



SILENT INSPECTOR INTERFACE in DREDGEPACK®

By Jerry Knisley

The US Army Corps of Engineers (USACE) currently has a requirement that all Hopper Dredges will submit continuously monitored data to the DREDGING QUALITY MANAGEMENT (DQM) office. DQM is the replacement to the old SILENT INSPECTOR. Currently the only DQM required submittals are from the hopper dredges and the scow tracking systems. In the near future, there will be a pipeline and a mechanical dredge submittal requirement. I have completed a test of the pipeline system and one with a clamshell dredge for the mechanical system. When those specifications are published, DREDGEPACK® will be compliant. I expect to make those two systems similar to the hopper dredge with a one common driver and, if required, a collector specific to the dredge itself.

If you, as a dredging company, are currently required to submit something on the pipeline or mechanical dredge as part of a project, it is most likely a requirement of the local district or the customer, not the DQM. Each district has their own set of files and reports they are used to receiving.

Currently the DREDGEPACK® software is compatible with the DQM requirement with one caveat. Because we do not require the hopper dredge to use our hardware, we must write a device interface on the dredge to feed our standard output. The driver written per dredge acts as a collector of data and feeds into a standard driver that passes the correctly formatted string to the DQM computer.

The DQM website is <http://dqm.usace.army.mil/Default.aspx>. On this site, you can download a copy of the current dredge specification. (For hopper dredges, it is SECTION 35 20 23.23.)

In the beginning of our involvement with the Silent Inspector system, there was a driver written for B+B Dredging. That driver is the SilentDredge.dll and is currently only used on one vessel. This driver receives data from the DREDGEPACK® software and provides the required information to a separate computer that works with a PLC to collate the data before sending it to the DQM computer. This version we will refer to as Silent Inspector version 1. In version 1, the DQM computer did not require a XML formatted string.

About a year later, DREDGEPACK® was chosen to replace the existing software on a MANSON dredge because the newly required XML format was implemented and the software in use on the NEWPORT did not meet the requirements. To simplify things in my mind and make it easier to implement on other dredges, I chose to separate the SI required data from the actual dredge instrumentation. This is how the SI_SENDER.dll was created. The SI_SENDER driver is the driver that does all of the heavy lifting in the output to the DQM computer. There is a collector driver but that collector feeds the SI_SENDER driver.

The Silent Inspector structure of data is quite inclusive. Some of the data has very specific formats including the date and time. Anywhere that I quote the specification, I will bold it and change the color to Green.

3.1.1 Date and Time

The date and time shall be reported to the nearest second and referenced to UTC time based on a 24 hour format; mm/dd/yyyy hh:mm:ss

3.1.15 Draghead depths

Draghead depths shall be reported with an accuracy of ± 0.5 feet and a resolution to the nearest 0.1 feet as measured from the surface of the water with no tidal adjustments. Minimum accuracies are conditional to relatively calm water.

At first I was surprised that the draghead accuracy is ± 0.5 feet. On the Atchafalaya we were The date and time were two important items in the specification that I wanted to call attention to. Another important item is the onboard backup. Besides sending the data to the DQM computer, I store the data in the project folder on the dredge. It is in a folder named INSPECTOR_DATA. In that folder is a file with the date and an extension of ".txt". That file is a comma-delimited text file that contains all of the same information that I send out in the XML formatted string. This format enables you to take it into a spreadsheet program (eg. Microsoft Excel) and manipulate the data so that you can determine dredge efficiency and other statistics, if desired.

There is one problem with that backup file. It no longer meets the USACE DQM required format. The following is from the Spec and will be included in the latest SI_SENDER driver that you can obtain from me by email.

3.2.11 Contractor Data Backup

The Contractor shall maintain an archive of all data collected for transmittal to the DQM computer during the dredging contract. The Contracting Officer's Representative may require, at no increase in the contract price, that the Contractor provide a copy of these data covering specified time periods. The data shall be provided within an ascii text file (*.txt) containing all the XML data strings which would have been transmitted to the DQM computer (section 3.2.9). Each data record within the text file shall be stored on a single line including all data parameters with appropriate xml tags (i.e. the carriage return should only occur after the xml tag </HOPPER_DREDGING_DATA>). Each data record is distinguishable by the beginning tag <?xml version="1.0"?> and the ending tag </HOPPER_DREDGING_DATA> with a carriage return after this tag. As per section 3.2.9, there shall be no line breaks between the parameters; each record string shall be on separate line. Naming convention for the files shall be <dredgename>_<StartYYYYMMddhhmmss>_<EndYYYYMMddhhmmss>.txt . Data submission shall be via storage medium acceptable to the Contracting Officer's Representative.

DQM DREDGE STATUS

Certification Status			
			
Dredge	Last Inspection	Fully Certified	Profile
Hopper			
Cashman Dredging			
Atchafalaya	3/9/2011	☒	
Dutra			
Columbia	11/5/2010	☒	
Great Lakes Dredge & Dock			
Dodge Island	7/8/2011	☒	
Liberty Island	12/9/2010	☒	
Padre Island	12/2/2010	☒	
Terrapin Island	7/28/2010	☒	
Manson Construction			
Bayport	9/9/2010	☒	
Glenn Edwards	3/11/2011	☒	
Newport	1/5/2011	☒	
Westport	7/6/2011	☒	
Stuyvesant			
Stuyvesant	7/13/2010	☐	
USACE			
Essayons	7/23/2010	☒	
McFarland	8/11/2009	☐	
Wheeler		☐	
Yaquina	8/12/2010	☒	
Weeks Marine			
B.E. Lindholm	11/4/2010	☐	
R.N. Weeks	6/28/2011	☐	

This is the current status of the hopper dredge certifications listed by the DQM office. The highlighted check boxes are dredges that run DREDGEPACK®. There are 17 hopper dredges listed with the USACE. Of that total, 10 run DREDGEPACK®, the Stuyvesant did before it left so I am unsure what it runs now. I will not include it in the total. Of the 17 dredges running, there are 12 certified with the USACE for a total of 70%. Of the 10 DREDGEPACK® installations, 3 are not certified with one being the WHEELER owned by the USACE. The WHEELER and the COLUMBIA both run DREDGEPACK® but have a different installation where DREDGEPACK® is not outputting the required data to the DQM computer. In those cases the output is from a different program not written by HYPACK®.