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## HYPACK® DQM for Pipeline Dredges

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The United States Army Corps of Engineers (USACE) will soon be requiring pipeline dredges over 18 inches to adhere to DQM specifications on government contracts. These specifications can be found at the following location: <http://dqm.usace.army.mil/>.

In the specification section, the information on how the contractor will adhere to the program is found in section 35 20 23.33: *National Dredging Quality Management Program: Pipeline Hydraulic Dredge Specification*.

HYPACK has made a provision for this specification in the NewInc.dll device driver. This driver, for now, is based on a customer's request only. It will be part of the standard HYPACK® starting in HYPACK® 2017. The driver will do the following:

- **Read and calibrate all current inclinometers** that are currently available in the Inclinometer.dll.
- **Allow for user input for downtime reports** for such events as maintenance, repairs etc., which is all transmitted to USACE DQM.
- **Input of the USACE Contract number.** This is used by the government to identify your plant.
- **Production formulas.** These formulas can be user-defined or input by the government for material type.
- **Compile DQM JSON format data** for transport to the USACE DQM computer.

**FIGURE 1.** NewInc Driver Setup Dialog—Inclinometer Tab (left), DQM Data Tab (right)

The screenshot displays two windows from the HYPACK software. The left window, titled 'DQM Inclinometer', shows the 'Inclinometer' tab with a 'Delay' button and a 'Project Information' section containing 'Contract Number' (DACS-000-00120213) and 'Ticker' (3608). Below this are two data tables:

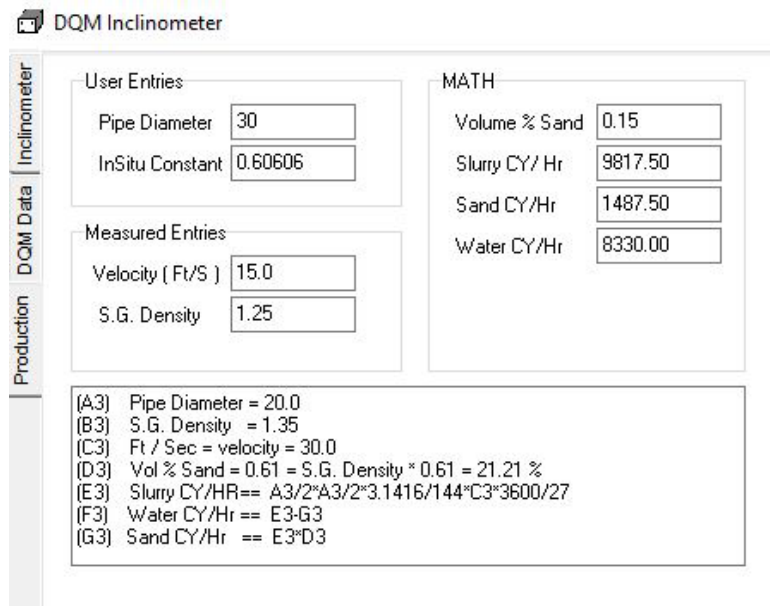
Key	Value	Key	Value
CUTTER HEAD LAT	29.98390410	Instant Production	1943.66
CUTTER HEAD LON	-94.23314524	Integrated Production	0.00
DISCHARGE LAT	0.00000000	Total Production	0.00
DISCHARGE LON	0.00000000	Cutter Head Swing [KTE]	0.00
PORT SPUD LAT		Swing Rate	0.00
PORT SPUD LON		Pump1 Vacuum	20.00
CENTER SPUD LAT		Pump1 Discharge	18.90
CENTER SPUD LON		Pump1 Inlet	0.00
STBD SPUD LAT		Cutter Head RPM	60.40
STBD SPUD LON		Pump RPM	300.30
WALKING SPUD LAT		DREDGE Advance (DMG)	0.00
WALKING SPUD LON		Port Anchorwire	0.00
		Stbd Anchorwire	0.00
		Downtime	
		Length of Pipe	0
		Number of Booster Pumps	0.00
		Last Update	2:50:47 PM

Key	Value
CUTTER HEAD DEPTH	12.00
TARGET DEPTH	-1.00
CUTTER HEAD TYPE	Tooth
VERT CORRECTION (Tide)	9.03
HEADING DREDGE	0.00
HEADING DISCHARGE	0.00
SLURRY DENSITY	1.35
SLURRY VELOCITY	14.00

The right window, titled 'DQM REPORT', shows the 'Event Type' section with radio buttons for 'Non-Effective Time' (selected), 'Pipe Event', 'Station Event', 'Contract Event', 'Booster Pump Event', and 'Work Event'. The 'Reason' dropdown is set to 'Contractors Negligence' and the 'Code' is 'CN'. The 'Start Time' is set to 2016-09-25 at 14:46:50, and the 'End Time' is set to 2016-09-26 at 14:46:50. There is a 'User Comments' text area at the bottom.

FIGURE 2. NewInc Driver Setup Production Tab



DQM production is computed in real time with sensor input.

FIGURE 3. NewInc.dll Device Window

Each dredge will have a separate DQM PC that receives the JSON data from HYPACK® and is sent to the DQM data center via Internet connection. With the NewInc.dll and a dedicated DQM computer aboard, you can use HYPACK® to be in full compliance of the DQM Specification

