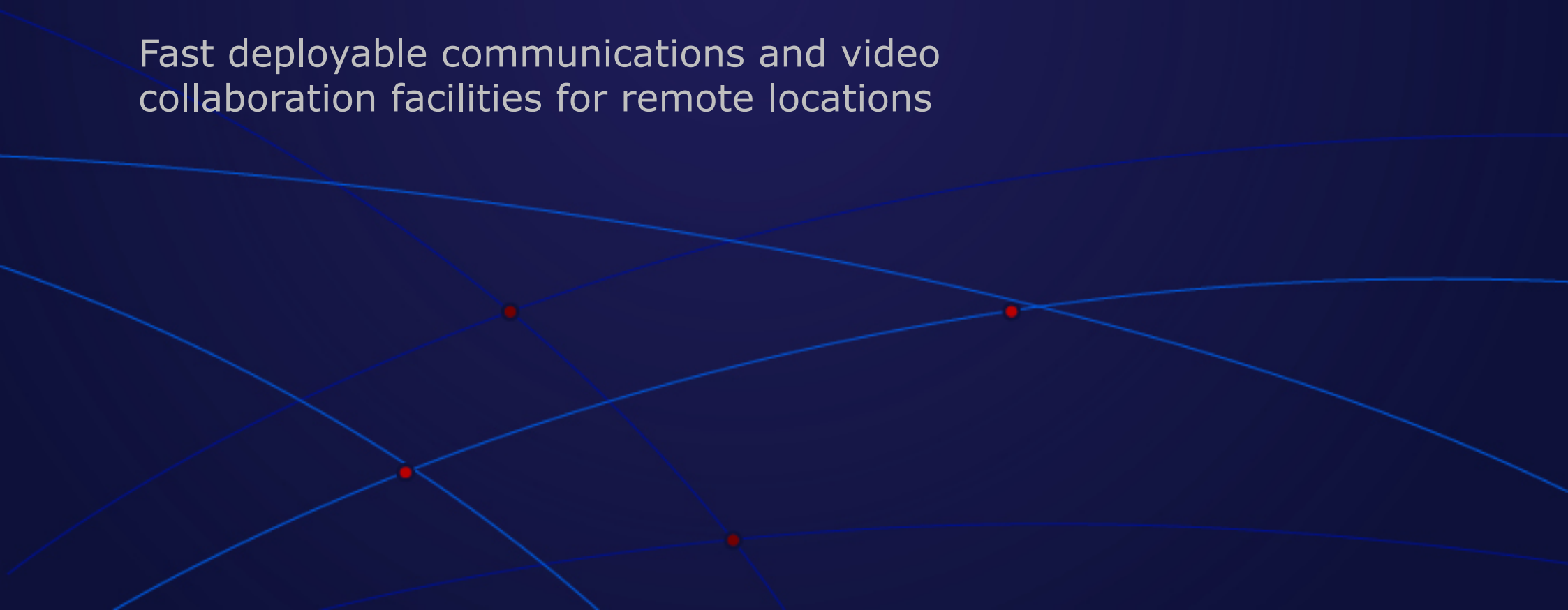




Results through understanding

The Safe Fields™ and MCC

Fast deployable communications and video collaboration facilities for remote locations



Introduction

The oil and gas industry is often situated in difficult operating environments. Since the Asian financial crisis of the late 90's, oil companies have focused on cost efficiencies. The advance in computer imagery software and the significant reduction in cost of high speed bandwidth has meant more opportunities to introduce solutions aimed at reducing cost through smart use of internet technology.

The MCC hits the sweet spot as it can limit the client's physical footprint at the sites by taking advanced collaboration technology to the most remote places on the planet. It reduces the need to have experts deployed everywhere, lowers the cost of remote operations, improves safety and reduces the security risks of having staff exposed to threats in challenging environments.

Possible uses (We are sure you can think of more!)

- Remote project management with support and mentoring of local operations
- Quality assurance and project supervision
- Crisis management and emergency response
- Communication with local partners, including contract preparations and organization of operations
- Site communication, data collection and data transfer
- Commissioning and startup of plants, factories and machinery with recording of events for troubleshooting and dispute resolution
- Remote installations of high technology equipment and implementation advanced systems
- Continuous monitoring of sites through CCTV systems which can be remotely operated
- Cargo inspections and verification of deliveries

Mobile Collaboration Center (MCC)



Remote Video Conferencing and Collaboration

Petronor has configured and developed the technology supporting our Safe Fields™ services. The technology has been engineered for collaboration and communication and enables a real-time, mobile and two way video and voice communication from a remote site back to multiple offices within the clients network.

The Safe Fields™ services allows the fast deployment of units to remote sites which allow teams to meet and communicate from anywhere in the world. Fewer people need to travel, less people are exposed to risks at the remote end, and facilities can be monitored for quality control and continuous improvement 24/7.

This in lowers overall cost and reduces HSE risk for the client.



Safe Fields™ technology (above) and the view of the service from a clients perspective (top, right)



MCC Configurations

The base units, will be the 10 foot MCC10, and the 20 foot MCC20. A larger configuration, the MCC220, will consist of 2 x 20ft container sized modules which will join together as a meeting room facility and work space that allows up to 12 people to work comfortably.

However, the MCC can be configured for facilities with single or multiple meeting rooms based on the combination of 20ft and 40ft modules. These modules can be combined in units as 2x20ft, 3x20ft, 2x40ft, 3x40ft and so forth.

The facilities can be designed to house self contained and supported meeting rooms, data rooms with optional 3D visualization, control rooms and communication facilities for crisis management.

The Container:

Standard based customized container normally 10 or 20 feet and fitted specifically for the service. Flexible interior design made on request.

Engine room

The engine room consists of the diesel engine, compressor, air condition, generator, fuel tank and air filtering system. Operating time without refueling approximately seven days.

Video Communication Unit

There are two different types of video systems with the MCC. The main stationary video system includes a high definition camera, and is mounted on the wall of the MCC. The other mobile hand held camera can, together with the long range links, be used in an area about 3 km around the MCC. The hand held unit can send live pictures to the MCC or to a remote video system.

A content server enables recording and streaming from both the camera and/or from the video system inside the MCC unit. A Video communication server handles call control and bandwidth management. The multipoint Control Unit is used to enable all of the video systems to attend the same virtual meeting. Up to six parties can attend a multisite meeting.

Long range links

The long range links are used to enable communication in a wide area up to 3 km around the container. The antenna mast together with the long range units enables both video and audio communication from the camera back to the container. Standard PCs can also be connected to this network for a fast set up of communications at remote sites.

Satellite Communication

The satellite auto deployment unit makes the MCC to a mobile communication central. During deployment the dish will adjust and find the right settings for optimal satellite connectivity. The satellite is a standard based VSAT platform and compatible with most standard VSAT services. At least 1024 Kb synchronous is recommended for optimal video quality.



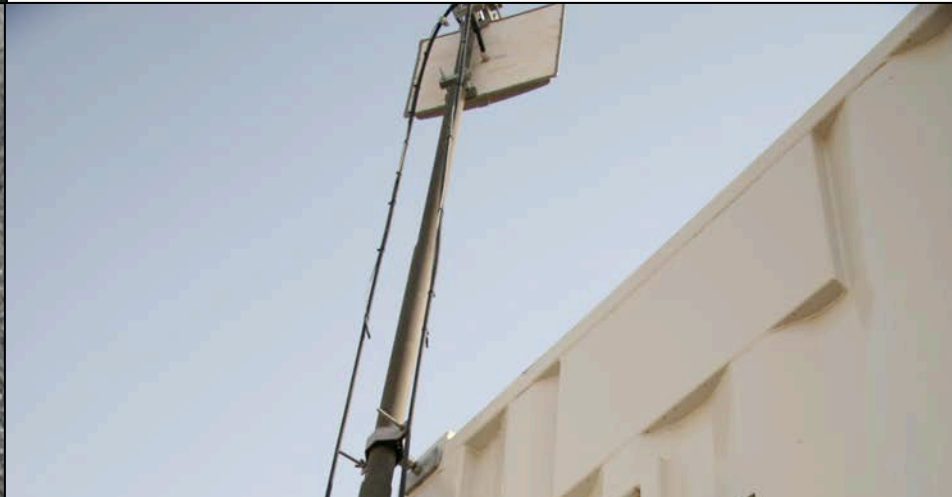
MCC Collaboration Workspace

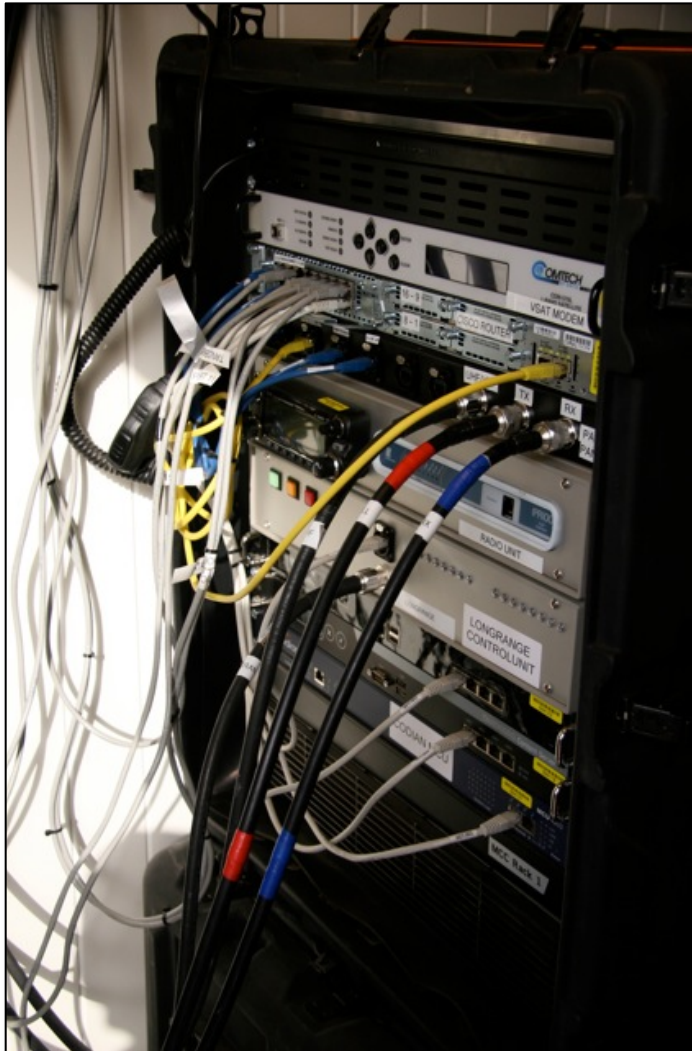
- The videoconferencing system is based upon Tandberg technology from Norway (Now part of CISCO)
- Redundant Compact HD Camera with Integrated 20" widescreen LCD or larger monitors for full size video conferencing and collaboration set ups
- Powerful presentation, multimedia and conferencing capabilities
- Easily switches between a video call and an XGA PC display
- Join up to 4 video sites and 3 audio sites with embedded MultiSite functionality
- Highest level of embedded encryption as well as H.235 and IEEE 802.1x authentication
- True CD-quality audio
- Protection against network interruptions in point-to-point and multipoint calls
- Superior video quality incorporating the H.264 standard
- Standards-compliant and compatible with 3rd party video conferencing endpoints
- Record, Manage, and Share sessions from the content server with live and on-demand streaming
- Manage and distribute live or recorded content to any PC and leading portable media devices in Microsoft Windows Media®, QuickTime® compatible MPEG-4 and RealPlayer® formats

MCC Features – Mobile Camera



- The camera is designed for harsh environments with environmental sealing for protection from dust and liquids, drop proof up to 4 feet and operation in temperatures from -10°C to +40°C
- The explosion proof version has been approved for use in Class I, Div 2 or Zone 2 hazardous locations
- The camera connects directly to the MCC via WIFI or connects via WIFI to a radio communications box that connects via radio link to the MCC
- The camera operator can operate up to 3kms line-of-sight from the MCC
- The camera has two way voice and one way video that can be shared from the device
- Telescopic antenna links the MCC via a radio network to the long range communications unit



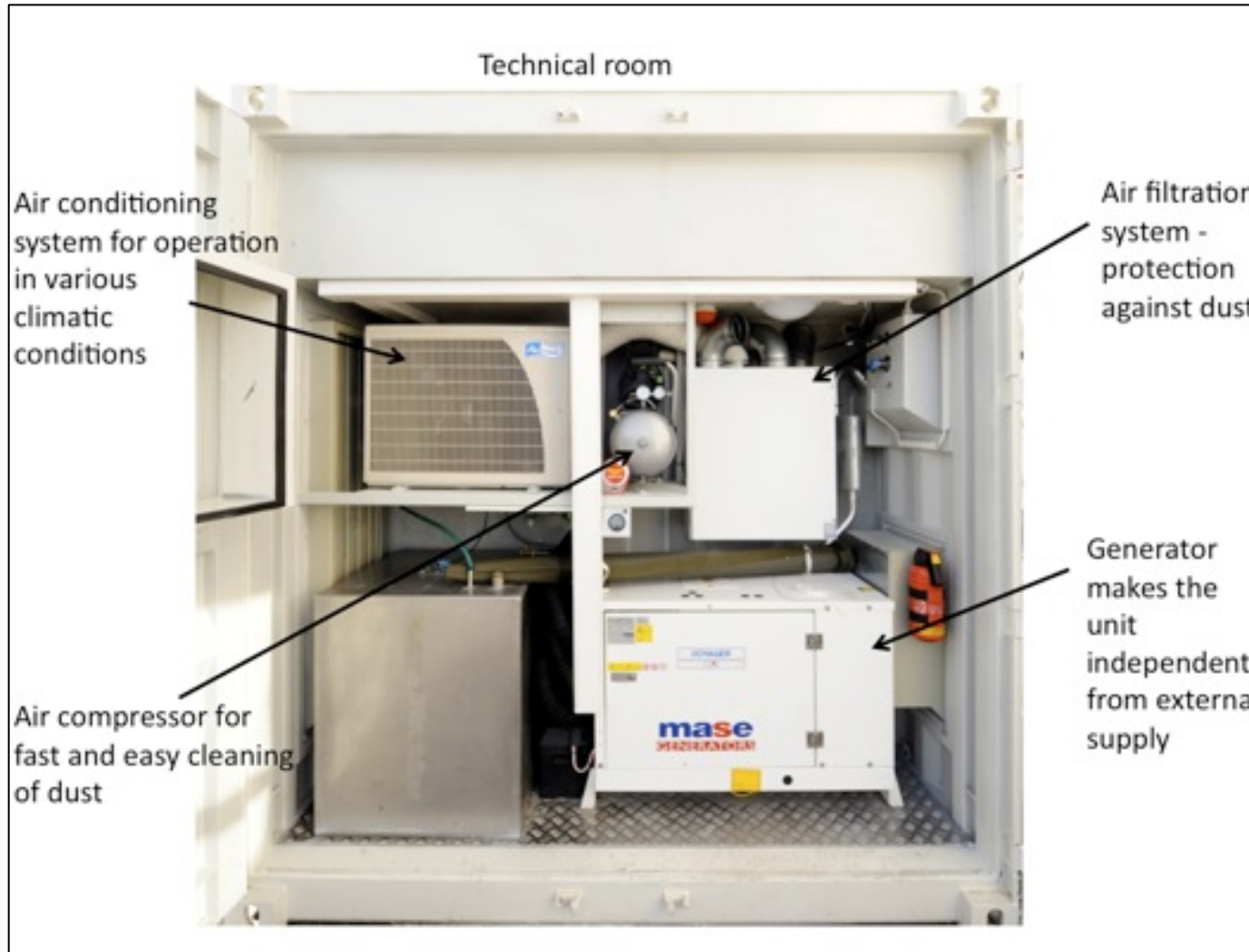


- All electronics are housed in vibration and dust protected data racks
- Each rack contains a full set of electronics equipment
- Two racks within the MCC make for full redundancy of all electronic systems
- Change over from one rack to the other in less than 10 minutes
- Both racks surge protected and wired to UPS for 2 hours emergency operation
- A VOIP radio system is installed allowing the MCC operator to talk directly to the camera operator via a handheld radio, and both MCC operator and Camera operator can communicate with remote technical support
- Each rack contains sub-systems for multiple site video conferencing, videoconference recording, LAN network, WIFI network, auto-deploy satellite, long range radio network, and VOIP UHF/VHF radios



MCC UPS and Alarm panel

- The electronics are protected by a UPS that prevents data loss in the event of power failures
- A fire alarm system includes detection of Co2 for the maximum safety of personnel
- H2S detection system are available as an option
- A power switching panel allows for easy change from an external power source to generator power
- Lighting and audio designed for optimum quality of videoconference
- No windows for best quality video during conferences and to prevent unwanted attention into the unit
- Triple bolt door for security
- Peep-hole for protection of personnel in the unit.



MCC Technical Room

- The technical room is isolated from the collaboration room by sound barriers.
- The MCC can be powered by an external power supply or by the onboard generator that has its own fuel supply allowing one week of continuous operation.
- An air compressor allows for cleaning of the unit onsite, allowing operations to continue in heavy dust and sand environments.



MCC10 on field test site in Southern Iraq

- The MCC comes in the same measurements as standard ISO shipping containers
- Design using standards allows for the most cost effective movement by air, sea, or land transport
- Fork lift recesses provided for ease of loading onto transport vehicles and for movement around yards
- Lifting lugs at the top provide secure connections for moving the unit by crane

Standard Components

- Units of standard shipping container measurement, designed and fitted for efficient workflow and video conferencing
- Furniture, layout, lighting and color scheme for enhanced video quality
- High definition video conferencing and recording system built on standard Tandberg equipment
- Large HD monitors for visual collaboration and data presentation
- LAN network with wireless access and a PC
- Uninterruptable Power Supply for continuous operations
- Split AC units with cooling and heating
- Dehumidifier
- Air filter system, over-pressured for dust control
- Power distribution panel for mains or generator power sources
- Diesel generator with automatic transfer switch
- Air compressor for maintenance and cleaning
- Alarm sensors and fire prevention system
- Fire fighting equipment
- Whiteboards

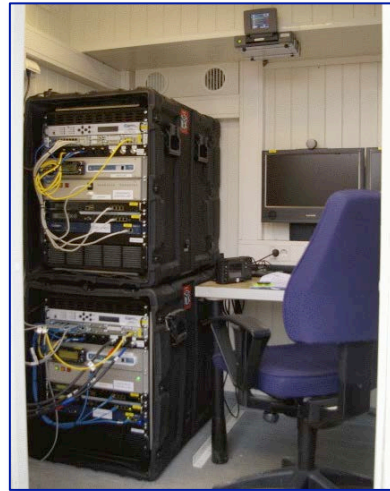
Optional Equipment

- Satellite communications system
- IT equipment such as :
 - Printer (laser printers and plotters)
 - Scanner (for, document, maps and logs)
 - Photocopier
 - Projectors
 - Document cameras
 - Digital whiteboard for capture to PC
- 3D visualization system
- Light table
- Satellite TV system
- Safe Field™ long range cameras
- Mesh based WiFi network
- Remotely controlled CCTV systems
- Roof structure for environmental protection
- Hardened windows
- Ballistic protection of roof and walls
- Access control systems
- Larger external fuel tanks with filters
- Solar panels for power supply and charging of UPS systems

MCC10 - Highly Mobile Unit



Within the MCC is a full video conferencing system, with HD cameras, dual screens, and lighting and audio designed for optimal quality of the video conference. It includes a WIFI network, and content servers to record all sessions for backup and review.



The electronic within the MCC are protected from power surges and the unit includes a UPS system for 2 hrs of emergency operation. The systems are duplicated for full redundancy and troubleshooting, and allows Petronor to diagnose the MCC and the communication links remotely.



The technical room includes silent diesel generator and fuel tank, an AC unit, wiring to the auto-deploy satellite antenna and alarm sensors. Shown above is the radio mast and the long range radio link communication unit which gives a standard range of 3km for camera operations, with a possible range of 30km. Space is allocated for utilities and maintenance equipment.



The MCC has been designed to have a very low profile. There are no windows to avoid unwanted attention and the antenna folds into roof and is not visible during transport. The MCC shown is a standard 10' shipping container allowing fast transfer by air. The MCC comes in both 10' and 20' versions. The unit is pressurized to limit entry of dust during transportation and operations.

MCC10 being tested in Baghdad, March 11th, 2009

Site Survey with MCC

Petronor was contracted by a major IOC to visit and survey production facilities on a oil field in the south of Iraq.

In addition to collecting the necessary information, the project demonstrated the use of the Safe Fields™ technology and proved that technical support would be available in Iraq, even while international companies are reluctant to send personnel to the field.

The first MCC arrived in Baghdad and after field testing and a demonstration to the Ministry of Oil was flown to Basrah where it was deployed to the field for the first survey.

The survey was an unqualified success where the clients were live with real-time video and voice communications established within 45 minutes of the unit arriving on site.

The clients directed the camera operator to view all points of the facilities and interviewed the SOC engineers working on the site directly via the video conferencing system.

The Safe Fields™ operation utilizing the MCC met all the technical objectives of the client and verified the state of the facilities without client personnel having to deploy to the field.

Support of Oil Field Operations

The MCC is now prepared for remote support of oil field operations.



Site Surveys in Iraq by Petronor using Safe Fields™



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