

Not only can remote connectivity vastly improve workflow on drilling rigs, it can also provide a huge boost to workforce morale writes Doug Tutt, COO and President of Global Energy Services, CapRock Communications

Making remote connections possible with VSATs

THE TERM 'REMOTE location' can conjure up an image that resembles an isle in the Caribbean or the deck of a cruise liner floating somewhere in the Indian Ocean. No Internet, no telephones, no problem, right? Well, that detached feeling might be great when you're on vacation, but when the Caribbean isle is actually a jackup drilling rig you've been stationed on for a month and that cruise liner resembles a drill ship, the realities of being in a remote location set in. No Internet, no telephones, big problem.

In today's ultra-connected society, energy companies are looking for ways to utilise mainland technology and become more efficient with their critical operations scattered across the planet. In addition, crews look for ways to stay connected to the outside world whenever they are in the world's inaccessible regions. Very Small Aperture Terminal (VSAT) communications have kept remote energy and maritime sites connected for years, but today corporations are integrating communications further into their daily operations, and making them an integral part of their businesses. On top of this, VSATs are bridging the communication gap between crews and their families and friends, enhancing crew morale and increasing employee retention.

The need for communication services to reach operations hundreds of miles offshore, coupled with the global competency required to support rigs mobilising in new areas, is making satellite communications one of the only viable options for oil discovery today.

Whether the site is stationary or traversing the ocean, VSATs bring more efficient ways to conduct business anywhere in the world. Video conferencing, remote video streaming, data transfer and Internet connectivity are just a few of the amenities available with VSAT communications. With these capabilities, it makes it hard to determine if anywhere on the planet can be labelled 'remote' any more.

High-tech communications on the high seas

The middle of the ocean is probably the last place you'd expect to find a solid Internet connection, secure corporate networking, VoIP capability and real-time video streaming. Drilling rigs and maritime vessels can be difficult environments to operate on, let alone host strong communication tools. However, as critical operations move further

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<p>SHALLOW WATER DRILLING Fixed antenna designed for semi-permanent installations and shallow water drilling and production such as:</p>  <ul style="list-style-type: none"> > Jackup rigs > Production platforms > Lift boats 	<p>REMOTE OPERATIONS FACILITIES Fixed antenna deployed for high capacity requirements to support remote corporate operations including:</p>  <ul style="list-style-type: none"> > In-country bases > Housing facilities > Logistics centers

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from the mainland, it drives the need for more complex applications and communications to support them.

For voice and data communications, VSATs provide always-on connectivity. Services are always up and available and users pay a fixed monthly price for 'all you can use'. On the flip side, some alternative services, such as hand-held solutions, are metered and users are charged by the minute or by the amount of data that they use. Additionally, these alternative solutions typically support lower data rates. As such, VSAT communication is one of the only services capable of supporting complex energy and maritime operations that require constant connectivity with corporate and regional offices.

Taking voice communications one step further, many corporations also find video conferencing capabilities via broadband connections advantageous in their daily operations. YouTube and other video-centric Web sites have helped heighten society's ever-increasing interest in video communications. Corporate executives can

check in with critical operations managers in a 'face-to-face' setting. Video conferencing helps maintain the ability to stay connected to daily events onboard the offsite assets without travelling to the remote locations. It reaffirms a verbal and visual understanding of the issues. Plus, with an ageing workforce now commonplace, energy companies need all of the tools they can get to work with a limited crew of experts – video conferencing helps keep these experts onshore where they can quickly discuss offshore challenges with a rig manager in the Middle East one minute, and a rig manager in Africa the next – all without leaving the corporate office. Video conferencing is the next-best thing to direct communication, and is one of the only reasonable solutions to avoiding a business trip destined for the middle of nowhere.

Additionally, VSATs enable the user to have secure network functionality. Transferring drilling data is simplified with high-speed connections transmitting statistics back to headquarters. Stakeholders depend on drilling information to collaborate and to make critical decisions about drilling specifications and provide further instructions. With VSATs' ability to transfer data, executives can receive the information they require in a timely manner and transmit critical information back to the drilling ship or jackup rig, all of which can take place through a secure network connection.

Ship and rig diagnostics and maintenance

VSAT Communications for the Oil and Gas Industry

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Become drilling capabilities with CapRock's VSAT solutions

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also benefit from data transmission. Broadband communications can transmit reports of the engine's health and performance for technicians to monitor, giving them the ability to assess problems from thousands of miles away and deliver a swift resolution.

A visual perspective

VSAT communications open the door for technologies that may be commonplace onshore to now be deployed hundreds of miles offshore. Remote video streaming is no exception. The service delivers real-time video of subsea structures and remote facilities to desktops anywhere in the world. Designed for underwater and on-land applications, the service enables corporate executives, managers, engineers and even customers to visually see into critical offsite operations without having to travel thousands of miles. The integration of subsea video cameras and surveillance cameras with satellite links and IP networks has completed the visual link between a corporation's uncertainty and its base of knowledge.

That visual link is extremely important when time is of the essence. For dive teams repairing an underwater pipeline leak 30 m below the surface, divers are often asked to describe the situation underwater. How big is the hole? How much fluid is leaking? One diver's definition of small might not be the same as another diver's. Without a definitive answer and visualisation of the problem, it is difficult for stakeholders to determine the best solution for the issue.

Streaming video can add clarity to the situation. With cameras attached to the divers' helmets providing streaming video to the surface and other parts of the world, surface crews can see a problem in real-time and quickly come to a resolution. Streaming video also can be utilised with cameras mounted on a Remotely Operated Vehicle

(ROV). These vehicles can provide an underwater 'eye' when viewing subsea structures at extreme depths or hard-to-navigate areas.

Also, streaming video on offsite energy locations, such as remote equipment depots or rigs, can save engineers and technicians time and travel expenses. For example, if a critical onboard pressure gauge is not working properly, the onboard crew can hold a video camera to the instrument while technicians back on shore can assess and diagnose the problem and provide a solution. Additionally, with a web browser, managers can monitor surveillance cameras and help keep track of the events related to offsite assets any time, anywhere.

Streaming video services can be scaled to adapt to changing conditions as bandwidth requirements can drastically change between jobs. Most streaming video applications call for at least 64 Kbps of always-on connectivity so that the service is ready to use at a moment's notice. That helps prevent wasting valuable time during a crisis waiting for the set-up of the service. Users have the ability to transition to speeds such as 256 Kbps or 512 Kbps as needed to increase visual clarity so that an underwater incident can be accurately assessed. Having ultimate bandwidth control helps save energy corporations on paying for higher network speeds during situations where it is not necessary.

Mobilising critical operations

Whether the operation is five kilometres offshore or 500 km, satellite communications is the easiest way to achieve broadband capabilities while having the flexibility to mobilise critical operations. For drilling rigs positioned a few miles offshore, fibre cable might seem like a reliable way of achieving network connections, but it has to be disconnected once it's time to set course for a new drilling location. VSAT equipment

moves with the operation, able to traverse the planet with its users. The technology is extremely beneficial to those drilling rigs moving farther into deeper waters. Wherever the oil leads the drill ships, broadband capabilities can follow.

When crew members of drilling rigs and other offsite operations have been away from family and friends for weeks, the crew's morale can start to diminish. Corporations invest millions of dollars into the large drill ships and rigs that the crews occupy and the equipment the engineers operate, but without the strength of a strong crew, those offsite assets cannot function. To maintain high spirits at sea, energy companies are using their VSAT services to provide crews with amenities like Internet kiosks, Wi-Fi wireless LAN, calling plans and other online media.

Broadband helps when trying to market an energy corporation to the future workers of the industry. New applicants occupying these critical operations have grown up in a world with computers, cell phones, Internet and other technologies that have defined their generation. Broadband communications can help make a corporation seem more attractive to well-qualified employees. Just like health and dental insurance, Internet connectivity and phone access on offshore sites are becoming popular items when employees are searching for the right place to start or continue their career. Individuals emerging into the offshore oil industry and those with decades of experience want to stay connected to what's happening at home. They want e-mail, breaking news alerts, photos, videos and a slew of other Internet capabilities to pass the time.

Remote sites can designate bandwidth for employees to catch up with their favourite sports teams, view financial reports, pay a few online bills and chat with old friends. With crew calling plans, employees have access to a cost effective means to call friends and family back home. These simple pleasures can help fuel crew efficiency and productivity, all while marketing the corporation as a great place to work in the energy industry.

As drilling rigs push farther and farther into deep waters, reliable forms of communications diminish, as does the accessibility to offsite operations. One thing remains certain: broadband paves the way for many technologies waiting to make life a lot easier for critical offsite operations. Internet connectivity, VoIP access, video conferencing, remote video streaming and many other broadband capabilities on these remote sites can help redefine the way energy corporations conduct business in those remote locations. It also helps provide that 'home-away-from-home' feeling to its crews scattered across the ocean – no matter where in the world a rig worker may be located. ■