

Oil Well Status Monitoring – USA

OPC DataHub supports data communications during Hurricane Ike

Late in the summer of 2008 Hurricane Ike wrought extensive damage along the Gulf Coast of the United States. Many companies, large and small, worked together round the clock before and during the storm to protect their assets and to prevent large-scale environmental damage. Here is the story of how one company, Arizona Automation, working with Cogent Real-Time Systems, used the OPC DataHub in a last-minute effort to avert disaster.

Wednesday, Sept 10 – Weather reports project that Hurricane Ike, a Category 2 hurricane, will make landfall somewhere south of Galveston, and could cause extensive damage to onshore and offshore oil industry facilities up and down the Texas and Louisiana coastlines. Oil companies are still in a ready state from the recent Hurricane Gustav, and evacuate workers from offshore rigs in the Gulf of Mexico.



Steve Jechura, a system integrator with Arizona Automation, keeps one ear tuned to the weather reports. He has been working in the Houston area on a data integration project for a major oil company operating in the Gulf, and this hurricane could mean trouble. He needs to monitor scores of devices—wells, routers, switches, and other equipment—on oil wells from Northern Texas to Eastern Louisiana. Right now he isn't too concerned. The storm is supposed to hit over 100 miles south of Galveston, well outside of his area.

Thursday, Sept 11 – The surge pushed forward by the advancing storm causes tidal flooding in coastal areas. Residents of Houston, Galveston and other towns along the coast begin massive evacuation. Not a moment too soon. That evening the forecast changes—the storm has veered north and is headed directly towards Galveston.

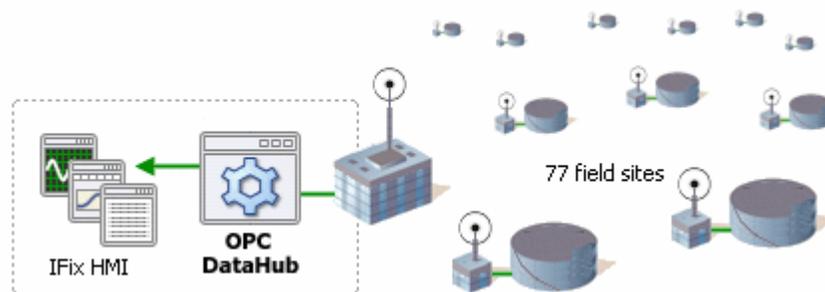
Friday, Sept 12 – The air in Houston is eerily still when Steve heads to the control center. The sky is blue, but Steve knows all too well that disaster is brewing just a few miles off the coast. If the storm tears apart his communication network, he will have no way of knowing what happens at the remote well locations.

“These wells produce a lot of fluids--oil, water, and other byproducts, and can fill up and overflow if they are not monitored,” Steve said. “We don't want any spills, so we have to watch to see if anything needs to be shut down. Each well site has two 20-foot-high tanks, and a spill can cause a lot of environmental damage and cost thousands of dollars to clean up.”

9:45 a.m. Steve contacts Cogent Real-Time Systems for a way to use the OPC DataHub to ping devices on the oil company WAN to see if they are operational. Cogent replies that a newly developed version of the OPC DataHub is capable of executing a DOS-mode program without blocking, which would allow it to detect responses from pings. All that was needed was a script to send and respond to the pings. The script Cogent envisioned would use the response from a ping to trigger a point in the OPC DataHub. That signal could then be used in a number of different ways, such as to trigger an email or update a web page, if a data link was broken. The link status could also be sent to an external program or OPC client application for monitoring and alarm purposes. “Perfect, thanks!” was Steve’s reply and both he and Cogent set to work.

1:54 p.m. Cogent sends a script that runs a ping on a repeating timer. The script will add a point to the OPC DataHub for each remote machine, and write “1” for reachable, or “0” for unreachable. Steve needs to add a line to the code for each machine to monitor, and then create a display in his HMI.

7:29 p.m. Steve notifies Cogent that the script is working. He is using it to monitor over 77 PLCs, putting the data into an IFix HMI application, so they can see the data on the screen, and visually track the IP status of the base radios and routers.



Saturday, Sept 13 – Ike makes landfall on Galveston at 2:10 a.m., electricity is cut off for over 2 million people. The storm hits Houston later that morning, and continues on through Northeast Texas. President Bush declares Southeast Texas and Southwest Louisiana disaster areas.

Sunday, Sept 14 – Cities are in shock at the devastation wrought by the hurricane. More residents have to be evacuated. FEMA sets up mobile recovery units in Galveston. Officials inspect damage and begin the year-long efforts to restore infrastructure and services. Ike leaves in its wake over 100 offshore platforms destroyed or damaged (out of 3800), and production levels are cut. Yet, overall the damage to the oil industry was considered light, due to good advance preparation.

Tuesday, Sept 16 – Steve Jechura reports: “All the IP-based end devices worked fine and proved out well during the hurricane down here. With all of our end devices running over radios, it helps to know immediately that the device is not responding vs. waiting for time-outs to cycle through the system.”

As it happened, two radio sites went down, one north of Houston, the other on the Louisiana border. At that point, since there were no communications detected, the oil company had to take action. They were able to send someone out to shut down those wells. “The OPC DataHub with this special script did the job really well,” Steve said. “It was actually pretty cool how it all worked.”

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The OPC DataHub is a highly optimized integration tool for real-time data. It provides quick, reliable and secure access to valuable process and production data and makes it available to management systems, database archives, and remote clients. Combining a number of innovative technologies, the OPC DataHub makes it easy for you to access the real-time data you need to make informed and timely decisions that save time, reduce waste, and increase profitability.

Arizona Automation specializes in the development of real-time performance management systems for the process and discrete manufacturing industries. Combining the disciplines of electro/mechanical engineering, information technology and business strategy, Arizona Automation creates integrated solutions that enable clients to control, improve and optimize their manufacturing and industrial process.

Founded in 1995, Cogent Real-Time Systems is the leader in real-time data integration between Windows, Linux and QNX systems. Customers include the Bank of Canada, Cadbury Chocolate and the European Space Agency. Cogent leverages its experience in real-time data communications to provide the next generation of OPC products. For more information, please contact Cogent at info@cogent.ca or visit our web site at www.opcdatahub.com. You can also call us at +1 (905) 702 7851.