

# GeoReach

Newsletter from the  
SCAR Geoscience Standing Scientific Group



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### From the CO's Desk

Dear Geoscience Antarcticans,

The last part of 2002 has seen great activity, both the usual field work and a number of major meetings involving Antarctic geosciences. I went to the American Geophysical Union Fall meeting in San Francisco and attended a planning meeting for the Antarctic Climate Evolution (ACE) project plus sessions of posters and papers on Antarctic and Southern Ocean climate. The ACE sessions in particular showed the potential power of linking modelling with field observations in providing new insights into Antarctic climate.

Since the last newsletter, the CEP has met and considered the Environmental Impacts of the marine acoustic technology report. It was generally welcomed although there were some criticisms of it. Since then, there has been an

incident involving the beaching of beaked whales in a region where seismic data were being collected for research purposes. Although I have no details on the circumstances of the beaching, this highlights the need for careful planning of surveys. To help with this, we have decided to post the draft version of the report (Version 1.2) on the Geoscience web site to help those involved in planning marine surveys to understand the issues and maybe avoid potential problems in the Antarctic. This version will be updated when comments come in from expert reviewers so it is not final but I believe an interim report is better than the current vacuum.

On a worrying note, the Geoscience SSG secret weapon, Glenn Johnstone will be leaving Geoscience Australia to move to the UK. Glenn has done a wonderful job keeping the former Geodesy and Geographic Information Working Group functioning smoothly and has already made a major contribution to the Geoscience SSG. I'm sure we would all like to thank him for his efforts and wish him all the best in his change of direction and hope he will still be involved in SCAR.

I would like to conclude by thanking everyone who has participated in SCAR in 2002 and wishing everyone a safe and happy 2003.

Cheers  
Phil O'Brien, Chief Officer, GSSG

### Acoustics Report

The SCAR Ad Hoc Group on Marine Acoustic Technology and the Environment has released its report on "Impacts of Marine Acoustic Technology on the Antarctic Environment".

The following is an extract from the Executive Summary of the report:

"The working group felt that the evidence available did not justify a ban on seismic surveys

or scientific echo sounders in Antarctic waters, however, surveys should be examined on a case by case basis and mitigation strategies should be used to reduce the risk to Antarctic wildlife from high power, low frequency sources. Acoustic releases and similar low power, occasional source were not considered a threat to wildlife.

Mitigation strategies should be investigated to evaluate their effectiveness and there should be a regular review of mitigation strategies and the progress of research in the field to ensure that new research findings will be available to the Antarctic community.

Research into the hearing and reaction to noise of Antarctic animals should be encouraged as should research into sound propagation conditions around Antarctica.

Records of the locations, timing, duration, frequency, and nature of hydroacoustic and other activities should be maintained to permit retrospective assessment of the likely causes of any future observed changes in the distributions, abundance, or productivity of the potentially affected species and populations"

The full report is available (as a 3.2Mb PDF document) from the GSSG web site at: [www.geoscience.scar.org/geophysics/](http://www.geoscience.scar.org/geophysics/)

### **ATCM / CEP meetings**

Both the Antarctic Treaty Consultative Meeting (ATCM) and the Committee on Environmental Protection (CEP) held their annual meeting, this time in Warsaw, Poland from 10-20 September 2002.

The following report has been prepared by Mr Tom Maggs, of the Australian Antarctic Division, who attended both meetings. My thanks to him for providing this report to us.

"At CEP V we endorsed a number of intersessional tasks and foreshadowed discussions on several significant issues for CEP VI, as summarised below from the CEP V Final Report.

The Committee looks forward to news from the Czech Republic and Romania on their progress with **ratifying the Madrid Protocol** and becoming members of the CEP.

ATCM XXV flagged the issue of **tourism** as a major focus of ATCM XXVI. It has yet to be decided how the ATCM will be advised of the operational, environmental, and policy aspects of tourism.

The Committee expects to consider three draft Comprehensive Environmental Evaluations at CEP VI.

For CEP VI, the 120-day **deadline for prior circulation of draft CEE falls on 9 February 2003**. This allows a little fewer than ten weeks in which to convene contact groups, agree on terms of reference, complete the discussions and prepare a working paper report to CEP VI.

The **Intersessional Contact Group (ICG) on the Lake Vostok drilling program** (Russian Federation) has already been convened by Jean-Jacques Reyser of France, and it is hoped that the revised draft CEE will be available for the group's consideration in February 2003.

Draft CEEs are expected from New Zealand on the **ANDRILL program** and from the Czech Republic on the proposed **new station for James Ross Island**.

**Discussion commenced on these issues, and substantive input is expected at the next meeting:**

### **EIA general matters**

- Marine acoustic techniques - **SCAR**
- Additional details of the AEON analysis of IEE - **COMNAP**
- Results of the cumulative environmental impacts survey - **USA**
- Elements of the final report on the Cape Roberts program - **NZ**

### **Conservation of Antarctic Fauna and Flora**

- Advice on the status of Antarctic species with respect to the IUCN Red List criteria - **SCAR**
- At CEP V the Committee requested the ATCM to take steps to seek the agreement of CCAMLR, CCAS (convention for the Conservation of Antarctic Seals) etc on a common approach for species in Antarctic marine environments. We await the outcomes of CCAMLR XXI and other intersessional discussions.
- The ICG to consider the review of Annex II of the Madrid Protocol has begun its work, led by Vice-Chair Tito Acero (Argentina). The deadline for first-round comments was 5 December. This group will provide a progress report to CEP VI.
- Prepare for discussion of environmental issues related to biological prospecting - **All members**.

## Area protection and management

- Review Annex 3 to the CEP III Final Report (management plan guide) - **NZ**
- Convene ICG to consider draft protected area management plans - **UK, USA, Chile, NZ, Italy, India, Australia** (The UK (Neil Gilbert) and Australia (Bruce Hull) have begun their respective intersessional processes.)
- Updated report on the status of Antarctic Historic Sites and Monuments - **UK**
- Draft management plan on tourist sites - **Germany**
- Deception Island draft ASMA management plan discussions - **Argentina, Brazil, Chile, China, UK, USA**
- Draft management plan for a Dry Valleys ASMA - **USA**

## Monitoring

- Practical Guidelines for Environmental Monitoring Programs in the Antarctic - **COMNAP**

## State Of the Environment reporting

- Report of ICG on Antarctic State of the Environment report - **NZ/Australia**
- (Announcement of a March 2003 workshop expected in December)

## Information exchange

- Information on national scientific databases to CEP VI - **All Parties**

## Cooperation

- The CCAMLR process for considering draft Annex V management plans - **CCAMLR**

## Election of officers

- The first two-year term of the current Vice-Chairs concludes with CEP VI. Both Joyce Jatko (USA) and Tito Acero (Argentina) have expressed their willingness to serve a second term.

## Preparations for CEP VI

- Deadline for submission of supplementary agenda items is 09 December 2002.

Australia is in the process of taking over administration of the CEP website from Norway, and I expect to be able to advise you of the new URL in the coming weeks. Until that time the site

will continue to function as usual from the [cep.npolar.no](http://cep.npolar.no) server, with thanks to Norway."

SCAR has been given a number of tasks to undertake and report back on at the next ATCM.

A full copy of the ATCM report [5.01Mb MS Word document of 286 pages] can be found at:

[www.25atcm.gov.pl/docs/conference?idk=19](http://www.25atcm.gov.pl/docs/conference?idk=19)

A full copy of the CEP report [364Kb MS Word document] can be found at:

[www.25atcm.gov.pl/docs/conference?idk=20](http://www.25atcm.gov.pl/docs/conference?idk=20)

## Cyberatlas funded

According to Prof Fraser Taylor, the [Cybercartographic Atlas of Antarctica](http://www.cybercartographicatlasofantarctica.com) - a project of the Geospatial Information Group - "just received word that our application for major funding to the Social Sciences Research Council of Canada for our project has come through. Therefore we will be able to move ahead on work on the ...Atlas."

Congratulations to Prof Taylor and his team. We'll keep you informed of progress in this project.

You can find more information on the project at: [www.carleton.ca/geography/geography/Taylor\\_research.html](http://www.carleton.ca/geography/geography/Taylor_research.html)

## PCMEGA Activities for 2002/03

In the Austral summer of 2002 - 2003, a group of 35 expeditioners from Australia and Germany (the Prince Charles Mountains Expedition of Germany - Australia [PCMEGA]) are undertaking a scientific research program in a remote and spectacular mountain range 500 km south of Australia's Mawson station.

"The PCMEGA [science program](#) plans to investigate geological and glaciological histories and past climates in the southern Prince Charles Mountains. This will be of national significance as it will identify continental geological / glaciological processes occurring in Australia and Antarctica, prior to and during their separation about 120 million years ago, and relate them to present day observations.

The team of geologists, geophysicists and support staff will spend two and a half months in the southern [Prince Charles Mountains](#) (PCMs) living in tents and travelling by helicopters, quads and skidoos to outlying mountain peaks rising from the polar ice cap."

Regular newsletters on PCMEGA activities are available from the Australian Antarctic Division's web site at: [www-new.aad.gov.au/default.asp?content=dynamic&title=Weekly+newsletter&casid=3940&docid=2951&type=1&children=](http://www.new.aad.gov.au/default.asp?content=dynamic&title=Weekly+newsletter&casid=3940&docid=2951&type=1&children=)

### **Komsomolskiy seismic installation**

Dr Anya Reading from the ANU Research School of Earth Sciences (and member of the ANTEC Scientific Programme Planning Group) has been undertaking research activities in the southern Prince Charles Mountains (SPCM) region - the following is an extract from a report posted on the RSES web site.

"Komsomolskiy Peak was discovered by a Soviet air crew in 1958 on a flight from the Pole of Inaccessibility to Mirny station. It was photographed by ANARE in 1960 and the first known ground visit was in 1973 when surveyor John Manning and geologist Dick England flew to the summit in Hughes 500 helicopters.

In November 2002, seismologist Dr Anya Reading visited the mountain in order to set up a seismic recording station, take rock samples and make a preliminary selection of a site for a permanent Global Positioning System (GPS) site."

More information and photographs can be found at: [rses.anu.edu.au/geodynamics/gps/antarctic/koms.html](http://rses.anu.edu.au/geodynamics/gps/antarctic/koms.html)

### **GPS installations in the SPCM's**

The SPCM's have also been a hive of activity for scientists from RSES and Geoscience Australia installing remote GPS stations.

Gary Johnston and Paul Digney from the Geodesy Group of Geoscience Australia's National Mapping Division file the following report.

"We now have GPS and Gravity data on Wilson Bluff, Burke Ridge, Mt Borland, Mt Twigg, Mt Maguire and Mt Newton. It ranges from 4 to six days. We have installed the gear at Cumpston Massif, Mt Stinear, Mt Johns, Barkell Platform, Harbour Bluff and Rooster Point trig (McCue Bluff). We have also done Gravity at these sites.

In mid-January we collect them and move them to Mt Bird, Mt Rubin, Mt Ruker, Mt Rymill, Mt Seddon and Seavers Nunataks. A week later we will collect them from these sites and pack for return to Australia. I will also remove the Mt

Creswell base station. After that we fly to Wilson Bluff to pack up the base station.

We then fly in the twin otter back to Davis via the Grove Mountains. We are likely to spend 10 days in the Davis area."

The locations mentioned in this report can be found on a map provided by the Australian Antarctic Division at: [aadcm.maps.aad.gov.au/aadc/mapcat/display\\_map.cfm?map\\_id=12892](http://aadcm.maps.aad.gov.au/aadc/mapcat/display_map.cfm?map_id=12892)

Paul Tregoning from RSES at the Australian National University has set up remote GPS stations in 4 locations; Beaver Lake, Landing Bluff, Dalton Corner and Komsomolskiy Peak.

Through the use of Iridium satellite modems data will be transmitted from these last two remote sites on a daily basis back to RSES.

More information about these stations (including diagnostic data) can be found at: [rses.anu.edu.au/geodynamics/gps/antarctic/index.html](http://rses.anu.edu.au/geodynamics/gps/antarctic/index.html)

### **ICESat launched**

"The ICESat (Ice, Cloud and land Elevation Satellite) mission will provide multi-year elevation data needed to determine ice sheet mass balance as well as cloud property information, especially for stratospheric clouds common over polar areas. It will also provide topography and vegetation data around the globe, in addition to the polar-specific coverage over the Greenland and Antarctic ice sheets."

ICESat was launched on time today, January 13, 2003 (at 6:45 pm Austin time). At the time of writing ICESat has successfully separated and deployed solar panels. There are several milestones ahead, but the mission is off to a great start.

The GPS receivers will be turned on about 3 days after launch. The spacecraft contractor will be spending the first several weeks in spacecraft "shakedown" tests.

More information on ICESat can be found at: [icesat.gsfc.nasa.gov](http://icesat.gsfc.nasa.gov)

**Stop Press:** Gary Johnston reports that the ground survey for ICESAT has been started. It covers a 600m by 4.5km area about 11km NW of Mt Creswell. A GPS was fixed to the baggage rack of a skidoo to mark out the area and the base station at Mt Creswell was increased to a 5 second capture rate.

## **ANTEC news**

Several workshops and symposia relevant to Antarctic Neotectonics have been held since the SCAR meeting in Shanghai.

In the USA, a workshop convened by Carol Finn and others was held in Denver, 5-8 August, entitled "REVEAL: Remote Views of the Antarctic Lithosphere" focused on scientific objectives and needs for airborne geophysical data acquisition in Antarctica. Terry Wilson presented related ANTEC objectives at the workshop. A preliminary version of the workshop report can be found at: [crustal.usgs.gov/antarctica/](http://crustal.usgs.gov/antarctica/).

In October, Slawek Tulaczyk and others convened a workshop in Santa Cruz entitled FASTDRILL 2002: Interdisciplinary Polar Research Based on Fast Ice-Sheet Drilling. Interdisciplinary science objectives for drilling and sampling of the ice sheets, the ice-bed interface and the bedrock beneath were discussed, and technical requirements outlined. Information can be found at: [www.es.ucsc.edu/~tulaczyk/fastdrill.htm](http://www.es.ucsc.edu/~tulaczyk/fastdrill.htm). Terry Wilson presented ANTEC objectives within a poster entitled "Drilling in the Antarctic Interior: Neotectonic Objectives".

There was an information meeting for Antarctic scientists held at the Geological Society of America Annual Meeting in Denver in October. Posters and presentations were made on SCAR (by Ross Powell, poster from Chuck Kennicutt), and on ACE (by Rob DeConto), ANTEC (by Terry Wilson), and SALE (by Ross Powell).

An Antarctic Town Meeting was held at the American Geophysical Union in San Francisco in December, in which the new organization of SCAR was explained by Chuck Kennicutt. Overviews of the diverse science initiatives of each of the Scientific Standing Groups and specific outlines of ACE, ANTEC, Permafrost, and SALE were presented. The goal is to encourage more involvement by U.S. scientists in SCAR activities.

Several upcoming events are also of interest to ANTEC scientists:

- There are many theme sessions as the joint AGU-EGS-EUG assembly to be held in Nice, France, 7-11 April, 2003. A session that is co-sponsored by ANTEC is "GD11: Glacio-Isostasy and Neotectonics" - the aim of this session is to bring together researchers working in both currently and formerly glaciated regions in order to examine the current level of understanding of glacio-isostasy and its impact on crustal tectonism.

There are many other sessions of interest, full details can be found at:

[www.copernicus.org/eqsagueug/index.html](http://www.copernicus.org/eqsagueug/index.html).

- The IX International Symposium on Antarctic Earth Sciences will be held 8 - 12 September 2003, Potsdam, Germany. Several of the major themes are relevant to Antarctic Neotectonics, and a major symposium theme is specifically on "Antarctic Neotectonics - the ANTEC Programme of SCAR". Abstracts are due 1 April, 2003. Full information can be found at: <http://isaes.awi-potsdam.de/>.

## **ACE news**

Following a successful international workshop held in June 2002 at the University of Massachusetts, USA, the Antarctic Climate Evolution (ACE) project continued to 'outreach' its plan through a day-long session at the Fall meeting of the American Geophysical Union 2002.

A total of 12 talks and 8 posters were presented at the session. Highlights included back-to-back presentations of integrated ice-ocean-atmosphere modelling by Rob DeConto and Dave Pollard, detailing their study of the roles of atmospheric carbon dioxide and subglacial sediment on Antarctic ice-sheet initiation. Their work was published in the international science journal Nature following the meeting in January. This article received 'News and Views' coverage, by Peter Barrett (who also spoke at AGU), and worldwide media attention.

An ACE website has been developed, and can be accessed at [www.ace.scar.org](http://www.ace.scar.org) or [www.geo.umass.edu/ace/](http://www.geo.umass.edu/ace/)

This web site will make up the forum from which the full ACE proposal will be debated and revised by ACE members (and other interested parties) prior to its submission to SCAR at Easter 2003.

## **AGU Fall 2002 meeting summary**

A number of Antarcticans attended the American Geophysical Union Fall meeting in San Francisco in early December 2002.

It was interesting to note that of the 8,240 abstracts almost 250 of them contained the word Antarctic.

All 551 sessions and 8,240 abstracts for 2002 Fall Meeting have been posted on the AGU web site and abstracts may be accessed by a search tool: [agu.org/meetings/fm02/waisfm02adv.html](http://agu.org/meetings/fm02/waisfm02adv.html)

## AGS'02 meeting summary

Another successful Antarctic Geodesy Symposium, this time being held in Wellington, New Zealand in late November 2002, saw two days of presentations finishing with a short business meeting of the Geodesy Program element of the Expert Group on Geospatial Information (GIG).

Attendees included twelve representatives from six nations: NZ, Australia, Indonesia, China, United States and Japan - a number of New Zealanders also attended the whole or part of the symposium. Notable late withdrawals were from Germany, Poland and Italy who all sent presentations and papers as they were unable to attend.

A major focus of the symposium was the status of regional geodetic networks in Antarctica and their future integration. Tide gauge operation and calibration were discussed at length, as were the new advances in remote GPS operational technology for Antarctic sites.

GIG will be producing a CD-ROM containing the proceedings of AGS'02 (ie. all the papers and PowerPoint presentations). This will be distributed to all GSSG members during February 2003.

You can also visit the AGS'02 web page at:  
[www.geoscience.scar.org/geodesy/ags02/](http://www.geoscience.scar.org/geodesy/ags02/)

## Call for papers - AGS'03

Following the successes of the previous 4 symposia the GIANT program within GIG plans on holding a 5th Antarctic Geodesy Symposium (AGS'03) in Lviv, Ukraine, from September 15<sup>th</sup>-17<sup>th</sup>, 2003

The event will be hosted by the National University "Lviv Polytechnik", in the Ukraine.

One focus of the workshop will be the ongoing and planned Geodesy projects within GIG. Other elements will include:

- Reporting on geodesy activities conducted during austral summer 2002/03;
- Reports on recent Antarctic Geodesy meetings / sessions (EUG, ISAES, etc);

If you are interested in presenting a paper at the symposium or would like to add an agenda item please contact the organiser directly.

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## Call for papers - GIS Workshop

Following the first International Antarctic GIS workshop in Wuhan, China in 2000 the Geospatial Information Group plans on holding a second GI Technical Experts Meeting of SCAR.

The proposed theme of the workshop is  
**"GIS projects in Antarctica: Standards & Applications"**

The event will be hosted by IPG, University Freiburg in Germany from 7-11 April 2003. IPG has several years of experience in remote sensing and glaciology on the Antarctic Peninsula. Since the year 2000 it has co-ordinated the SCAR King George Island GIS project.

One focus of the workshop will be the ongoing and planned GIS projects on King George Island. Other elements will include:

- Developing the SCAR Spatial Data Model;
- GIS projects in other regions of Antarctica;
- Internet and Antarctic GIS; and
- Place names and GIS.

Potential attendees are invited to send abstracts of papers (approx. 200 words) for inclusion in the program by **15th March 2003**. Selected papers of the workshop will be published in "Polarforschung", the journal of the German Society of Polar Research.

Please send abstracts to either  
<glennjohnstone@auslig.gov.au> or  
<steffen.vogt@geographie.uni-freiburg.de>

There will also be a session devoted to the Composite Gazetteer of Antarctica (CGA) to which all attendees are invited.

Up-to-date information can be obtained from the 2<sup>nd</sup> International Antarctic GIS Workshop website at:

[www.geographie.uni-freiburg.de/ipg/forschung/ap3/antarctica/antgis\\_2003/](http://www.geographie.uni-freiburg.de/ipg/forschung/ap3/antarctica/antgis_2003/)

Further inquiries should be directed to:

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### **Call for papers - TAPMOG**

Terrane Processes At The Pacific Margin Of  
Gondwana (TAPMOG)

A meeting of the British Antarctic Survey, the Tectonic Studies Group of the Geological Society and the Geochemistry Group of the Geological Society and Mineralogical Society to be held at: New Hall College, Cambridge, UK, 5-6 September 2003.

New isotope and geochemical techniques, combined with regional scale multidisciplinary studies, have produced major new insights into the evolution of the Gondwana margin in the Phanerozoic. Terrane processes were active prior to and during break-up of the supercontinent with implications for palaeoenvironmental and tectonic interpretations. This meeting seeks to bring together terrane specialists in a range of disciplines, with a focus on the following topics:

- Phanerozoic terrane accretion along the Pacific margin of Gondwana
- Terrane transport mechanisms
- Detrital processes and sedimentary provenance
- Where is the Permian arc?
- Isotope tracing of terrane sources using Hf and SHRIMP
- Palaeoenvironmental implications of terrane movements
- Terrane palaeobiogeography
- Geochemical tracers of terrane deep structure
- Pressure-temperature-time evolution of terrane accretion events
- Interactions between marginal and interior processes during break-up
- Remote sensing of terranes and terrane boundaries
- Studies from comparable margins

It is intended that refereed papers from this meeting will be published as a Geological Society Special Publication. If you are interested in contributing to the meeting please send an abstract of your paper to either of the convenors:

Convenors:

Alan Vaughan Tel: +44 (0)1223 221419  
[a.vaughan@bas.ac.uk](mailto:a.vaughan@bas.ac.uk)

Phil Leat Tel: +44 (0)1223 221432  
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British Antarctic Survey, High Cross, Madingley Road, Cambridge CB3 0ET, UK

Fax: +44 (0)1223 362616

[Abstract](#) deadline: 1 February 2003

Early [registration](#) deadline: 1 March 2003

Invited Speakers: Dr Dick Glen, Geological Survey of New South Wales, Prof John Bradshaw, Canterbury, New Zealand

### **Upcoming meetings**

- A workshop on "Structure and Evolution of the Antarctic Plate" will be held 3-5 March in Boulder, Colorado, USA, sponsored by the U.S. National Science Foundation Office of Polar Programs. Members of the ANTEC group (Morelli, Reading, Wilson), as well as an international group of scientists who have participated in ANTEC workshops and symposia, will participate in this upcoming workshop, to coordinate international planning by ANTEC/SCAR with this U.S. effort. The purpose of this workshop is to develop a long-term science plan designed to improve the understanding of the structure and evolution of the Antarctic Plate. In particular, the scientific justification and feasibility of an ambitious program to improve seismic instrumentation on and around the Antarctic continent will be a centerpiece of the workshop and of the science plan. Information can be found at: [anquetil.colorado.edu/seap2003/](http://anquetil.colorado.edu/seap2003/).
- Antarctic Geodesy sessions at [EGS/EUG/AGU](#) – Nice, France – April 2003
- [8th International Permafrost Conference \(IPA\)](#), Bern Switzerland July 2003
- [ISAG 7 - 7th International Symposium on Antarctic Glaciology](#) - Milano, Italy, 25-27 August 2003
- [International Symposium on Antarctic Earth Sciences \(ISAES\)](#) – Potsdam, Germany – September 2003
- International Hydrographic Bureau - Antarctic Hydrographic Committee meeting, Monaco, 08-10 September 2003. Contact [Captain Hugo Gorziglia](#), for further information.

## **Next Edition**

We plan to produce 4 editions of GeoReach per year and would ask for your contributions on:

- News items
- Field work/workshop reports
- Reports from leaders of Action Groups, the Expert Group, Scientific Research Programmes and Scientific Programme Planning Groups
- Diary events

Details should be sent to Glenn Johnstone <glennjohnstone@auslig.gov.au>.

The deadline for contributions to the upcoming editions are as follows:

- Vol. 2 No. 2 - Monday 21 April 2003
- Vol. 2 No. 3 - Monday 21 July 2003
- Vol. 2 No. 4 - Monday 20 October 2003