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## HYPACK® Crane Interface

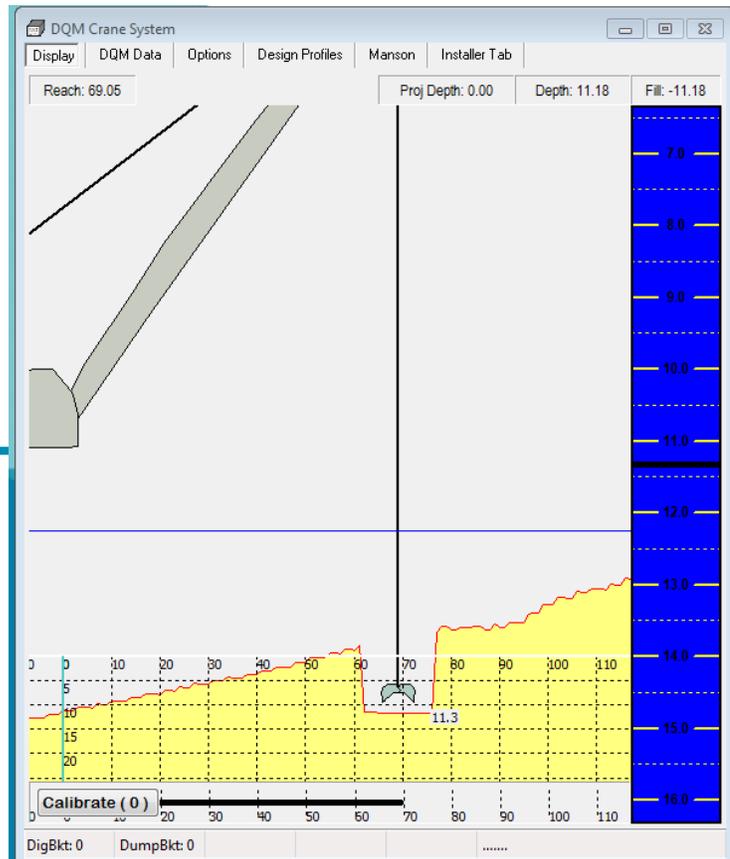
By Bob Glover

The HYPACK® crane interface has seen some changes lately to support the second generation of the HYPACK® crane system.

The driver used to interface to the crane is the DQM Mechanical driver. This driver interfaces to several different setups, but was written primarily to interface to the HYPACK® crane system (HCS).

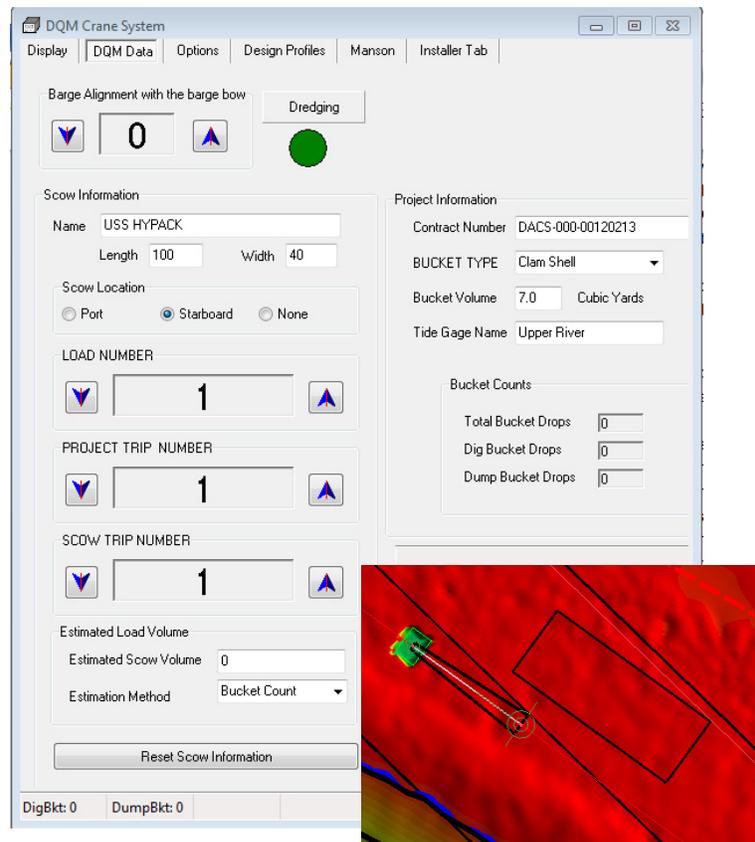
### **MATRIX FOOTPRINT**

The most significant change to the driver is the matrix update portion. In the past, the driver updated a single matrix cell where the exact point of the bucket center was located. In the new driver, the size of the bucket is inherited from the DREDGEPACK® program. The size of the bucket footprint is entered in the DREDGEPACK® software so, rather than entering it twice, the driver now inherits the size of the bucket to update the matrix.



## DREDGE QUALITY MANAGEMENT

The Dredge Quality Management side of the driver is written for the USACE. They require an update every time the bucket is closed or opened. In DREDGEPACK®, we use the bucket marks to note where the material was taken from, and the same button can be used to mark where it was dumped. The rectangle on the map to the right is a container drawn on the map by the driver to indicate the dump scow. If the operator presses the mark button and the bucket is over the scow the driver denotes that as a dump. If the bucket is not over the scow the driver denotes that as a dig cycle and places a bucket mark on the map. The location of the scow on the map is controlled by the DQM DATA tab in the driver.



## INSTALLER TAB

One of the new improvements in the system is the Installer Tab which has tools used to calibrate the latest crane system. This tab is intended to be used when installing a HCS2 system.

The HCS2 system has several parts that must be calibrated. The counts per foot of the holding wire must be calibrated.

Using this option:

1. Reset the counters: The installer has the bucket set on the deck or another known surface. Press [Set to 0].
2. Raise the bucket a known distance and enter that distance in the box provided.
3. Click [Set Distance] to compute the number of counts per foot ratio.

The screenshot shows the 'Installer Tab' within the 'DQM Crane System' software. The interface is divided into several sections:

- Installer Calibration:** Contains a 'Set at 0' button with a text box containing '0.0320', a 'Set the Distance' button with a text box containing '25.0', and a 'Counts per foot' text box containing '0.00'. To the right, a list of instructions reads: '1. Set the bucket on a reference elevation such as the deck. 2. Press the Set 0 button. 3. Raise the bucket to a measured elevation. 4. Type in the distance in the box provided. 5. Press the Set distance button.' Below this is the note: 'The Counts per foot value will be calculated.'
- Open / Close option:** Contains 'Bucket Closed' and 'Bucket Open' buttons. To the right, instructions read: '1. Close the bucket, do not lift the bucket with the closing wire. 2. Press the Bucket Closed button. 3. Open the bucket until it is fully open. 4. Press the Bucket Open button.' Below this is the note: 'Repeat this procedure every time you change the bucket.'
- Set Boom Angle:** Contains a 'Set Angle' button with a text box containing '25.0'. To the right, instructions read: '1. Determine the boom angle. 2. Type in the value. 3. Press the Set Angle button.'
- Bucket Profile Name:** Contains a text box with 'Default', a 'Store Bucket Profile' button, and a 'Load Bucket Profile' button. To the right, a note reads: 'Bucket profiles are for storing the calibration parameters. The profile can be recalled quickly when the operator wishes to change out the bucket without requiring a full calibration.'

If the system has both depth and the Open/Close options installed, the installer closes the bucket and clicks [Bucket Closed]. Then they open the bucket and click [Bucket Open]. The software stores the variation in states as the bucket is opened and closed to determine the variation. There could be a problem if the drums are drastically different in size. If this is the case, the installer has other tools to count open and closed states of the bucket.

A future development that is planned is the ability to store a Bucket Profile. In the Bucket Profile, you will be able to store calibration values and footprint sizes for various buckets. This will allow you to quickly switch the buckets in the software without leaving DREDGEPACK®.