

DIMENSIONS

CRUISING OK TEDI

It's a 3-hour flight west from Port Moresby, Papua New Guinea, close to the Indonesian border. You have to fly in or go by water as there are simply no roads from the coast.

This is where Geocomp Systems' Jerry Cresp found himself earlier this year.

Kiunga is situated on the Fly River only 200 metres above sea level; even though it's about half way between PNG's north and south coasts.

Ok Tedi (also known as the Alice River) joins the Fly downstream of Kiunga and from there the Fly flows south for another 450 km through swampy land, past few settlements, and discharges through the ninth biggest delta in the world into the Gulf of Papua.

The port of Kiunga is located at the furthest point upstream that is deep enough for large barges which supply the Ok Tedi gold and copper mine. From Kiunga, the equipment is trucked north to the mine at Mount Fubilan near the headwaters of the Ok Tedi. Until recently, Ok Tedi Mining Ltd was controlled by BHP.

High concentrate copper slurry is piped down from the mine to

Kiunga and barged out to ocean-going ships waiting in the Gulf of Papua.

Why here?

As you would expect, Geocomp and Terramodel are in use at the mine, but why is Geocomp Systems interested in the river?

Landslides prevented completion of a major tailings dam, resulting in the significant and widely-reported impact on the Ok Tedi and Fly River environment and people.

Subsequently, Dredeco, a leading dredge operator, was contracted to extract large amounts of sediment at Bige, north of Kiunga where the Ok Tedi is 300 m wide.

GeoNav and Terramodel with HDMS and Visualizer, all from Geocomp Systems, are used to guide the dredges, chart the river, compute the volumes and help manage the silt.

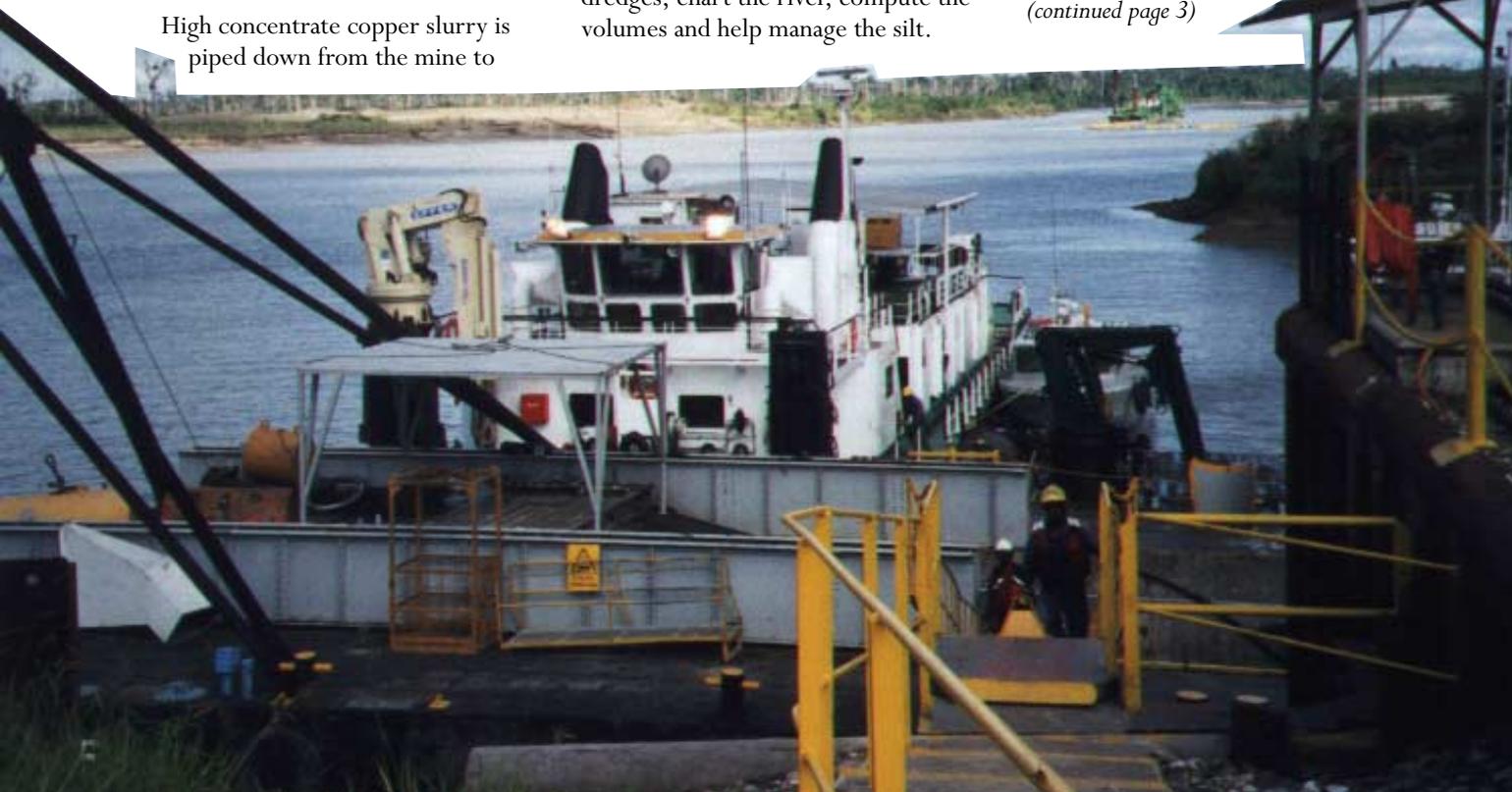
Getting sedimental

Dredeco has dredged a trench 800 m long and 200 m wide in the river. The strategy is to create a sink in the river floor into which the sediments will collect as the river flows by.

The dredge slowly zig zags along the trench, 24 hours a day. The dredge master continuously maximises the concentration of silt pumped from the river.

Upstream, it rains most of the time. At Bige, the river levels can change very quickly by up to four metres so they need to keep a constant eye on the depth to protect the dredge.

The dredge is supported by a survey boat that maps the river every second day. The surveyors use GeoNav to gather the data. They then use Terramodel with
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Spreading through Asia

Dimensions readers will recall many articles related to Geocomp Systems software in use throughout Asia. The software continues to gain popularity in this region, because of its speed and flexibility.

For example, Geocomp Systems recently sold 30 Terramodel licences to the Department of Civil Engineering at the University of Malaysia in Sabah. Paul Fulton often travels to Malaysia to visit and train clients.

In Hong Kong, the survey authority is now requiring data in a specified format. Geocomp Systems has modified Terramodel accordingly and delivered 15 Terramodel licences to our distributor for a number of survey companies.

Laser 3D Scanning

Shortly after the events of 11 September 2002, a 3D laser scanner was positioned leaning out from a window of a building next to the World Trade Center site. Through the smoke and settling dust, this scanner captured the first data to create a series of models from which the shape and movement of Ground Zero could be measured in the days to follow.

Laser scanner systems with integrated video cameras, servo-drivers, tilt sensors and associated software are now able to model large and complex spaces that used to be impractical to record. The intensity of the lasers is low enough (Class 1) to be used on sites where people are present.

As the instruments scan the field of view, the sensitive detectors note the arrival of the return signal and so determine distance and direction. Because there is no one holding a target, this method is not suitable where you need to code the points. However, there are tremendous advantages in using reflectorless technology to rapidly collect a million points automatically.

Applications include monitoring movement and mapping building facades, tunnels, factories, open terrain, quarries, oil rigs and inaccessible or unsafe surfaces.

Getting equipped

While you might have heard of Optech, Cyrax and I-SITE, look out for the name Callidus. Manufactured by Callidus Precision Systems GmbH in Germany, the Callidus 3D Laser Scanner is now distributed worldwide by the Trimble Engineering and Construction Division.

Unlike other scanners on the market today, this scanner sweeps 360 degrees horizontally and from 90 to -60 degrees vertically. The data is processed with Callidus Extractor software which can export to Terramodel and Geocomp.

For more information, see the site at <http://www.trimble.com/callidus.html>

Also, the 3DFilter.TML from Geocomp Systems can significantly reduce the size of most Terramodel terrain models without degrading the surface definition.

DISTRIBUTOR PROFILE: HAEFELI-LYSNAR PTY LTD

Perth company Haefeli-Lysnar has been distributing Geocomp Systems products in Western Australia since 1991.



The company aims to be the market leader in providing the world's finest survey equipment and offering superior customer support.

In 1989 Haefeli-Lysnar won the National Small Business of the Year award and in 1994 was the second survey equipment supplier in Australia to achieve certification to AS3902 (now ISO9002).

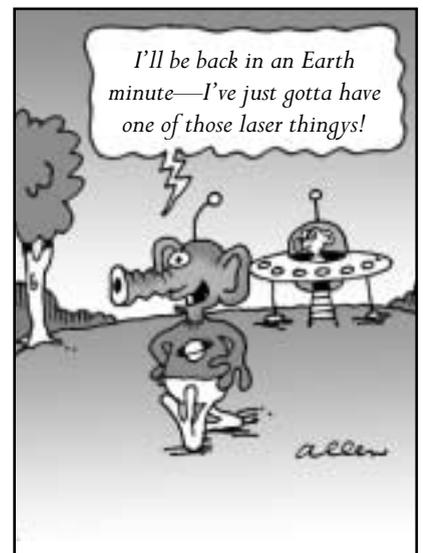
Their staff comprises qualified surveyors with 20 years of surveying and sales experience, and technical support staff with more than 40 years experience in maintaining survey equipment.

The team can discuss and demonstrate the world's leading brands, including:

- Geodimeter. Total stations from the inventors of electronic distance measuring, now part of Trimble.

- Trimble. Surveying, machine control, GIS and Marine GPS systems from the world's leading manufacturer.
- Pentax. One of the world's leading optical equipment manufacturers.
- Garmin. One of the most popular brands of hand-held GPS.
- Electrophone. Australian-made 2-way radios.
- SpectraPhysics. Inventors of the laser level, now part of Trimble.
- Laser Technology. Reflectorless measuring equipment.

For more information, contact Allan Hubble at Haefeli-Lysnar on (08) 9445 8811.



EXPERT ADVICE

Hints and tips from our experts

MultiLayerDTM

There is a trick to using this feature. You need to make up a LayerList of all the layers to be used. The name of this LayerList might be DTM_MULTI.

You also need to have a layer with the same name as the LayerList. The trick is that this layer must have at least 3 points in it to kick off the generation of the linking. You will also find that you cannot display links or quick contours for all the layers (listed in the LayerList) in one hit.

Universal Serial Bus (USB) ports

Have you noticed that notebook computers with parallel and serial ports are harder to get? Computer manufac-

turers are assuming that USB will do for everything, but we have yet to see a USB survey data collector.

If you don't have a serial port for your download cable, you can buy and install a serial-to-USB converter for a few hundred dollars. Maybe it's time to switch to card-based transfer.

But where do I put my dongle if I haven't got a parallel port?

Parallel-to-USB converters won't work with dongles. However, Terramodel and Paydirt can now be supplied with a USB dongle instead. Simply let us know at the time of ordering your software.

Geocomp, Terramodel and Paydirt licences with parallel port keys need a parallel port. For Geocomp, you need an LPT1 to print locally anyway. If your computer has room, you may be able to add a port.

Toshiba Notebooks

Recently Toshiba have released a new range of notebook computers. Some of these, including the TE2000 and some Satellites, can hide parallel port dongles from our applications by only allowing the Sentinel System Driver to use the USB port.

One of our clients discovered that you can solve the problem as follows:

1. Shutdown PC.
2. Hold Escape when powering up.
3. Press F1 to enter BIOS setup.
4. Press PgDn to go to second page.
5. Check that the following are set:
 - parallel port is enabled
 - port is set to LPT1
 - port is set to IRQ7 and CH3
6. Save settings (do not change anything else).
7. Restart PC.

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HDMS for the volume calculations and mapping. The 3D views from Terramodel Visualizer make clear what is happening on the river floor.

Jerry Cresp's assignment was to train new staff in the software. Engineers and surveyors from all over the world work on-site for up to 8 weeks at a stretch. Twenty-two staff work on the dredge, including three full-time chefs who rotate 12-hour shifts in the on-board kitchen.

Hidden pleasures in the slurry

The site is surrounded on three sides by swamplands that extend for hundreds of kilometres to the south and west. The dredged sediments are pumped to a



reclamation area where they are building land levels up to about 5 metres. The jungle will eventually regenerate over the silt which initially looks like grey beach sand.

It was out here that Jerry Cresp found that Kiunga also has recreational facilities. 'Diehard enthusiasts have created their own scenic nine-hole golf course along one side of the reclamation area,' Jerry explains.

'Surprisingly, there are few local rules to cater for the isolated conditions and hazards.'

Top: Using GeoNav onboard the survey vessel.

Left: Cutter suction dredger, Cap Martin.



UPDATE

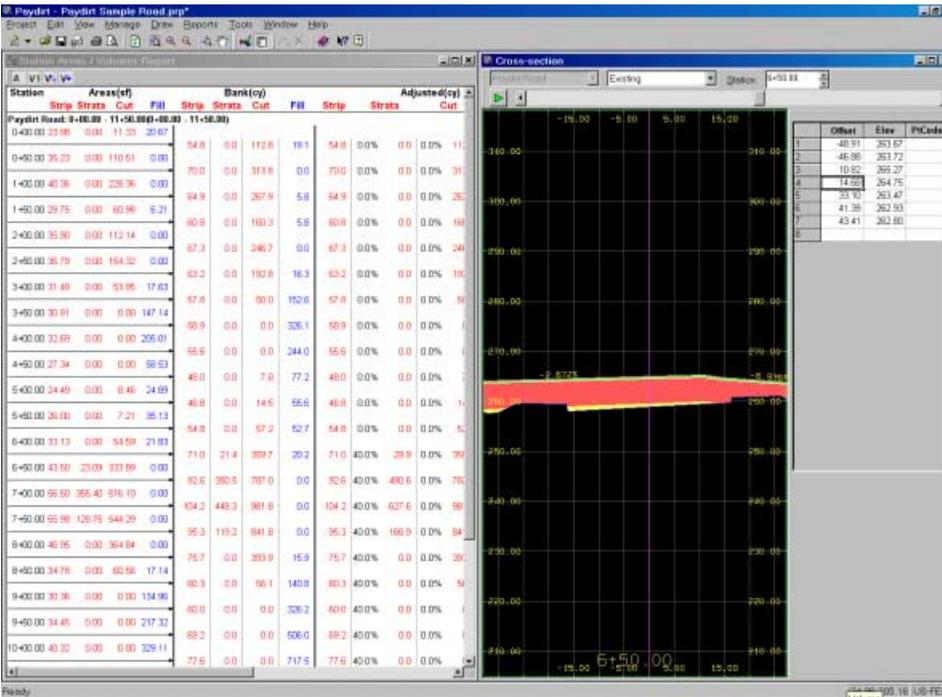
PAYDIRT SITEWORK NOW EXTENDS TO ROADWORK

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If you often need to estimate from digitised cross sections, you'll be pleased to know that Trimble have released Paydirt RoadWork.

Paydirt RoadWork expands the powerful yet easy-to-use, Paydirt SiteWork, enabling estimators in the construction industry to quickly and accurately quantify excavation volumes from cross-section plans.

Paydirt SiteWork calculates quantities for takeoffs from the plan view, while the RoadWork module adds cross-section capability. It is ideal for linear projects such as roads, dams and channels.

Paydirt quickly, easily, and accurately provides contractors with the information they need. Paydirt solutions are easy to learn and use—first-time users are tracing surfaces, calculating takeoffs, and producing detailed reports from plans in minutes.

This system will help you to increase your production, win bids and protect your profits.

Features

- Easily draw cross-sections by digitising or keyboard input.
- Report areas and volumes of quantities by chainage.
- View cut, fill, strip and substrata quantities for each pair of chainages and the entire road.
- Include bank, shrink and swell adjusted, cumulative and net volumes in a single report.
- Export reports for analysis and customisation by spreadsheets such as Excel or by cost-estimating systems.
- Strip unsuitable material from cut or fill areas or both.
- View cross-sections and areas on screen for each chainage.
- Compare your results with the provided quantities.

For more information on Paydirt SiteWork and the RoadWork module, contact Paul Fulton at Geocomp Systems or email him at: sales@geocomp.com.au.

Upgrade & Support Help Hotlines

For help with all queries about using our software.

We aim to respond to your call 95% of the time within 30 minutes, and 100% of the time within 2 hours.

Toll free: 1800 800 754 (in Australia)
Email: support@geocomp.com.au

8.30 am–5.30 pm EST each working day

Products

Geocomp Systems supports:

GeoCalc GeoNav Geocomp
Terramodel Visualizer GCGeocode
Paydirt Sitework and Roadwork

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The poetry of Tok Pisin.
Noticed by Jerry on a sign in PNG