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AEES is a Technical Society of
IEAust The Institution of Engineers
Australia and is affiliated with IAEE

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AEES Newsletter

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President's Column

Members who attended the 2002 Annual Technical Seminar and AGM in Adelaide will be aware of the very strong interest in how members of our Society might better serve those involved with planning, managing and delivering emergency services in the aftermath of earthquakes at the national, state and local levels. To that end, the national executive committee has been meeting with representatives in South Australia to develop a more robust protocol for our involvement in S.A. The upshot is that this may provide a model for other regions of Australia. We will keep members informed as things develop. By the way, thanks to all those who attended for making it the success that it was.

Also of interest to members will be the possibility of holding training workshops on the topic of *Urban Search and Rescue* (endorsed by AEES). The workshop was developed in New Zealand with substantial input from members of the New Zealand Society for Earthquake Engineering but has been tried last year in NSW with extremely positive feedback. Again, once details are finalized, dates and venues will be widely advertised.

I should also note some of the highlights at the recent Pacific Earthquake Engineering Conference, held in Christchurch, New Zealand this February. There were many excellent presentations but a recurring theme throughout the conference was the similarity of key issues facing earthquake engineers in countries all around the Pacific rim. I was privileged to give a talk on the progress of earthquake engineering in Australia (I suspect in order to try to explain why we have not been so keen to adopt full-blooded earthquake design a la New Zealand) during which I gave an overview of the aims of our Society. As a consequence of this, I was approached by Chris Poland, President of the

Earthquake Engineering Research Institute in the U.S. to see if our Society would be interested in establishing a formal memorandum of understanding that would better enable our sister organizations to collaborate. I see no reason why we should not pursue this course and will be working with the national executive to prepare this document to put to the membership for approval, probably at this year's AGM – which by the way is being held in Melbourne. (Please see elsewhere in this issue for dates, etc.)

Another key issue raised in Christchurch was the progress of the joint Australia-New Zealand earthquake loadings standard. There was some concern that not enough feedback has been received from Australia on the current draft (Number 8) and that while it was not too late, time was quickly running out for us to have an impact on the final form of the document. Members are urged to find some time to go over the latest draft of the document and get feedback to the committee ASAP (email contact for the Standards Australia staff member coordinating this effort is Richard Weller

Richard.Weller@standards.com.au)

Finally, I should end by wishing all members all the best for 2003. I know that it is difficult to balance work and family commitments with the demands that organizations such as the AEES place on us all – in spite of the strong professional interest we all have in the issues it still puts additional calls on our very limited time these days. Hence, I want to thank my fellow committee members and Barb, Kevin and Vaughan and all our members for their efforts last year and that to come in 2003.

Mike Griffith

Next AEES AGM and Conference to be held in Melbourne later this year!! Organisers Prof Graham Hutchinson, Prof John Wilson and Dr Nelson Lam

Call for Papers in this edition of Newsletter !!!

AEES Executive

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Earthquakes in Australia

Nov 2002 – Mar 2003

The following list of earthquakes was compiled by Geoscience Australia with information from ES&S and PIRSA. None of the earthquakes caused damage, though several were reported felt. Three of them were of magnitude 4 or more. The largest was a magnitude ML 4.2 earthquake off Bathurst Is, NW of Darwin on 1 November. Two months later a magnitude ML 4.1 earthquake occurred near Tennant Ck NT. A slightly smaller event shook Meckering and historic towns of Northam and York in southwest WA on 24 March.

Meckering and Tennant Ck were sites of large damaging earthquakes in 1968 and 1988.

Date	Time	Lat	Long	ML	Place
Nov					
01	85519.1	11.03	129.97	4.2	Bathurst Is NT
04	193401.9	34.88	144.43	3.1	SW Hay NSW
05	91208.2	22.48	135.24	3.1	Arlparra NT
08	134631.3	34.05	136.17	2.8	North of Port Lincoln SA
08	195157.6	30.19	117.03	2.7	Kalannie WA
09	122753.4	36.25	148.87	2.9	Eucumbene NSW. Felt Kalkite
11	95500.8	30.57	117.03	2.3	Burakin WA
11	133406.7	30.23	117.05	2.5	Kalannie WA
17	110541.3	19.85	114.19	3.3	North of Exmouth WA
28	210231.2	30.53	117.06	2.6	Burakin WA
29	130456	31.40	119.24	2.3	Koolyanobbing WA
Dec					
02	93156.4	36.39	150.37	2.5	Tasman Sea of Bermagui NSW
04	41150.4	21.98	129.75	2.6	NE L Mackay NT
06	83300	43.16	144.72	3.7	Southern Ocean SW of TAS
09	112845.5	31.82	138.19	3.0	Hawker SA
14	133831.4	27.38	152.98	2.8	Brisbane Qld. Felt Brisbane
16	45820.3	19.87	134.03	2.8	Tennant Creek NT
20	181339.6	19.89	134.01	2.4	Tennant Creek NT
21	211605.7	26.80	132.64	3.2	Moorilyanna Hill area SA
26	210741.1	30.26	151.29	3.0	Bundarra NSW
28	92453.6	35.34	135.79	3.2	Spencer Gulf SA
30	180138.1	33.11	138.60	3.0	Peterborough area SA. Felt
31	101608.6	19.89	134.02	2.7	Tennant Creek NT
Jan					
01	174732.4	19.84	133.98	4.1	Tennant Creek NT
03	101219.8	19.86	134.01	2.8	Tennant Creek NT
05	200713.3	19.88	134.13	2.1	Tennant Creek NT
06	100017.8	19.85	134.05	2.5	Tennant Creek NT
08	164114.3	24.77	152.38	2.4	Bundaberg Qld
13	140250.3	19.89	134.03	2.3	Tennant Creek NT
14	134315.4	35.02	149.01	3.1	Murrumbateman NSW. Felt
15	20457.7	25.91	137.55	3.3	Simpson Desert NT
15	144617.6	32.62	138.82	2.2	Orroroo SA
16	190204.7	25.91	137.52	2.9	Simpson Desert NT
19	114304.7	33.93	148.06	2.4	Grenfell NSW
23	104818.4	22.80	129.94	2.7	Mt Redrers NT
24	232638.8	31.96	117.24	2.1	Quairading WA. Felt
25	30328.1	35.97	146.88	3.2	Lavington NSW. Felt Albury and Wodonga
25	103754.7	38.01	140.56	3.0	Mt Gambier SA. Felt
25	115060	37.94	140.62	2.8	Mt Gambier SA
27	74029.2	33.54	118.10	2.1	Gnowangerup WA
27	93018	28.99	118.77	2.1	Youangarra WA
30	140858.4	19.73	133.83	2.9	Tennant Creek NT
Feb					
01	84919.9	33.51	136.88	3.3	Cleve SA. Felt
02	93522	37.31	144.32	2.3	Blackwood Vic. Felt
03	155411.3	29.14	148.77	2.3	Mungindi NSW
04	75351.2	20.75	116.97	3.5	Karratha WA. Felt
04	151914.9	19.88	134.02	2.6	Tennant Creek NT

08	223144.1	32.57	138.37	2.9	Carrieton SA
09	175325.8	30.61	147.99	2.4	Walgett NSW
14	62142.7	34.77	149.16	2	Oolong NSW
16	101339	31.54	138.63	2.5	Hawker SA
17	172612.8	38.00	139.97	2.5	Mt Gambier region SA
19	45909	30.70	118.40	2	Bonnie Rock WA
26	32853.3	33.58	118.06	2.2	Katanning WA
28	55617.2	30.56	116.99	2.0	Burakin WA
Mar					
02	93642.9	24.22	110.78	3.3	Offshore WA
06	35759.8	22.11	126.58	3.3	Gibson Desert WA
10	100612.6	19.86	134.01	3.0	Tennant Creek NT
10	122814.6	35.08	143.90	3.1	Moulamein NSW
11	134502	19.88	134.67	2.1	Tennant Creek NT
14	213934.9	33.41	117.78	2.5	Dumblebung WA
18	190648.4	17.16	123.77	3.8	Derby WA
22	80602.5	35.04	143.87	2.5	Moulamein NSW
23	73255	19.74	134.73	2.5	Tennant Creek NT
24	115031.2	31.72	117.11	4.0	Meckering WA. Felt Northam, York and Cunderdin.
26	111039.9	30.58	117.01	2.3	Burakin WA

lives. What has caught the attention of the EERI, as well as local officials, is why some newer buildings collapsed, while others, some centuries old, remained standing.

Dr. Bazzurro's team will examine the patterns of damage and try to determine their causes. The findings will be used by the EERI to help engineers prevent future destruction by examining new techniques to mitigate damage and loss of life from future earthquakes. For more information please see the EERI website at www.eeri.org.

Col Lynam

Government re-starts R&D funding

IEAust News 6 Dec 2002 The federal government has reopened applications of the R&D Start program, albeit with tighter guidelines.

The \$150 million a year program, which subsidises business R&D and commercialisation, was suspended in April due to a high demand that saw spending blow out by \$40 million.

Industry groups, including the IEAust, have been lobbying for the reintroduction of the scheme since its demise.

However, no new funds have been allocated for this year and the guidelines for the scheme have been tightened to avoid another blow out. The first round of successful applicants will be announced by mid-February, with another round expected a few months later. All businesses that had previously applied for Start will need to resubmit their applications.

The AEES subscription year is the fiscal year. It is expensive to send each member an individual reminder that fees are due so please help us by sending your subscription for 2001/2002 to AEES if you haven't already done so (attn: Barbara Butler, Civil and Environmental Engineering Dept, Melbourne University Parkville Vic 3052) or renew through IEAust's annual subscription system by marking AEES your preferred Society. If you change address or if you know a member who is not receiving the newsletter please advise the Secretary or Barbara.

Australian Seismologist elected to ISC Governing Council

Gary Gibson ES&S seismologist joins an elite group of international scientists with his election to the ISC Governing Council, Australia's second such appointment in the last 100 years. The Governing Council is the ruling body of the ISC. Representatives of the [member institutions](#) meet in alternate years, in conjunction with IUGG and IASPEI Congresses. The Council elects a Chairman and an Executive Committee from its ranks.

The ISC Executive Committee guides the ISC in implementation of policies defined by the full Governing Council. It is formed of 3 voting members elected from the Governing Council for 6 year terms, and *ex officio* members representing IASPEI and the ISC's host institution. The current members of the Executive Committee are:

D r A k i ō s h i (ſai n d 097) Japan
 Meteorological Agency, Japan ayoshida@mri-jma.go.jp

News!

EERI sent a reconnaissance team to Alaska. The magnitude 7.9 earthquake that struck Alaska on November 3 last was one of the largest recorded earthquakes in U.S. history. Because the quake struck a sparsely populated area, however, damage was minimal. In contrast, the earthquake that occurred in Molise, Italy on October 31 measured a moderate 5.9, but affected several towns and resulted in extensive damage and the loss of 29

Dr. Chris Browitt (since 1999, Chairman)
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Dr. Oleg Starovoi (ex officio, IASPEI) Russian
Academy of Sciences, Russia ostar@gssc.rssi.ru

Prof. John Woodhouse (ex officio, Oxford
University) Oxford University, U K
John.Woodhouse@earth.ox.ac.uk

Joint Loading Code hits snag AS/NZS 1170.4 concerns

At the 59th minute of the 23rd hour, doubt has been cast on the proposed joint loading code with New Zealand getting off the ground. This followed a letter to Standards by a group of leading Australian engineers, many of them members of AEES. Below is a copy of the reply from Standards.

Report by Richard Weller, 2003-02-07

Following expression by a number of Australians on the content of the draft AS/NZS 1170.4, I arranged to meet with Dr Lam Pham, Prof Graham Hutchinson, Dr John Wilson and Dr Nelson Lam on Friday 7 Feb.

The purpose of the meeting was to discuss the concerns raised on the impact of the new proposed Standard on the Australian industry.

The meeting agreed that there was a fundamental difference in the engineering culture, philosophy and design approach for seismic design between Australia and New Zealand.

For example, in NZ the collapse mechanism has to be envisaged before the structure is designed. This would imply that the formation of plastic hinges would be decided and as a result the configuration of the structure would need to be adjusted at conceptual design stage. Currently this is not done in Australia. The implication is that this would affect the architectural input at the very start of the design process as well as the engineering design itself.

The group believe that the earthquake loading standard should have a common basis for evaluating the seismic hazard (as is in the current draft). However, the design approach and therefore the procedure for each country should be separate.

The group proposes the inclusion of a new section for use in Australia only. This section would be based on an update of the current 1170.4 methods.

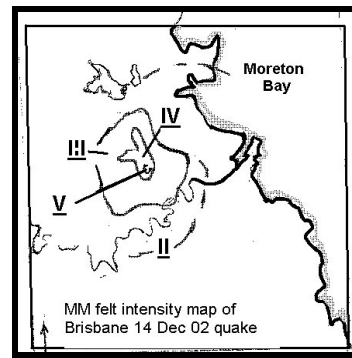
The basic reason for this proposal is that the impact on Australian engineers of the new joint Standard would be very significant and any resulting improvement in our structures has not been demonstrated given the low level of seismic activity.

Brisbane Earthquake

A small earthquake rattled homes in suburban Brisbane just before midnight on 14 December causing considerable alarm but no damage. Col Lynam compiled the following map from media and phone reports showing how widely it was felt.

This is the largest event in Brisbane since 1960, the year of the so-called Mt Glorious earthquake which was rated magnitude 4.4 but caused no damage.

Unfortunately the Brisbane seismograph was not working, a victim of the lack of cooperation between Commonwealth, State and university authorities.



Col Lynam

GPS may provide early earthquake warning

09 December 2002, NewScientist

A new network of 250 Global Positioning System stations in California could provide rapid early warnings of major earthquakes. The alerts could provide enough warning to automatically shut down gas lines, slow or stop trains, warn doctors performing surgery or even prevent a nuclear reactor melt down.

Geophysicist Ken Hudnut, at the US Geological Survey in Pasadena, California, is leading the team that has just finished installing the GPS network in the Los Angeles area. It is designed to sense movement on the San Andreas fault and the team is now waiting for an earthquake to test the system.

The network will work by detecting movement between GPS stations on opposite sides of the fault. The stations are capable of relaying their position once a second and can detect the first five centimetres of movement within 10 seconds, says Hudnut.

Seismic waves travel at about five kilometres per second, so cities more than 50km from the epicentre could receive a warning before any shaking starts. "At this point, there is no seismic

early warning system in the United States," notes Hudnut.

Seismic network

Taiwan already has an alert system based on the seismographs that detect shaking. Los Angeles, which lies more than 55 km from the closest point on the San Andreas fault, is working on a similar system.

But seismic networks require at least 15 seconds to calculate the location and size of an earthquake. "The GPS network could make the difference of 10 seconds or even more," says Hudnut, adding that every additional second could save lives and property.

Ideally, the GPS and seismic systems would be used in concert. Unlike the seismic system, the GPS system can only detect tremors that result in fault movement at the Earth's surface. However, such earthquakes are almost certain to be major ones, and this could help reduce the risk of a false alarm in which the seismic network mistakes a small, subsurface rupture for large earthquake.

The San Francisco Bay Area also lies along the San Andreas fault but has relatively few modern seismic and GPS stations. "But we're heading in that direction," says Mark Murray of the University of California, Berkeley. "Real time is the hot new direction for GPS right now."

The research was presented at the annual meeting of the American Geophysical Union in San Francisco.

Skopje 40th Anniversary Institute of Earthquake Engineering and Engineering Seismology (IZIIS) and University "Cyril and Methodius", Skopje, Republic of Macedonia, are organising the International Conference "Skopje Earthquake - 40 Years of European Earthquake Engineering" to be held in Skopje and Ohrid, Republic of Macedonia, in the period 26-30 August 2003.

Detailed information is contained on the Conference webpage: www.iziis.ukim.edu.mk/SE-40EEE.

4th International Conference on Dam Engineering

The 4th International Conference on Dam Engineering is to be held from 18-20 October 2004 in Nanjing, China. Organised by the Hohai University in Nanjing and managed by CI-Premier Conference Organisation, the conference will feature keynote papers, special sessions, technical presentations, an exhibition and pre and post conference events. For further information, contact Er John S Y Tan, conference director, CI-Premier PTE, 150 Orchard Road 07-14, Orchard Plaza, Singapore 238841, Republic of Singapore.

Tel: +65 6733 2922. Fax: +65 6235 3530.

Email: cipremic@singnet.com.sg.

Canberra Firestorms

The terrible bushfires that struck Canberra's southwestern suburbs on January 18th destroyed the homes of eight IEAust members and injured one member attempting to fight the fires.

AEES life-member Charles Bubb and his wife Viki had a narrow escape. Police evacuated them but somehow their home was saved, scorched but intact, the garden and fences burned. Members will no doubt join me in expressing our relief at their safety and hope for a rapid return to normal life.

The Society website/email list

Dear AEES Members,

The AEES web site is at www.aees.org.au. Any contribution from you on the following topics is most welcome

- details of interesting recent publications
- significant research projects in earthquake engineering (in Australia?)
- links to other relevant Web sites

Please send me your contributions/suggestions via email.

The AEES email list is operated by the Seismology Research Centre, Melbourne. If you would like to register please notify me at vaughan@seis.com.au

Vaughan Wesson

FORTHCOMING CONFERENCES

6 - 11 April 2003 EGS-AGU-EUG Joint Assembly Nice, France

<http://www.copernicus.org/EGS/egsga/nice03/programme/overview.htm>

23-27 April 2003 The Geology department, Mansoura University has the pleasure to invite you to participate in the 3rd Workshop on Seismic Risk in North Africa that will be held in Egypt.

<http://www.ictp.trieste.it/~attia/working-group.html>

12 - 14 May 2003 SEE4 4th International Conference on Seismology and Earthquake Engineering. Tehran.

www.iiees.ac.ir

22 - 26 June 2003 Soil-Rock2003, MIT, 12th Panamerican Conference on Soil Mechanics and Geotechnical Engineering, and 39th US Rock Mechanics Symposium.

17 - 19 Aug 2003 Catastrophic Risks and Insurability. Aon Re Hazards Conference. Surfers Paradise Marriott Resort, Gold Coast, Qld.

8-13 February 2004 17th Australia Geological Convention Wrest Point Convention Centre, Hobart Tasmania.

www.17thagc.gsa.org.au

1 - 6 Aug 2004 13 WCEE Vancouver Canada.
Hosted by the Canadian Association for
Earthquake Engineering (Chair Don
Anderson).

www.13WCEE.com

**18-20 October 2004 4th International
Conference on Dam Engineering** Nanjing,
China (see article above).

NEW BOOKS (& OLD) / REPORTS

Australian Seismological Report - 1998 Record
2002/1 Geoscience Australia Sales Centre
ph: 02 6249 9519, fax: 02 6249 9982

Dr Jim Bowler has published a CD titled Lake Mungo
Window to Australia's past. The CD contains a large
dataset of Quaternary geology and archaeology.

www.mup.com.au/e-showcase/

International Handbook of Earthquake and Engineering
Seismology (Part A) 2002 Eds Lee, Kanamori,
Jennings and Kisslinger. Academic Press (review next
newsletter).

Soft Plate and Impact Tectonics 2002 Antonio
Ribeiro, Springer-Verlag Berlin.
