

Create a New Profile under the current well and enter the relevant information for an MWD run. Don't forget to associate the survey with the corresponding proposal. You can add job details by clicking on the **Add New Job** button here or you may do it later from within the **Drill Records Editor** (see below).

Close the **Survey Properties** and open the **Slidesheet Editor**. You will be prompted to enter the **Bit to Sensor Distance**.


When the slidesheet opens, click on the **Drilling Records** button on the slidesheet toolbar or by selecting **Edit**, **Drill Records** from the menu to open the Drilling Records dialog.

Click on the **Add New Job** button to create a new job, or select one from the dropdown list if you wish to use an existing job number. Enter the **Job Number** and any other relevant information about the job.

Click on the **Alerts** tab and select the personnel and/or customer contacts that you wish to receive alert messages should the alert criteria be triggered. Check the relevant box depending on whether the

person is to receive email or text messages or both. If there is sufficient information to enable the alerts, the **Status** box turns green, otherwise it turns red.
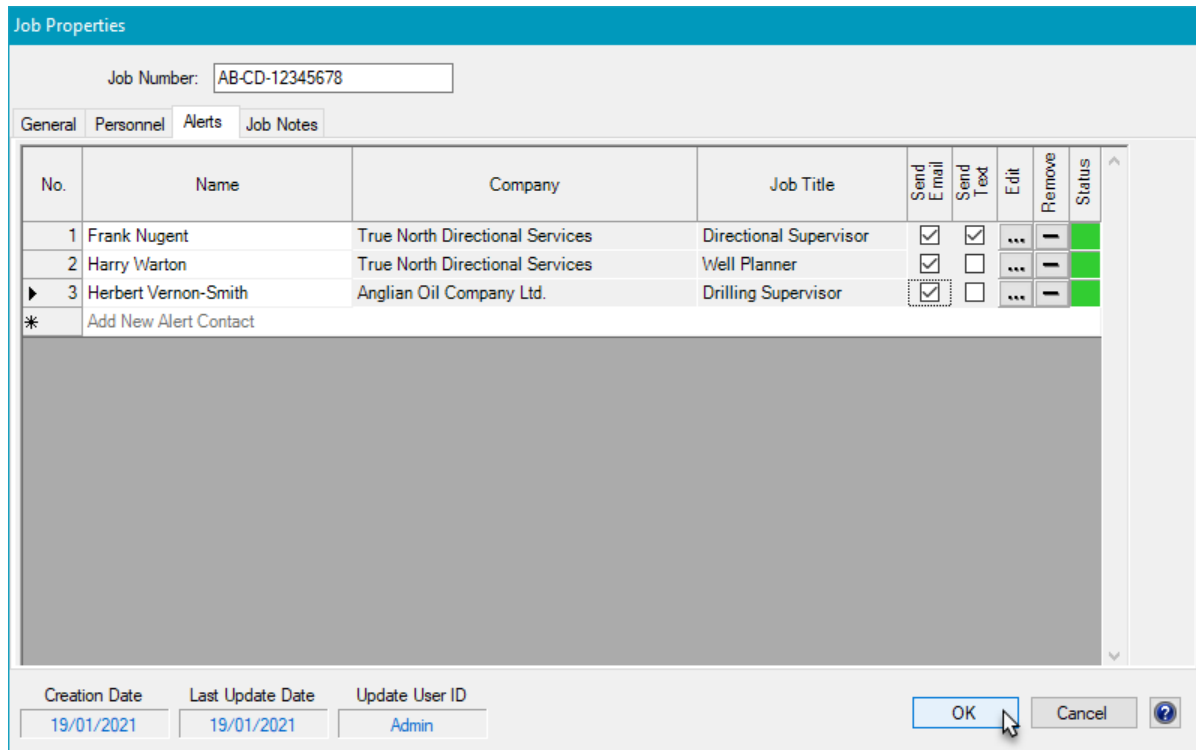
Close the **Job Properties** and click on the **Job/Bit/Motor** tab in the **Drill Records Editor**.

Enter details about the **Bit** and **Motor** and then click on the **Add New Drillstring** or **Edit Drillstring** button to enter the list of drillstring components. Click on the **Edit Pumps** button to enter information about the pumps and then close the Drill Records dialog.

As drilling proceeds and raw surveys are computed by the MWD computer and entered into the slidesheet. The raw MWD sensor data is simultaneously transmitted to the survey analysis company that computes the corrected survey and writes it to the Watch File located on the shared network drive. The shared drive may be located on a local area network or in a third-party cloud storage folder such as Microsoft's OneDrive™ or DropBox™.

It is beyond the scope of this document to describe how these shared folders are configured and shared so please refer to the associated documentation depending on which methodology you decide to use. For this example, we will utilise the DropBox™ technology and store the watch files in a secure DropBox folder named *KellyDown Shared Folder*.

Create the new folder on the DropBox drive and share the location with the survey analysis company and with the Remote Operations Centre if the drilling operation is to be monitored in real time.

If the operation is to be monitored by the ROC, you need to save the current well, profile and drill run to the DropBox folder so it may be imported into KellyDown at the ROC. To do this, simply check the box next to the current well in the Database Explorer and select the **File**, **Export** menu.
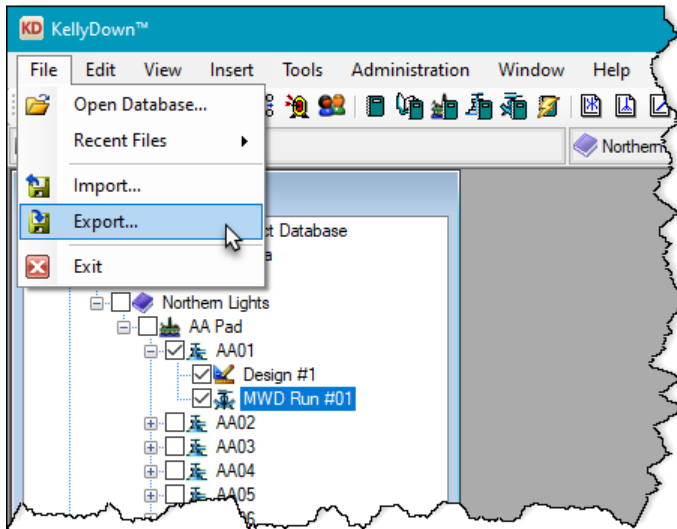
Use the default name provided by KellyDown.
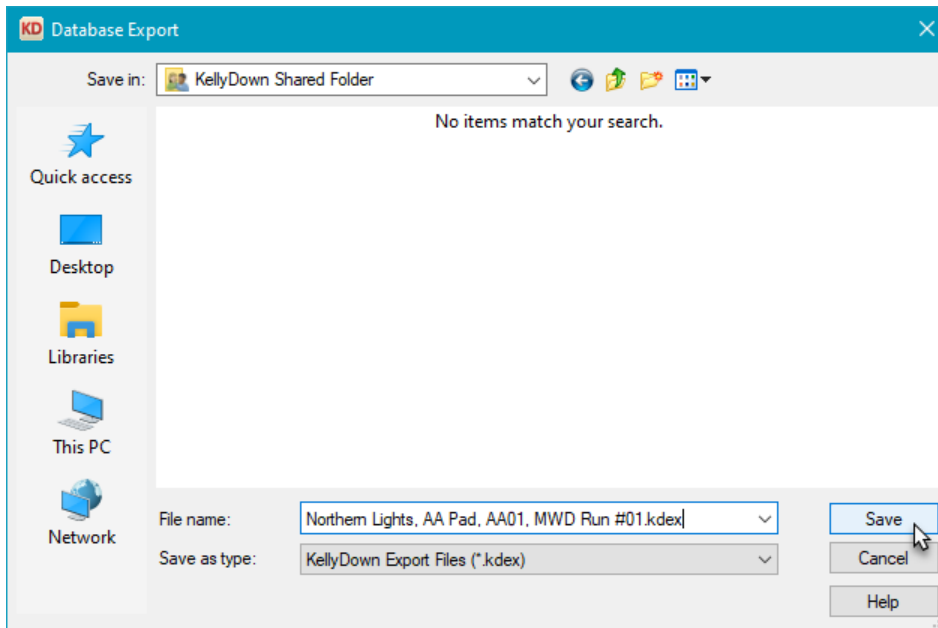
Inform the ROC who will then import the well, profile and run into their instance of the KellyDown.

Back in the KellyDown slidesheet at the rig-site, click on the **Tools, Configure as Client (Receive Data)** menu and select the file that contains or will contain the corrected survey data. The file does not need to exist yet, but the survey analysis company needs to know the name of the file and its intended location.

KellyDown will check that the information stored in the watch file matches the information for the current well and if it doesn't will display a message advising you to correct the discrepancy before continuing.

Important: Make sure there is absolutely no doubt and no ambiguity about the name of the file that will contain the corrected survey data, otherwise the process will fail at best and at worse, update the slidesheet with incorrect survey data.
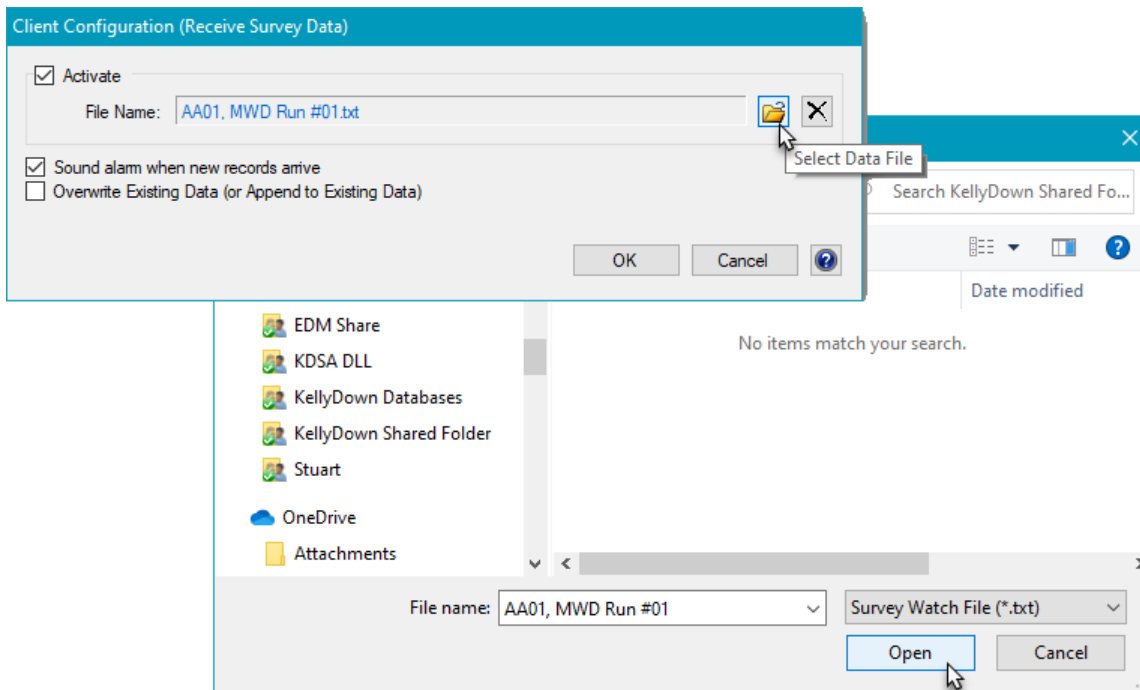
Check the **Activate** box and optionally, the **Sound Alarm** box.

While the survey is being processed and corrected by the survey analysis company, continue to enter drilling activities and relevant information into the slidesheet including the survey depth and the uncorrected survey inclination and azimuth values. The corrected survey data will eventually be written to the watch file. It could take anywhere between five and thirty minutes for the corrected survey data to be processed depending on the circumstances.

Survey Data Watch File

The **Survey Data Watch File** may have any number of header lines but they must include **Survey Name:** and **Well Name:** lines with a colon character (:) followed by the actual name. These two names must match the corresponding names in KellyDown.
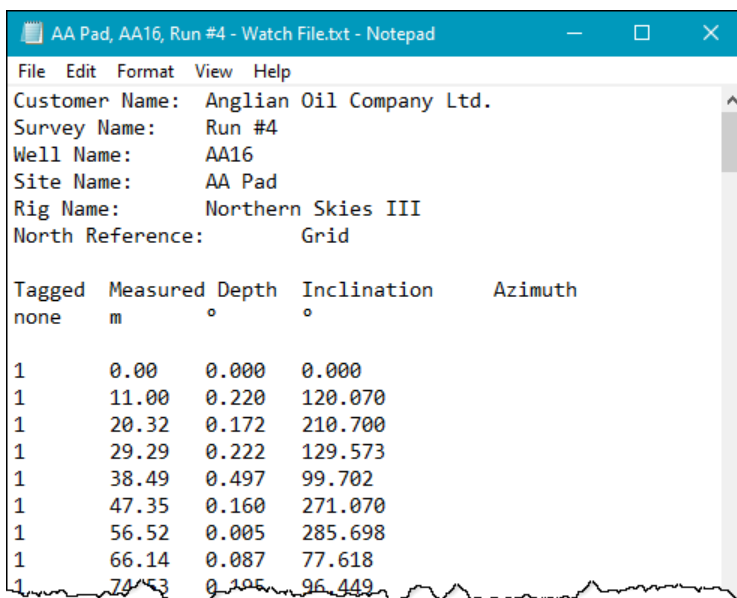
If a **North Reference** line is not included in the headers, the current North Reference in KellyDown is assumed.

The **Column Headers** line must exist and must contain the four column headers labeled **Tagged**, **Measured Depth**, **Inclination** and **Azimuth** in any order separated by tab characters or spaces.

The line following the column headers must contain the **Units** for each column in the same order as the column headers and separated by tab character a space. If the **Measure Depth** unit contains the characters "ft", the units for the measured depth are assumed to be international feet. If the **Measured Depth** unit contains the characters "us", the units for measured depth are assumed to be US Feet. Otherwise the units for measured depth are assumed to be metres.

If the unit for **Inclination** and/or **Azimuth** contains the characters "rad", the units are assumed to be Radians, otherwise they are assumed to be decimal degrees.

The **Data Lines** must be in the same order as the column headers and each value must be separated by a tab character a space.

All lines having the **Tagged** value of 0ne (1) will be interpreted as survey data. Any data lines not having a **Tagged** value of one (1) will be skipped.

In the screenshot shown below, the well has been drilled down to a **Bit Depth** of 27.21m and raw survey data has been entered for **Survey Depths** of 1.89m and 11.00m respectively. Meanwhile, the raw MWD sensor data has been processed by the survey analysis company and the corrected survey data for the survey depth at 1.89m has been written to the watch file.

As soon as KellyDown detects that new corrected survey data is available, a message is displayed on the status bar and an optional audible alarm is sounded.

However, the survey data in the slidesheet isn't updated until the user tabs off the current cell in which he is working, at which time, any surveys that have been corrected are updated and recalculated and the message on the status bar disappears.

No.	Survey (Y/N)	Activity	Hours	Start Depth (m)	End Depth (m)	Depth Drilled (m)	Survey Depth (m)	Survey Inclination (°)	Survey Azimuth (°)	Vertical Depth (m)	Northings (m)	Eastings (m)
0	☐						0.00	0.000	0.000	0.00	0.00 N	0.00 E
1	☐	Standby	5.00	0.00	0.00							
2	☐	Rig Up & Tear Down	1.00	0.00	0.00							
3	☐	Tripping In	0.50	0.00	0.00							
4	☐	Rotating	0.33	0.00	4.03	4.03						
5	☐	Sliding	0.22	4.03	9.03	5.00						
6	☐	Rotating	0.26	9.03	13.89	4.86						
7	☐	Sliding	0.17	13.89	17.89	4.00						
8	☑	Survey & Connection	0.00	17.89	17.89		1.89	0.160	85.065	1.89	0.00 N	0.00 E
9	☐	Rotating	0.32	17.89	22.21	4.32						
10	☐	Sliding	0.13	22.21	27.21	5.00						
▶ 11	☑	Survey & Connection	0.00	27.21	27.21		11.00	0.250	120.000	11.00	0.01 S	0.03 E
*		Add New Slide Record										

Drilling proceeds as normal with each record being added to the slidesheet and each time corrected survey data becomes available, it is updated in the slidesheet whenever you tab to a new cell.

Tip: Click on the **Read Watch File** button on the slidesheet toolbar to immediately read the watch file. Hold down the **Ctrl** key and click on the **Read Watch File** button to update the whole of the slidesheet with data from the watch file.

SMS Text Message and Email Alerts

We have already discussed how to configure KellyDown for transmitting real-time alerts. To enable these alerts, KellyDown needs to actually calculate the perpendicular distance to the associated wellplan and the closest distance to other wells in the project.

To enable this functionality, one or more of the associated columns needs to be included in the slidesheet. For example, in order to scan for the closest well, the slidesheet must contain one or more of the **Closest Well Name**, **Closest Well Distance** or **Pseudo Clearance Factor** columns, and to scan for the distance from the associated proposal, the slidesheet must contain one or more of the columns referencing the associated wellplan, i.e. **Distance to Wellplan**, **Offset to Wellplan**, **Direction to Wellplan**, **Proposed Inclination** or **Proposed Azimuth** etc.

Whenever any of the pre-defined criteria are triggered, KellyDown will issue text messages and/or email alerts to those individuals listed in the **Alerts** tab of the **Job Properties**.

Remote Monitoring

To configure KellyDown for remote monitoring, you need to configure KellyDown to save the slidesheet to another watch file in the same or another shared folder that may be accessed by the Remote Operations Centre (ROC).

In the slidesheet, click on the **Tools**, **Configure as Server** menu and enter a name for the watch file in the shared folder. Make sure you select the **Slidesheet Link File** with a .kdsst extension shown at the bottom of the dialog. Use a file name that uniquely identifies the current well and survey.
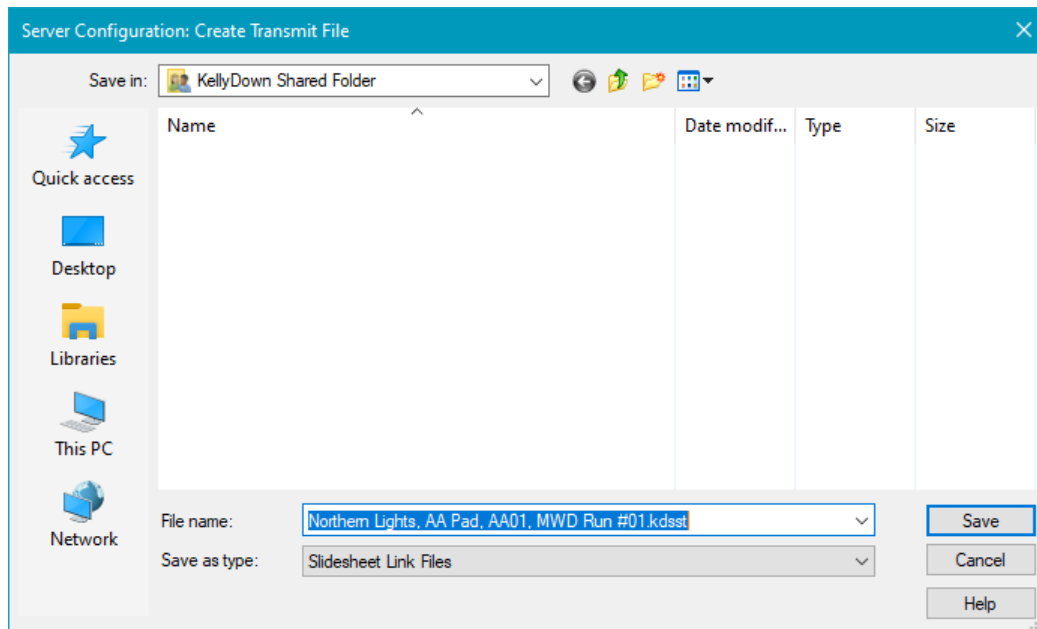
Check the **Activate** box and click on the **OK** button to return to the slidesheet.
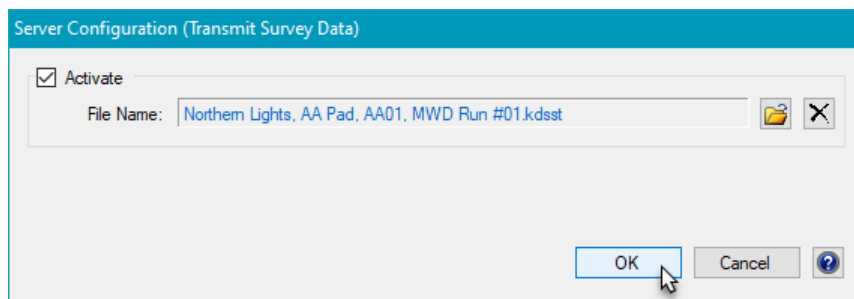
As soon as you close the **Server Configuration** dialog, any existing slidesheet records are written to the watch file and a message is shown on the status bar, and as new records are added to the slidesheet, they too will also be written to the watch file.
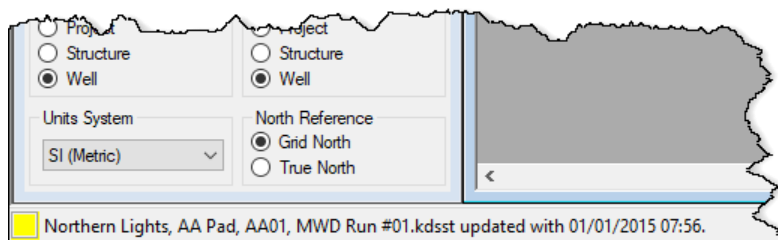

As each new record is added to the slidesheet, the watch file is updated with the new information. This also includes any modifications made to the **Drill Records**, i.e. **Drilling Parameters** and **Mud Properties** etc.

In the Remote Operations Centre, the ROC operator opens his or her slidesheet for the same well and selects **Tools**, **Configure as Client**.

He locates the same file in the shared folder and checks the **Activate** button. As soon as he closes the **Client Configuration** dialog, any records already in the watch file are appended to the bottom of the slidesheet.
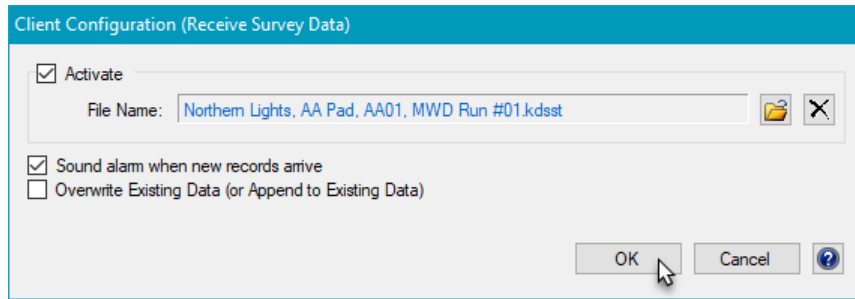
As a safeguard, KellyDown checks that the identification information stored in the watch file matches that of the current well and if it doesn't will prompt you for confirmation before updating the survey data.
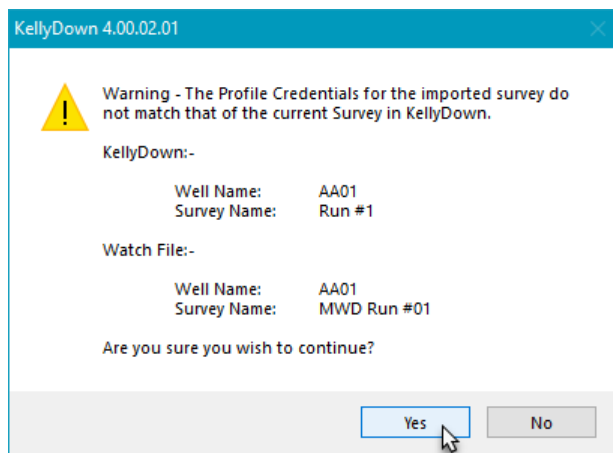
If the information does match, KellyDown sounds an alarm indicating that the slidesheet has been updated and displays a message on the status bar.
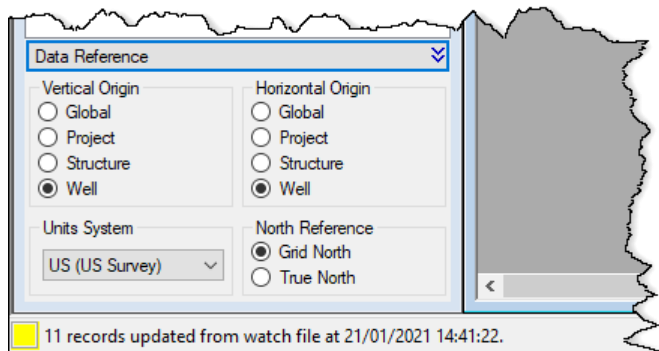
The ROC slidesheet will continue to receive new records until the client is deactivated. If the watch file contains corrected survey information for earlier surveys, it too will be updated and the slidesheet recalculated.

The ROC may issue text and/or email alerts to a different group of people than the rig, but the ROC slidesheet must also contain the columns that enable the detection of the closest well and associated wellplan (see above).

If you have a question you would like answered in KellyDown Tips, reply to this email with your question.
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If you would like to be removed from this email distribution list, reply with "Unsubscribe" in the subject line.