Leading Oil & Gas Drilling Contractor Improves Life Safety Strategies by Use of Technology

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Background
Transocean is one of the world's largest providers of offshore contract drilling and exploration services for the oil and gas industry, working with clients such as BP, Shell, Exxon, and Chevron. The company focuses primarily on deepwater and harsh environment services. It is a very dangerous process with many risks involved.

Challenges
In such a high-risk environment, life safety is of the utmost importance. Accuracy and time could literally mean the difference between life and death for a large group of people, or even an entire 200+ person rig.

To this day, many Transocean rigs and other vessel-based operations rely on a paper and phone-based muster system to account for crewmembers and visitors aboard the rig at any time. This is prone to human error, relies on paper that can be out of date, and is slow to figure out exactly *who* is missing when a muster doesn't match. Other systems, including kinds relying on T-Cards and biometrics, had similar issues.

"Using these other systems, I found myself spending much of my time attempting to get a good muster during drills and emergencies instead of thinking about how to properly react to the situation," Captain Brandon Hargreaves explains. The final straw was a poor muster during a USCG inspection. "I knew there was a better technological solution to our mustering issue, [and this event] made me want to move forward with an electronic system."

In addition to basic requirements, such as muster speed and cost effectiveness, criteria for a new system included the system's ability to account for people that are not at their assigned muster point. "Accounting for people is the most important thing during an emergency," Captain Steven Walker says, "and one of the things that can be the most difficult to manage is when people are unable to get to their 'normal' muster location during a real emergency."

Additional criteria for a new muster system included ease-of-use. "We needed a system that could be taught and used easily, allowing new crewmembers to utilize it within minutes of being onboard if necessary," Captain Hargreaves explains. "We also needed a robust system that would still operate in case of any single or in some cases multiple failures. In addition, we wanted a system that could quickly communicate the needed information in an understandable form to the command team on the bridge, as well as the muster takers at the individual muster locations."

Complete Solution
By streamlining the Inspiration's entire mustering process, the Savance E-Muster system leverages technology to the fullest. In short, each person on the vessel is given an RFID identifier in the form of a silicon wristband or a proximity card. As a backup, a person's name can be selected from the touchscreen device when checking in to a muster point. This allows a person to quickly identify and account for themselves at one of several muster points throughout the vessel, based on the emergency situation and current location. From the bridge or other areas, visibility into the full muster is instantaneous through a large screen display. No phone calls, radio, or physical headcount needed.

All of the check-in devices used on the Inspiration were purpose-built for the vessel's harsh environment, and powered through Power Over Ethernet, along with wireless connectivity and dual, long-lasting batteries as a failsafe. Proximity card readers allow for the quickest possible check-in. The combined qualities of these custom muster devices make them ideal as e-mustering checkpoints.

One of the Inspiration's criteria for an electronic mustering solution was a way to quickly communicate required information to the command team on the bridge in an understandable form. This was accomplished through a large master display that allows for easy tracking of each muster site, and where personnel can view the progress of the ongoing muster in real-time. Along with many other staff members, Captain dos Santos appreciates this feature: "The most attractive feature of the system is the availability of real-time updates and the display on the master screen on the bridge," he says. "You can immediately identify the individuals that have not mustered on the master screen."

Radio Operator Ken Davis agrees. "Before implementing this system on the Inspiration, I was excited about the thought of faster, more efficient emergency musters. We've been using it for several months now and the system has exceeded my expectations. The most

attractive feature for me is the big screen TV mounted above the laptop I use on the bridge. It's an extremely effective tool."

Results & Benefits
In short, the Inspiration's new electronic mustering system offers a faster, more efficient, and more reliable way to account for people than the previously used methods. It provides real-time insight and better visibility to where people are located, empowering the captain and others to make better-informed decisions. Collaborative, real-time information is available from anywhere, resulting in greater visibility for everyone involved.

"The main difference between using the Savance system compared to other mustering systems is that after the first stage muster if people are missing, you can identify them immediately," Captain Hargreaves says. "Unlike in the past, muster during drills is almost an afterthought. It occurs almost automatically, and I can focus my efforts and those of the bridge team on addressing the emergency."

Captain Hargreaves and Captain dos Santos have both experienced true emergency musters since the installation of the system, and both had musters in less than 10 minutes. "One of those emergencies took place at 0200 in the morning, and involved significant emergency response and the confusion that comes along with it," Captain Hargreaves says. "Still, muster was completed in about 8 minutes. If you would have told me this before the installation of the E-Muster system, I would have thought you were lying."

In Captain Walker's mind, the most important outcome is the ability to handle people who are not in their "assigned" muster location: "[The system] has the potential to save lives in a real emergency by tracking personnel who aren't where they are expected to be, and it can be updated efficiently as soon as personnel arrive or depart the vessel."

Captain dos Santos agrees. "The flexibility of relocating from one muster point to the next is one of the most important outcomes so far. The system automatically removes you from your previous muster location and assigns you to your new location once you re-scan," he says.

Although all crewmembers mention seeing an improvement as far as muster times go, everyone agrees that the biggest improvement is the additional visibility and the real-time information on who has or has not mustered, as well as each person's location. "I would say our muster times are 20-25% faster on average," Ken Davis says. "[However,] the biggest benefit by far is our ability to see how many people have mustered in each specific location, as well as the names of those people. The capability of the system to adjust a person's mustered location if they scan in then move to a different location and scan in again is very valuable."

Electronics Technician Victor Alford agrees: "I can see a minimum of a 25% faster mustering time," he says. "But beyond that, we are able to see where everyone is in real-time. It will make things efficient in the event that we have a real emergency and need to abandon the rig." Alford also mentions the additional bonus of increased communication. "It gives the rigs another way of communicating that we have or do not have a full muster," he explains. "With the E-Muster system everyone at the mustering areas can assist with getting a full muster because they can see people checking in at a real-time pace."

Jerald Colbert, also an ET, brings up the time cut out by being able to remove the phone calls from each location: "Personally, the most attractive thing about the system is the availability of real-time updates for all muster takers," he says. "They can know what exactly is going on at their and other locations as far as missing and/or checked in personnel. It eliminates the time of calling in your muster from each location and limits the requirement of human involvement, which I feel reduces the potential for errors." Another time-saving aspect, Captain Walker adds, is that time and manpower looking for mistakenly missing personnel is minimized or eliminated.

When asked what he would tell other rigs about the electronic mustering system, Captain Hargreaves says: "Much of my correspondence with other vessels is with their captains, and I would only have to tell them one thing to sell this product: For me, musters during drills and emergencies are nearly stress free." Ken Davis adds: "I would strongly recommend Savance to other rigs in our fleet. We were using a paper muster system prior to this system's implementation, and the improvements are immense. This is definitely the way to go!" Victor Alford concludes: "I would like to see this E-Muster system on every vessel in our fleet. If it will save even one person's life in the event of a real emergency, then all our hard work has been worth it."