



SATELLITE SOLUTIONS

**JOHN D. PRENTICE, STRATOS GLOBAL CORP., USA,
DISCUSSES HOW NEW SATELLITE SOLUTIONS
IMPACT OFFSHORE AND LAND BASED
EXPLORATION AND PRODUCTION.**

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Satellite based communications, together with satellite terrestrial hybrid solutions, have long played a vital role in the energy industry. They provide essential connectivity and access to critical applications, often in remote environments and harsh operating conditions.

In today's energy markets, voice, data and many higher bandwidth applications operate effectively

between remote sites, field offices, customer premises, central offices and other locations within a globally dispersed corporate network.

With the reduction of highly experienced experts available to the energy industry, and the high cost and financial risk of ongoing operations, broadband has become essential. Simply put, well managed, interactive, end to end broadband networks are critical for enabling timely, accurate decision making.

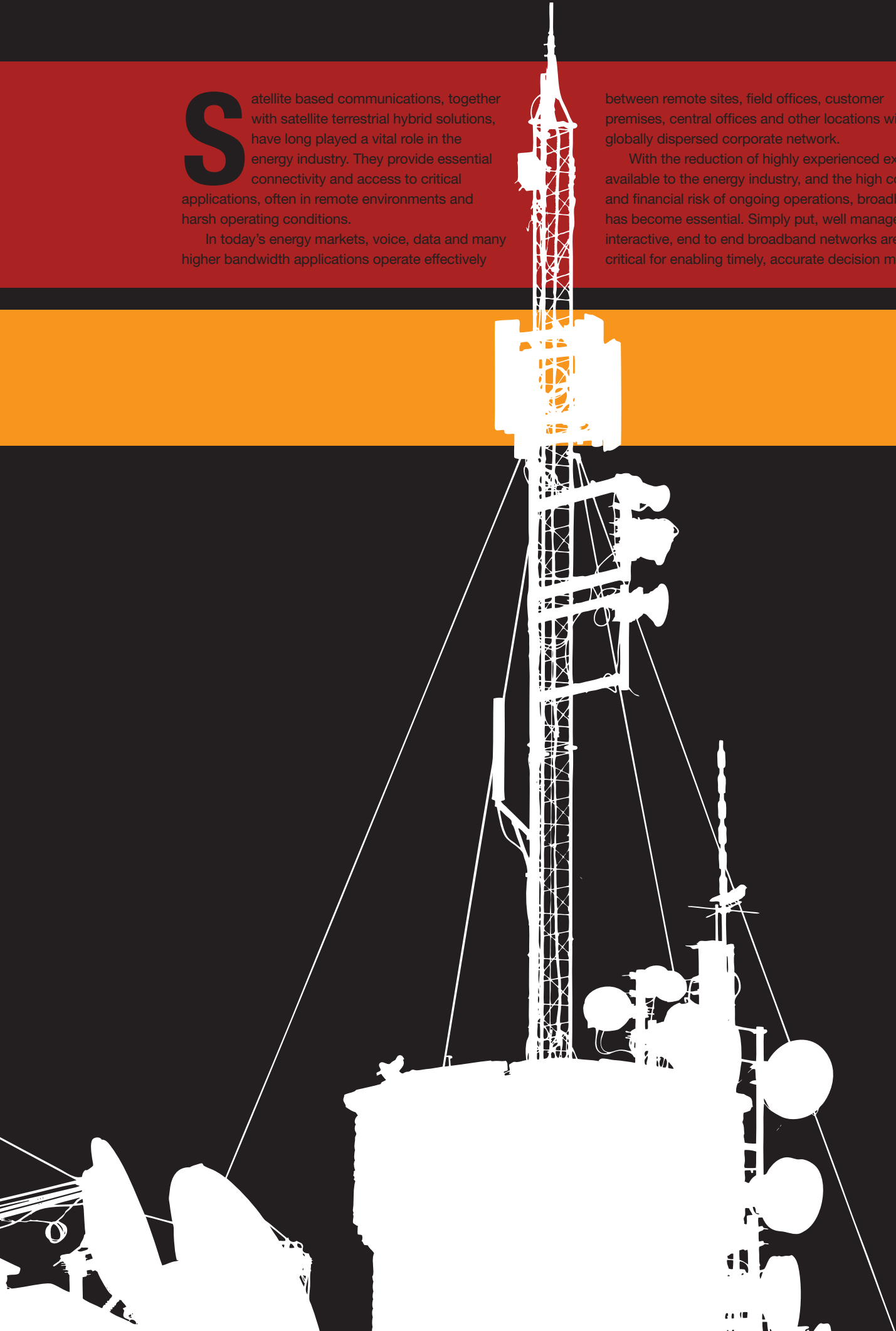




Figure 1. New mobile broadband satellite systems offer voice and high speed data connectivity via compact, lightweight terminals.

This year, more than ever before, leading energy companies are placing greater emphasis on centralised IT functions, with an urgent need to push more sophisticated business and operational applications to the field. They demand high uptime of core communications networks that can support global operations. The challenges are often made more complex by the need to guarantee consistent treatment of data through the application of well defined QoS criteria, as the data is cross mapped through multiple subnetworks along the corporate network.

For more than 20 years, VSAT based communications systems have successfully serviced narrow bandwidth SCADA, voice and data applications. Higher efficiency, satellite based systems are essential to the successful deployment of new broadband IP applications. A major challenge of today's satcom service providers is to demonstrate how greater satellite connectivity, coupled with the cost effective delivery of fully integrated satellite and terrestrial network solutions, can result in improved bandwidth optimisation and application performance for oil and gas companies.

Recently introduced satellite based remote communications solutions, fully integrated with robust managed terrestrial networks, are helping E&P professionals manage critical business

processes and ensure business continuity; both offshore and in land based exploration environments.

In the offshore arena, both VSAT and new mobile broadband satellite systems have become critical parts of the technology platform required for inventory management, real time drilling and global production monitoring, thereby providing true office at sea capabilities. Rigs offshore also utilise these systems for LAN, internet and other applications that were unavailable only a few years ago. At unmanned sites on land, traditionally effective VSAT based SCADA systems have recently been augmented with mobile satcom solutions that can efficiently process data and enable near real time status reporting of SCADA applications in the field.

Continuity of operations is key

After the recent impact of multiple hurricanes and terrorist threats, there is an increased demand for failover connectivity among many segments of the oil and gas industry. Along with the continued deployment of reliable VSAT networks, communications managers are now examining new satellite based mobile broadband solutions to further ensure 100% uptime for critical applications.

At high value onshore well sites, engineers depend upon fixed, private VSAT networks for real time, well pressure monitoring. High speed VSAT networks are also deployed for video surveillance applications at remote production sites. Although VSAT networks are designed to provide at least 99.5% network availability, some operators require network availabilities as close to 100% as possible.

New L-band mobile broadband satellite systems are being tested to augment available services. These new systems include Inmarsat's BGAN (Broadband Global Area Network), which has been deployed at thousands of sites worldwide.

With high portability via the use of compact, lightweight terminals, these new solutions offer high speed data rates up to 492 kbps and streaming data rates up to 256 kbps. These data rates represent a crossover to traditional broadband speeds, thus providing the communications manager with the assurance of full support for mission critical applications.

Clearly, the convergence of mobile and fixed satellite systems is helping meet the evolving business continuity requirements of E&P professionals. However, the demand for redundant communications solutions is not limited to onshore applications.

The world's leading offshore operators and rig management contractors are deploying communications systems that support complex, real time processes and ensure business continuity in the face of today's environmental and geopolitical threats.

Use of redundant technologies can be demonstrated in a recent deployment of a project for one of the Gulf of Mexico (GoM) region's largest operators. The multimillion dollar project provides remote communications for more than 100 offshore rigs. This includes utilisation of a GoM microwave system, as well as an upgrade to the operator's entire GoM telecom network to provide more available and reliable bandwidth and redundant communications.

This operator supplements its microwave based service with satellite based backup systems at key connection points to maximise business continuity and recovery of communications in the event of disasters.

Customised solutions

Since the availability of remote communications solutions may vary by region, service providers often insist on tailoring a customised solution for each individual business process.

For example, two drilling contractors with international operations have implemented the industry's first failover solution from one global satellite system (TDMA based shared VSAT) to a ship to shore, mobile satellite system (Inmarsat's Fleet F33). During severe weather conditions that threaten large, primary antennas or during a rig move during which communications requirements are often reduced, rig operators can quickly switch to the backup system without any loss of connectivity.

As the CEO of a major E&P company recently noted, energy companies may need to design new IT architectures based on the realities of communications challenges worldwide, not just at home.

Increasingly, energy company personnel are following advancements in the telecommunications industry and now have a better grasp on the power and diversity of today's remote communications alternatives.

More power for offshore applications

As satellite communications technologies advance, the lines between traditional mobile systems and fixed systems have become harder to distinguish. The promise of increasingly powerful mobile satellite systems was realised by offshore communications managers last year with the introduction of high speed services such as Inmarsat's FleetBroadband, which is the maritime version of BGAN.

These new, high performance services provide cost effective, broadband data and voice communications for both primary and backup connectivity, at speeds of up to 432 kbps. They have already been deployed by the Royal Netherlands Navy, Bernhard Schulte Shipmanagement and several other commercial shipping lines.

These services can be rapidly deployed across an entire fleet and, as a standard IP service, seamlessly integrated with head office networks. Terminals operate globally and the user interface is standard across all product versions. These new offerings support the latest IP services, as well as traditional circuit switched voice and data for legacy applications. Terminal costs are relatively low and the networks support all the latest security protocols.

In a data-centric world, we can expect to see energy companies continue to examine the primary and failover capabilities of ever more powerful mobile satellite systems.

Bringing office connectivity to remote areas

Satellite services have long been an established part of the communications mix for oil and gas companies operating in areas that are remote from fixed line and wireless networks. At unmanned sites, the latest mobile solutions can efficiently process data gathered by sensors and actuators, enabling near real time status reporting on wells, rigs and other equipment in the field through SCADA applications.



Figure 2. Refiners use economical VSAT systems for remote pipeline monitoring at thousands of sites.



Figure 3. E&P professionals have deployed new mobile broadband satellite systems in areas where there is unreliable or nonexistent telecommunications infrastructure.



Figure 4. New mobile broadband satellite systems offer reliable connectivity in all weather conditions.

By providing near real time remote monitoring and control of in-field equipment and processes, these solutions can process the information about the hardware or operations being monitored (usually unmanned), with reports automatically generated and transmitted at set intervals.

New satellite based mobile broadband solutions are also being tested as backup solutions for remote pipeline monitoring, where refiners now use economical VSAT systems at thousands of sites. Under adverse weather conditions, the main office sometimes loses contact with a pipeline station, forcing it to cease pumping. The latest mobile broadband solutions use a different satellite band from traditional VSAT terminals, making them less susceptible to rain fade.

Several major oil companies have been eager to examine the viability of these new systems as a backup solution, after noticing how they have successfully closed the bandwidth gap between mobile and fixed satellite systems. Also contributing to this new

viewpoint is BGAN's success as a primary communications solution for land based exploration in West Africa and other global regions.

In remote regions of booming West African oil towns, E&P professionals have successfully deployed new mobile broadband satellite solutions in areas where there is unreliable or nonexistent telecommunications infrastructure. They have been able to set up and shut down a fully functional broadband office in minutes, without any technical expertise. They can access email, corporate networks and the internet, transfer files and make telephone calls from almost anywhere in the world.

As those remote towns develop, new remote communications solutions are being tested as a backup to C-band VSAT networks for pipeline monitoring and site security at oil and gas processing facilities. The oil and gas industry's acceptance of new mobile broadband satellite solutions follows wide adoption of the services over the past two years by military agencies, media organisations and first responders worldwide.

Established users are fully utilising a range of value added services made available by leading distributors. These services provide cost control, firewall management, full traffic information, prepaid facilities, high security options, easy VPN access, messaging services and full IP range.

Late last year, a leading mobile satcom distributor introduced a new high performance connectivity service for remote, unmanned SCADA applications using ruggedised BGAN terminals. The new service reflects the development and increasing importance of SCADA operations, particularly in upstream oil and gas operations.

SCADA terminals typically need to withstand all the environmental challenges associated with remote applications, so they can reliably transmit mission critical data from hard to reach locations. Utilising the global Inmarsat L-band service, this new SCADA solution is well suited for many regions around the world. It can also fully complement Ku-band or Ka-band SCADA VSAT, serving as a network independent backup solution.

With the ongoing developments in remote site monitoring, SCADA based services must keep a constant check on the status and security of assets, and send commands remotely to manage equipment such as video cameras or environmental controls. The data can help improve maintenance scheduling, prevent disasters and reduce production costs.

Greater reliability

New mobile satellite communications systems transmit data automatically to remote asset monitoring servers, where it can be processed by back end systems.

Remote monitoring backhaul is already widely available over VSAT satellite links. However, the broadband data capability of new mobile broadband solutions, and support for services such as live color video, makes them an ideal and highly flexible accompaniment to VSAT. The new services are highly reliable, regardless of weather, and are easy to configure and use. They support all common office applications and allow simultaneous voice and broadband data.

As communications managers go about their meticulous planning to ensure business continuity and maximum productivity, new mobile satcom systems are likely to become an invaluable complement to existing satcom systems and satellite terrestrial hybrid solutions. **01**