Newsletter - May 2004

GEOmatics WORLD
EVERYTHING IN ITS PLACE

Editorial
This is my first Geomatics newsletter and I hope you enjoy reading it as much as I did putting it together. Your comments are welcome at : *J.Doraiswamy@shell.com*

To keep the 8-page format without resorting to font size 5, we have had to defer some excellent articles until the next newsletter. Thanks to all contributors and apologies to authors of deferred articles.
John.MacGregor@shell.com

Who Owns the Ocean ?
Maritime Boundaries & Disputes -What Options Do we Have?

By Leen Boer, EPT-SCIG, SIEP Inc Houston

Delineation of maritime boundaries is of vital importance due to impacts that may arise if they are not instituted. Ownership of resources (reserves) may be questioned as a result, and distances of even a few hundred metres can have significant economic consequences.

So what options do we currently have to obtain maritime boundary information in Shell in such cases? We look at two possibilities:
(1) Veridian who provide a worldwide database (GMDB)
(2) the UK Hydrographic Office (UKHO) who provide a service to establish maritime boundaries (http://www.hydro.gov.uk/law_of_the_sea. html)

(1)GMDB - Last year SIEP acquired the **Global Maritime Boundary Database (GMDB)** from Veridian. Since, Veridian has been operating as General Dynamics, Advanced Information Systems. We have used the GMDB (essentially a set of shape files) in a limited and local sense given the current licence agreement. The GMDB brings together the claims, limits and boundaries of the world with attribute information and documentation that can be queried and viewed using ArcGIS.

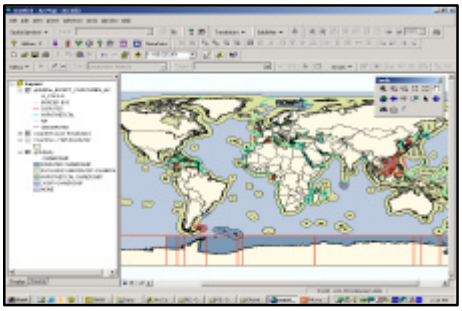

Figure 1 GMDB

Included in the GMDB are: territorial, contiguous, joint development, fishing and economic zones; potential meridian line solutions, disputed areas and boundary status. The information in GMDB is not authoritative but should be used to determine if further investigation is required. GMDB will tell you if areas of interest are disputed or not, and what the status of a boundary or claim is.

We are reviewing the feasibility of making data available to the whole of Shell EP by placing it on our spatial servers in The Netherlands and the US. Other geo-referenced products available from Veridian are Global Ports, Wrecks, and occurrences of Anti-Shipping (Piracy).

(2) UKHO - The UKHO provides a professional maritime boundary service used by the group in the past and have a good track record of working with governments, legal firms and third parties. They have an extensive database and up-to-date knowledge of current problems and work going on to resolve disputes. They produce **authoritative** estimates of the geodetic position of disputed boundaries, based on the UN convention on the Law of the Sea (UNCLOS).

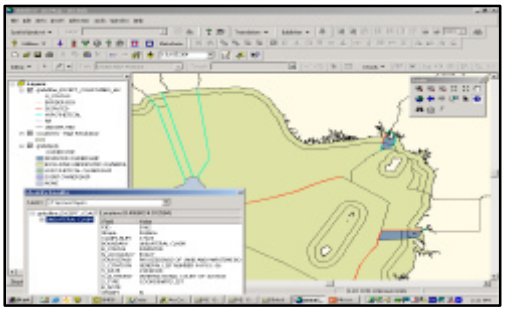

Figure2 UK Hydrographic office

In order to properly assess risks associated with E&P activities in the vicinity of maritime boundaries, it is imperative to have a better understanding of where an **arbitral panel** would draw the boundary in case the dispute cannot be resolved. SIEP BV and UKHO have formed a generic agreement recently for exactly this reason.

Under the agreement UKHO will deliver/generate as follows:
(a) Research into maritime boundary treaties in relevant areas.
(b) Median line solution in the absence of agreed boundaries using coastline data derived from the best scale UKHO Charts of the area (c) Report on the possibilities of a boundary being agreed in a position other than coincident with the median line, and (d) Digital file with Lat/Long coordinates of all relevant lines in the area of interest (as shape file).

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ArcGIS Enters Reservoir Surveillance

By Ian Lawrence , Shell Aberdeen , EPT-IT-ED

Reservoir surveillance has been used in Shell in the UK since 1995. It was initially used to monitor reservoir performance in the Brent Field during the depressurisation. A project team was set up with the scope to analyse reservoir performance, monitor short-term depressurisation issues and decide on development opportunities. The *bottom line* was to find and produce the remaining recoverable oil.

The methodology LTRO (Locate the Remaining Oil) was established and also adopted by other mature fields in the northern North Sea (Tern, Cormorant, and Dunlin).
The Geomatics ties with LTRO go back to the project inception in 1995. A Project Cartographer was assigned at the very beginning of both the Brent and Northern Fields LTRO project.

LTRO maps are highly interpreted, stylised forms of mapping that combine structural geology, geophysical (reservoir contacts), well and reservoir engineering data together. This integrated and interpreted data cannot be shown together in CPS3 or Zmap. All maps were subsequently produced in Microstation (CAD), which at the time was the perfect tool for illustrating the maps. In the case of the Brent LTRO these maps became 'the model' and the 'definitive' for the field.

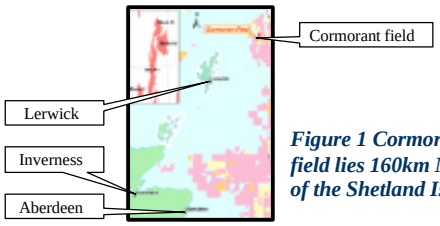

Figure 1 Cormorant field lies 160km NE of the Shetland Isles

In early 2002 at the request of the Northern Fields team the legacy Cormorant LTRO was migrated across to ArcGIS. The maps were ripped apart and given back to the team as data. The basic 'flat' Microstation design files (DGN) are now MXD's. The data has become a combination of DGN's (structural geology) and Geodatabases (well data). The team now have legacy maps and data that can be used again and again. Previously the only way the team could have reviewed the maps was via PDF files. They had never been able to freely access the data as it was locked away in CAD files, purely the domain of the Cartographer.

In September of 2002 the second stage of the project was kicked off, updating interpretation of the Cormorant Block IV data and maps. Block IV is the most complex geological parcel in the Cormorant field and is heavily faulted. Microstation was again used to capture the structural geology. CPS3 grid files could not be used due to the data requiring high levels of interpretation to show remaining oil and water ingress. Two maps would be produced for each of the six producing horizons. One map would show Remaining Oil and one illustrate volumes of produced oil, water and water injection.

The resulting finished product is a complete ArcGIS suite of maps and data. It has moved the process from CAD to a database-driven solution that not only provides additional functionality but also retains a high level of cartographic standards. Displaying the production bubbles easily in Microstation was not really possible but became a reality in ArcMap by using tables within the Geodatabase and buffering the individual wells.

Much of the original data was held in Excel spreadsheets. This is now residing in a Geodatabase. Well data was also integrated much easier saving time minimising annotation. ArcGIS also allowed for easy exchange of Microsoft Office products, unlike Microstation. Symbology was done by combining the SSL (Shell Standard Legend) 2002 for ArcGIS and a LTRO symbology style file was created for project-specific symbols that fell out with the scope of the SSL.

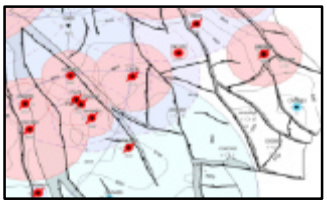

Figure 2 Extract from the Remaining Reserves Map. Pink illustrates the remaining oil, blue is water.

Figure 3 Extract from the Production Volumes Map. Pink illustrates the oil produced, two blues show water.

The project has delivered a more streamlined process for producing the maps saving time and effort. It has also produced the added benefit of being able to hand the data back to the team for their own use and further analysis.

Ultimately it has helped identify targets for new production wells and we all know how much we need that!Next project is to migrate the 29 Brent Field LTRO maps to ArcGIS.

In the near future it is hoped that we can utilise surface data from Petrel and use 'Mapematics' (existing Algebraic functionality i.e. Raster calculators) to further enhance the process. This would save even more time and give us an opportunity to use spatial analysis and hopefully utilise the 3rd dimension.

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BSP's Asset Mapping Database Integrity Status

By Junit Hj Zakaria and Nigel Young,BSP

When BSP's Back-to-Basics (B2B) projects started in 2000, the onshore part of the asset map database could not be considered fit-for-purpose for most of the company's activities - critical map information was either missing or incorrect. A considerable number of the pipelines and almost all cables were shown as straight-line design routes and not as-laid/as-built data.

What we've done : Part I "Cure"

To turn the database around and make it acceptable, the existing data first had to be cleaned, i.e. discrepancies and legacy gaps/errors identified and rectified.

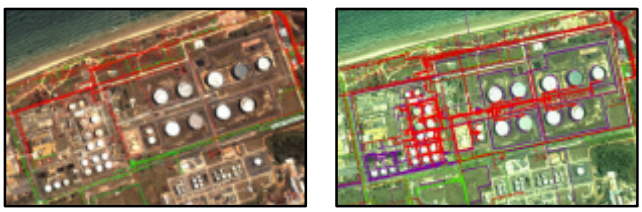

Figure 1 SCOT/SAINTS area – before and after B2B

This involved a lengthy and laborious process of digging out various information from a variety of sources, held or owned by different people and departments. From this, a risk-ranked scope for field work was defined to acquire missing data and rectify erroneous date (Fig.1)

Findings - what B2B revealed:

Spin offs from field survey and asset mapping verifications included events like severe corrosion, leaks, encroachments, ground erosion, etc (Fig.2)

Figure 2 What B2B revealed-Field Survey operations

Part II - "Prevention"

The next stage was to keep the gains and prevent recurrence of poor data integrity. Prevention means compliance process and policy. To exploit the improved data in asset management, asset owners must understand and commit to their role in maintaining the asset mapping databases that are managed on their behalf by the Geomatcs team. This involved a detailed review of the customers' business processes, procedures and policies. To elevate the requirements for asset mapping to the highest level, the **Mappable Changes Policy** was introduced (Fig.3).

The Way Forward:

B2B was officially closed out as a project, but work continues and has become embedded into standard operations. Management of these asset databases is complementary to corporate tools and systems such as GIS, CIRRAS, LiveLink and SAP. Compliance is monitored via the quarterly Asset Integrity Management System (AIMS) Forum.

Figure 3 Mappable Changes Policy of BSP- Key Message: If you can't map it, you can't manage it

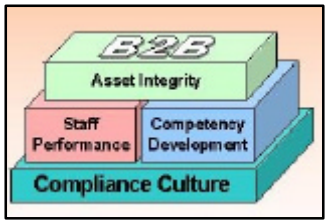

Figure 4 B2B Framework

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BSP Showcases its Geomatics Potential

Geomatics Day at BSP

By Jemmy Ang, BSP

BSP's Geomatics Services Department held a Geomatics Day on 8th April, 2004. The event was officiated by the Managing Director of BSP, Mark Carne, and the event attracted about **500 visitors**, including representatives of the Petroleum Unit (Government Partner), Government departments and secondary schools. The aim was to raise awareness of Geomatics activities and re-emphasise the importance of maintaining up-to-date databases, and adhere to the recently implemented Mappable Change Policy.

Nine exhibition booths were set up in the Geomatics office to display various activities of the department. These included the use of posters, presentations and live demos to portray survey operations, GIS applications in subsurface, well planning, satellite technology, metocean, emergency support and a special educational booth called "What is GIS?".

The event emphasised the benefits of sharing geomatics knowledge and technology. Many visitors were positively surprised with the capability and technology displayed. It was both **educational** and **entertaining** for them.

Figure 1 Mark Carne, BSP MD, officiates launching of GIS Portal

Figure 2 Students gathered at one of the presentations

Figure 3 Some of BSP's Geomatics Team

Quotes from visitors to the Geomatics Day:

"This was a great opportunity to see the range of activities that the Geomatics team do. Related to this you will now find a link to GIS Portal on our homepage. This will take you into the GIS system, which is a map based front end to many database products.… Take a look and see for yourself how useful this system is…"

Mark Carne, BSP Managing Director

"Fantastic demo of the capabilities of Geomatics – a real eye opener!"

Steve Drake, Head of Exploration

Near Surface Mapping Linked to Seismic Properties in Fahud

By Vianney de Lestrange , PDO

Near surface geology with diverse ground types, disparity in surface ruggedness and stiffness, or any other subtle surface/near surface alteration, can strongly affect seismic data quality. Integrating interpreted remote sensing data as a 'false' horizon into a seismic trace interpretation system is common practice in PDO and clearly demonstrates good correlation between seismic data quality anomalies and changes in the surface topography.

Additional work was carried out in April 2003 to focus on the complex and mountainous Fahud Jebel area, to analyse how remote sensing data could help in understanding and identifying areas potentially affected by poor seismic data quality (Fig.1 & 2).

The study was carried out by GAF AG (Germany) and included analysing high resolution DEM to provide **morphological** indicators, multispectral Landsat ETM7, Aster and IRS imaging to provide **lithological** indicators, SAR data to provide **structural** and **surface roughness** indicators and **geological** maps of Oman available in a GIS environment.

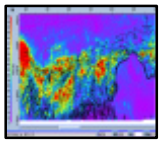

Figure 1 Seismic semblance maps (RMS 0-200 ms)

Figure 2 High amplitude chaotic seismic

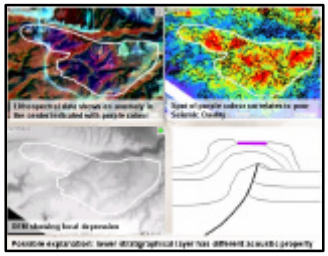

Figure 3 Sample of GIS indicators and interpretation

Selected indicators, i.e. the high resolution slope map, the spectral signature map and the morphological unit map, were weighted and integrated into a GIS environment to generate a GIS overlay map (Fig.4) showing remarkable similarity to the seismic quality map produced from LandMark (Fig.1).

It can be concluded that surface analysis derived from Remote Sensing information, can help identifying areas likely to be affected by poor seismic data quality related to near surface.

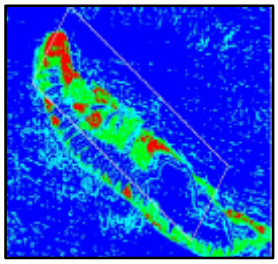

Figure 4 Final GIS overlay map from Remote Sensing Indicators

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Subsidence Monitoring using Radar Interferometry

By Gini Ketelaar, Delft University and NAM

In October 2003, NAM started the project 'Fundamental Research in Radar Interferometry' in cooperation with Delft Technical University. This is a four years' PhD research project on the feasibility of using InSAR for monitoring subsidence due to gas extraction in the Netherlands. This article describes the research topics and a case-study on the interpretation of PS-InSAR data for Rotterdam.

NAM is currently monitoring subsidence due to gas extraction using the precise levelling technique. As levelling is time consuming, expensive and low density, the possibility of using Radar Interferometry was investigated.

Different SAR missions are currently operational, for example ENVISAT and ERS-2. The ERS-2 satellite operates from 800 km height, has a repeat interval of 35 days, a look angle of 23 degrees, swath width of 100 km and a wavelength of 56 mm. Each satellite pass results in a SAR image. Two SAR images can be aligned to create an Interferogram with amplitude (signal strength) and phase difference observations. Phases can be determined with millimeter precision. However, besides deformation along slant range, interferometric phases contain influences of the reference ellipsoid, topography, atmospheric signal and orbital errors. Furthermore, phases are wrapped, which means that the integer number of cycles from satellite to target is unknown.

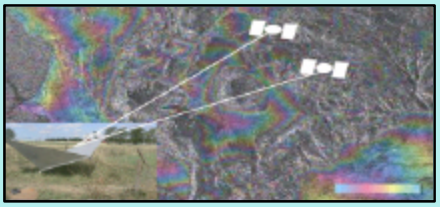

Figure1 Radar Interferometry

Complicating factors in the Netherlands are the low subsidence signal (around 6 mm/year for Groningen), the temporal decorrelation (rural area, vegetation changes), atmospheric instabilities and the missing quality description of InSAR observations and parameters in terms of precision and reliability. Hence, conventional InSAR is in many areas not suitable. Therefore research will focus on Permanent Scatterer (PS) type of approaches.

A PS has a consistently high amplitude in time. To select these reliable scatterers, a time series of interferograms is needed. The interferometric phase observations of PSs are then used to estimate the 'error source' parameters.
Research topics of the **TU Delft radar group** are related to the precision and reliability verification of the PS-InSAR processing steps and the formulation of a geodetic functional and stochastic model for the InSAR observations.

For **NAM** the research will focus on the following items:

- Spatial and temporal behaviour of subsidence due to gas extraction in the Netherlands, including the link to reservoir behaviour.
- Separation of PS movements due to different deformation regimes.
- PS density and distribution: geodetic network design, precision and reliability.
- Integration with other geodetic measurements, like levelling and GPS.

Figure 2 Fieldwork in Rotterdam: a possible double-bounce curb-to-wall reflection.

A PS-InSAR analysis for Rotterdam has been carried out by TRE/NPA for NAM. In this area, the expected subsidence due to gas extraction is very low: 0 to 2 mm/year. The resulting PS movements show high local variations which mask the signal of interest. Data-driven and model-driven methods have been used to separate the gas extraction deformation regime. The model-driven method selects PSs using cross-validation based on the subsidence prognosis. This prognosis is based on geological information and reservoir behaviour. The selected PSs reveal a pattern more similar to that of gas extraction, but local variations remain high. In following the research, attention will be paid to the spatial and temporal behavior of different deformation regimes using geostatistics.

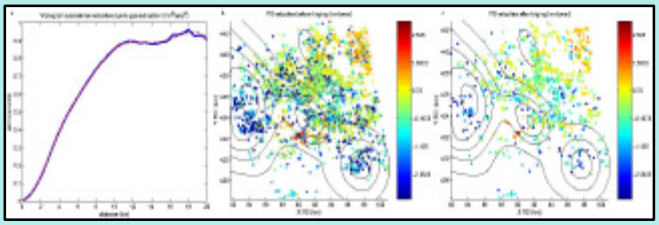

Figure 3(a) Variogram susbsidence prognosis

Figure 3(b and c) PS velocities before and after validation

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GeoSearch: How Geomatics is Assisting Shell Global Exploration

Global Geo-Datasets at the Click of a Mouse

By Maarten Tromp and J.Doraiswamy, SIEP-EPT-SCIG , Rijswijk

GeoSearch is a one-stop web-based viewer for geographical information within Shell whose main highlight is its integration with the EP One portal. It gives access to **over 100 spatial data layers** owned by Shell in a standard and user-friendly environment.

GeoSearch has evolved from E-Map, the previous web application used for displaying maps and attribute data within Shell E&P. It is being jointly developed by the Geomatics and EP One portal teams, both of which are a part of EPT- Solutions team of SIEP at Rijswijk. GeoSearch is presently in its first stage of development (Ver1.1) and geomatics community awareness and feedback would be welcome.

Functionality

GeoSearch can be used by anyone who has access to the EP One portal. GeoSearch provides its users with 3 iViews called Legend, Map and Results respectively. These are data windows representing the data tree, map and the search dialogue respectively (Figs. 1, 2 and 3). The user can select different layers of geographical data in the tree iView for display in the map iView.

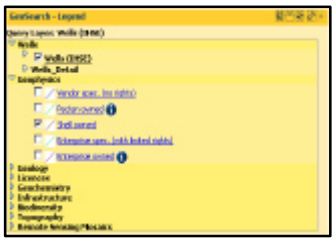

Figure 1 Tree iView

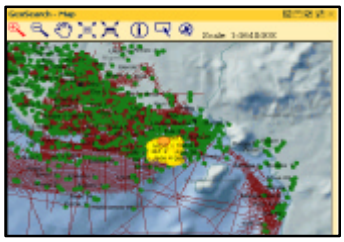

Figure 2 Map iView

The federated search tool is the **unique selling proposition** of GeoSearch. This allows the user to search features displayed on the map using generic resources like Google and specific technical databases like the oil and gas journal. This brings together a suite of spatial and non-spatial information resources at the disposal of the user. It is one of the first examples where different applications within the EP-One portal communicate.

Architecture

The iViews are built using the Sap Portal framework. The maps are generated using ESRI's ArcIMS. Metadata is accessible via ArcIMS MetaData Server. The Geo-Spatial data and the metadata are stored in ESRI's ArcSDE. The GeoSearch Service component contains the state of the application and communicates with the ArcIMS server. The 3 iViews (Map, Tree, and Search) trigger actions on the service.

Figure 3 Search iView

Future Improvements

Plans exist to extend GeoSearch during 2004 with more teamwork features, such as shared bookmarks in version 2. There will be more interaction between GeoSearch and other EP-One applications as well. So, watch this space!

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BSP's "New Look" WebGIS

By Jemmy Ang, BSP

BSP has recently completed a face-lift by introducing its new look WebGIS to replace the previous version which has been in use for almost two years. To commemorate the launching of this new version, a *Geomatics-GIS Day* was run (officiated by the Managing Director of BSP). The face-lift is not just about better appearance, the GIS team has been working on a number of improvements to provide users with better interface, a more friendly system to work on, and improved data maintenance strategy.

The new features include:

- Larger icon buttons for commonly used functions
- Tick box for clearer layer selection
- Dataset alias names (for better definition and recognition)
- Improved user statistics collection, and
- Very comprehensive help information

Another special function is the ability to save a working session in WebGIS as a bookmark and make this available/accessible from ArcGIS. This provides more convenience for users to work on either system. The WebGIS is also part of the Geographic Information Management (GIM) project to streamline overall GIS data maintenance and management.

Figure 1 BSP WebGIS

Figure 2 Interaction with ArcGIS

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http://sww-gis.bsp.shell.bn/

THE "IMPOSSIBLE" RIG MOVE

By Stephen Smith and Junit Hj.Zakaria,BSP

"Rig tenders and the current jack-up, Trident-12 are unable to access the platform" - 17/01/1996

"ENSCO-51 close tolerance rig move for CP-81 well abandonment successfully completed" - 30/05/2003

The Champion Field offshore Brunei has been producing both oil and gas since 1972. The CPWJ-03 platform, from which the CP-81 well was drilled, is located in the northern part of the field. The well was spudded on 19th April 1976 by the semi-submersible drilling rig Sedco 135-A. In 1979 the nearby CP-141 well blew out, creating a large crater approximately 50m to the northeast of CPWJ-03. In the few years that followed, drilling activity at the platform was suspended to allow the monitoring of both the crater itself and the subsurface structure. It was later concluded that rig tenders and the then jack-up, Trident 12, were unable to access the platform.

Meanwhile, annual monitoring surveys of the crater dimensions by the Geomatics (then Topo) department continued and from 1997 annual swathe bathymetry surveys were carried out. In 1999, due to severe corrosion, the CP-81 wellhead and 20" casing string sank by approximately one foot.

The jack-up drilling rig "Ensco-51" came on hire from December 2002 and was committed to accessing the CPWJ-03 platform. A multi-discipline team of BSP departments and contractors was formed to tackle this task. The team was comprised of petroleum engineering, drilling, marine, geomatics, transport and logistics departments and their contractors. The constraints and/or risks associated with this well can be summarised as follows:

- Blow out crater, with possible gas release
- 'Spaghetti' of pipelines in the area
- Abandoned pipeline close to jack-up leg
- Coral outcrops (for anchors and spud cans)
- Close proximity of other platforms
- Restriction for helicopter safe landing
- Anchor exclusion zone around pipelines.

Following additional close-in surveys and various meetings, studies and discussions in 2003 the team was ready for action. The target rig position was finalised with its stern only 2m from the edge of the platform and the heading optimised to avoid corals and other obstructions, but at the same time allowing the best approaches for the rig itself, support vessels and helicopters. As a result the Ensco-51 was successfully fine-tuned into position over CP-81 on 30th May 2003 to complete the well abandonment.

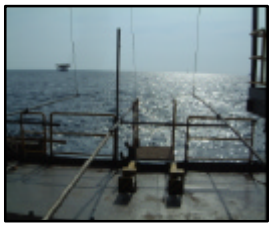

Figure 1 'Back-to-basics' "Bumper Bar" installed for close tolerance

Figure 2 CPWJ-03 with down lines

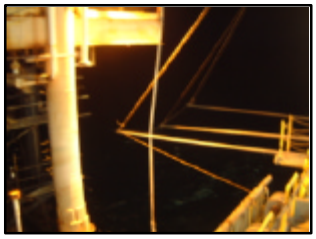

Figure 3 Final move in at dusk: The rig based poles and the 7000 tonne rig are positioned and orientated

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InSAR for Subsidence Monitoring at Yibal, Oman

By Vianney de Lestrange PDO

Atlantis, a Canadian remote sensing service Company processed InSAR deformation maps of the Yibal field using RadarSAT images acquired in January 2003, July 2003 and January 2004.

The process highlighted a similar deformation rate in 2003 as for previous years with approximately 45mm/yr at the centre of the bowl (Fig.1).

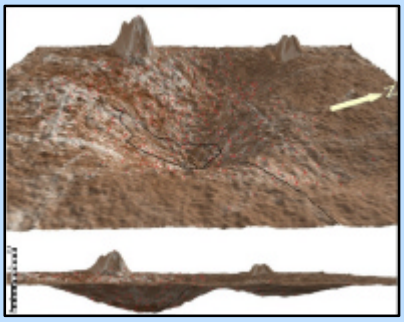

Figure 1 Yibal deformation map 2001-2004

Of particular interest was a leaking well reported in July 2003 that was charging the near-surface aquifer. This generated an uplift that could be observed on the SAR interferogramme three weeks before the actual flow to surface (Fig2).

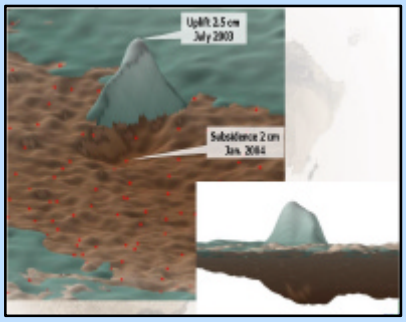

Figure 2 Y-29 water injection leak, deformation maps Jul.2003(Green) and Jan. 2004 (Brown)

The leak was fixed and six months later the InSAR deformation data clearly showed a bowl almost equivalent in size to the uplift. Such information provides potential for well integrity monitoring as well as a better understanding of the surface geographical impact of such subsurface event.

Another peculiar event could clearly be noticed just outside of the subsidence bowl and combining uplift with subsidence in a place that surface features could not justify. Conversely, subsurface maps of the location indicated a fault and a plausible explanation of the surface deformation as the result of a shear effect along the fault. (Fig.3).

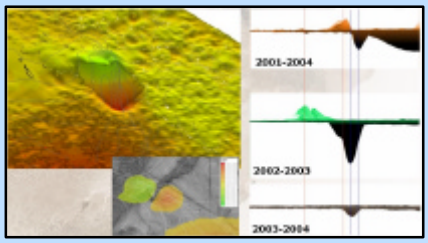

Figure 3 Surface movement generated from subsurface shear effect along fault

Plans for 2004 in PDO are to strengthen InSAR millimetre range accuracy integrating results of precise GPS observations to correct for InSAR atmospheric errors. It is also planned to extend InSAR subsidence monitoring services in 2004 to the Mukhaizna field where it would be combined with tilt metering, spirit levelling and GPS surveys.

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GEMS - Global Portfolio Management System Goes Live!

By Louise MacLean, Shell Expro, Aberdeen, UK

GEMS is a single global platform that provides an integrated view of the global portfolio (Blocks, Contracts and Prospect data). It has functionality for portfolio management and analysis and was released globally on 9th April, 2004 to provide a global application that will be used by EPX and Operating Units for tasks relating to the entire life cycle of the portfolio from creation to corporate reporting. Data is protected by a security model that treats all data as confidential and meets national legal requirements.

The GEMS application has two key components, both accessed via separate Citrix connection, but feeding from the same database. The **core GEMS application** has a Microsoft look and feel. Complementary to this is **GEMS Spatial**, which is served as an ArcGIS extension (and will be part of ArcPlus 4.1). Accessed via a separate Citrix connection, the GEMS Spatial tool allows customised GEMS spatial data management in addition to the spatial analysis capabilities of ArcGIS.

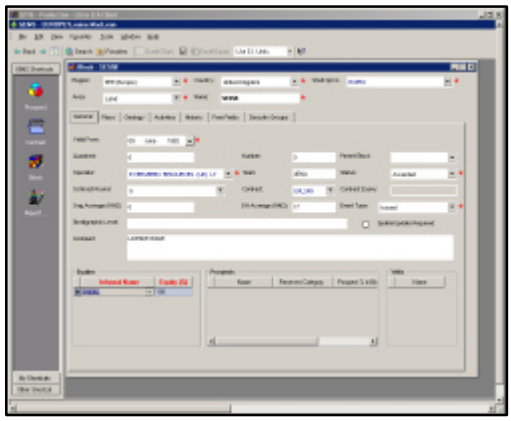

Figure 1 GEMS Interface

Key features of GEMS include:

Analysis One integrated view on the portfolio. Simple Excel-like analysis capabilities.

Reporting Simple dashboard-type reports. Auto-fill of central data requests and reports. 8.3 functionality is available via the GEMS Spatial Citrix connection including printing.

Access Globally for search, analysis and data management via customised GEMS and GIS interfaces.

Links Automatically, one-way to Peep and Fastrack.

Visualisation Through GIS and Excel-like graphs.

Highlights of ***GEMS Spatial*** include:

i. A shared standard basemap.
ii. Quick visualisation of symbolised block, contract & prospect data (current and historic).
iii. All data are published in WGS84.
iv. Functionality to view, edit, add and update polygon data.
v. Real-time updates to GEMS database.
vi. Global, Regional, LBG (Local Business Group) security.

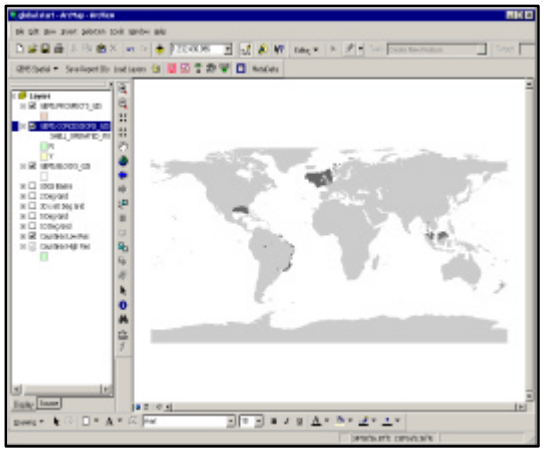

Figure 2 GEMS Spatial Relationship

In addition to the software development team, a small team in Aberdeen has been collating, doing Quality Control on, and loading global datasets (EPE, EPA, EPW & EPM with EPG to follow in 2004) into GEMS prior to a phased user rollout that will start with EPE on the 1st April 2004. If you would like a demo, access, or just to find out a little more about GEMS and GEMS Spatial, please contact Louise MacLean or Marc van Nes. Many thanks to our Geomatics colleagues who have contributed their time and experience to GEMS. This project has been made easier by the open and collaborative nature of our community.

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Staff News and Updates

John Macgregor has recently joined as the Head of Geomatics at SIEP in Rijswijk. The Geomatics group is part of the EP Solutions Information Management and Geomatics team. John was previously Head of Geomatics Services in Brunei Shell Petroleum (BSP).

Mark Tuttle will be replacing John at BSP as the head of their Geomatics services department.

J.Doraiswamy (also called **JD**), a Newcastle University Masters graduate in Geomatics, has joined the Geomatics team of SIEP at Rijswijk as a Geo-Information Analyst.

As from 3rd November 2003 the new Geomatics organization in EP Europe was formed within the Data Acquisition and Services department. The team has a presence in Aberdeen, Assen and Stavanger. The team is headed by **Jack Verouden** with **Dave Whitecombe** as the teamleader for offshore surveys, **Lammert Zeijlmaker** teamleader for onshore surveys, **Bart Hulshof** teamleader of geo-information management and **Kolbjorn Skjaveland** teamleader of the subsurface data management team.

Brian Schostak, **Arnold Villarreay** and **Jonathan Smith** have transferred to the Geomatics team in EP Solutions in Houston, from EP Wells.

Siddiq al Balushi has replaced **Paul Kunert** as Head of Geomatics (XGG) in PDO, Oman. Paul will shortly be transferring to Miri (SSB) to become Head of Geomatics for EPA. Other staff changes in PDO are:

- **Shamis Al Raisi** (an experienced surveyor from the Hydrographic office) has replaced Saleh Ghazali, who moved to local business development.
- **Ali Hadhrami**, a GIS graduate from Kingston University, U.K. has joined the GIS team.
- **Khalfan Al Salmi** is being sponsored for an MSc programme in Geodetic Surveying at Nottingham University, U.K.

Peter Latooij has joined the Al Furat Petroleum Company (AFPC) in Syria as the head of the data management and topographical services team. Peter was previously with SIEP in Rijswijk before joining AFPC.

Raoul Quadvlieg has transferred from NAM to SPDC in Nigeria. Raoul and his wife Annemarie were also blessed with a baby called Lieve shown here.

Cameron Watson, Shell Canada, was also blessed with a baby although we don't have a pic!
Congratulations from all readers of this newsletter!

Conferences/ Events (Apr-Aug, 2004)

Date	Location	Subject	Website
Apr 28-30	University of East Anglia, UK	12th Annual GIS Research UK Conference (GISRUK 2004)	http://www.uea.ac.uk/env/gisruk
Apr 29- May1	Crete, Greece	7th AGILE conference on Geographic Information Science	http://agile.isegi.unl.pt/ Conference/Greece2004/index.html
May 16-19	Rotterdam, The Netherlands	European Navigation Conference – GNSS 2004	www.enc-gnss2004.com
May 23-28	Bethesda, MD, U.S.A.	ASPRS 2004 Annual Conference	www.asprs.org
Jun 7-9	Gävle, Sweden	12th International Conference on Geoinformatics	www.hig.se/geoinformatics/
July 12-23	Istanbul, Turkey	XXth ISPRS Congress	www.isprs2004-istanbul.com
Aug 9-13	San Diego, CA, U.S.A.	24th ESRI International User Conference	www.uc2004@esri.com
Sep 20-23	The Netherlands	***Shell sponsored conferences-*** Integrated Subsurface Conference (ISC)	
Sep 23-24	The Netherlands	GIS TAP meeting	
Sep27-29	The Netherlands	Shell Geomatics Conference	
Sep 29-30	The Netherlands	ESRI Netherlands conference and GIS TAP technical workshop	