



AEES Newsletter

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REPORT: The 1996 AEES National Seminar

Dr Michael Griffith - Convener

*The Australian Earthquake Loading Standard
- 3 years on -
How is it working and what have we learned?*

October 3 - 4, 1996 at Adelaide University

The 2-day seminar was well attended with 61 participants, and included people from around Australia and several from overseas.

This year's seminar featured talks by many practitioners, local and inter-state, on topics from codes, innovative design, case studies to seismological and earthquake insurance issues. In keeping with the theme for this year's seminar, the various users of the current Australian Earthquake Loading Standard were able to provide valuable feedback to the code developers on what is and isn't working with the present Standard.

The seminar was designed to provide state-of-the-art information covering four broad areas determined to be of importance in earthquake risk reduction for Australia. These were:

- Earthquake Codes and Case Studies;
- Earthquake Insurance;
- Seismology and Microzonation; and
- Unreinforced Masonry Construction.

The seminar was held on The University of Adelaide campus on October 3-4 during which 22 technical papers were presented. The seminar was highlighted by the keynote address which was given by Dr. Andrew Whittaker, Associate Director of the Earthquake Engineering Research Centre at the University of California, Berkeley (and formerly an

honours graduate from the University of Melbourne). The title of his talk "Performance-Based Seismic Design", was particularly informative, giving the participants a real insight into the direction that seismic design standards are taking in the United States. For the benefit of those not in attendance, Andrew outlined the motivation and theory behind the shift from the current "force-based" design approach to a "performance-based" design approach. He discussed how this is likely to lead to design for deformations rather than forces and presented several examples how such an approach might be implemented.

Other highlights of the seminar were technical presentations on:

- Australia's first eccentrically braced frame building (now being built in Adelaide);
- the current state of the earthquake code harmonisation efforts between Australia and New Zealand;
- Dr. Nelson Lam's enthusiastic, and enlightening, discussion of interplate and intraplate earthquakes, frequency content, phase angles and why they are important;
- the outstanding work by seismologists underway in Australia including several microzonation studies (not without some controversy!) and novel estimates of the intensity of shaking in the 1989 Newcastle quake; and
- an update of the progress being made to improve the seismic resistance of unreinforced masonry buildings in Australia.

A further highlight of the conference was the very enjoyable evening spent at Penfold's Magill Estate Winery where the seminar dinner was held. A short pre-dinner talk by David Johnson of Connell Wagner about the history of the winery and the after-dinner talk by Ros Moriarty of Balarinji Designs (famous for their painting of the QANTAS jumbos) made for an outstanding evening which was, by all accounts, enjoyed by all.

All of the papers from the seminar will be published in a Proceedings and all registrants will receive a copy. Others who are interested may order a copy through the AEES.

The 1996 AEES AGM

The AGM was held on Thursday 3 October at Adelaide University and started at 5:15pm with 22 members present. In the President's absence, John Wilson gave both the President's and Treasurer's reports. He reported that the AEES' finances were

quite healthy thanks to the very successful Pacific Conference held at Melbourne University in 1995. The executive was re-elected (unopposed) for the second year. The 1997 AEES Seminar venue was chosen to be BRISBANE Queensland. The organising Committee includes Bill Boyce, Russell Cuthbertson and Steve Jaume. Details will be advised later but please be sure to come along.

WCEE 2000 AUCKLAND NEW ZEALAND

The New Zealand National Society for Earthquake Engineering were successful in their bid at the WCEE in Acapulco to hold the next World Conference on Earthquake Engineering! The venue will be Auckland and the AEES is expected to help.

ANOTHER STRONG AUSTRALIAN EARTHQUAKE

In the last newsletter we reported on a magnitude 5.1 earthquake on 13 August last at 2:30 pm located about 200 km west of Bourke NSW and widely felt in northwest NSW. Most of AGSO's field seismographs were still in place there when another earthquake of similar size shook Melbourne and a wide area of eastern Victoria on 25 September.

The focus was under Thomson Reservoir at a computed focal depth of about 10 km. Part of the seismograph network installed by the SRC for the Victorian Rural Water Commission to monitor reservoir induced seismicity following completion of the dam in 1977 was still in place including an accelerograph near ground zero. Monitoring such facilities needs a long term commitment.

No structural damage was reported, and the Thomson Dam came through unscathed.

Questionnaires were distributed statewide by AGSO and in the metropolitan and epicentral areas by SRC, and an isoseismal map compiled. The map is strikingly asymmetric, radiated energy strongly attenuated to the south and east. In Melbourne suburbs the intensity varied from MMV to not felt.

The Commonwealth/State initiative to install accelerographs in the cities has again proven its worth with all 4 field instruments in Melbourne and Geelong triggering. Other accelerograms were obtained from instruments installed on or near some of the Victorian dams.

The peak acceleration recorded near the epicentre is about 0.11g compared with only 0.0001g in Melbourne at a distance of 130km.

There is no data on how individual buildings performed because no buildings are as yet instrumented. That is perhaps a project the AEES should lobby to bring about - select at least one building in each city and apply for funds to monitor it for the long term.

Date: 25 September 1996
Time: 07 49 56 UTC (5:49 pm EST)
Magnitude: ML 5.0
Epicentre: 37.88°S, 146.47°E

NUGGETS FROM THE NEWSGROUP A REGULAR FEATURE BY CHARLES BUBB

SS says, "No problem, these statistics are from the U.S. Geological Survey in Boulder, Colorado." The following FAQ from Alan Feuerbacher answers this myth:

Professional seismologists are unaware of any change in the frequency of earthquakes in the past few centuries. If one looks at typical listings of earthquakes one might find that there *appears* to have been a large increase in earthquakes in the 20th century compared to prior centuries, but this *seeming increase* is due to two things:

(1) Old records are incomplete. (2) Modern seismographs began to be systematically installed around the world in 1897 [Australia in 1901], and a major effort was completed in the early 1960s to upgrade seismograph stations around the world with the latest automatic recording equipment.

It takes a great deal of effort to obtain reasonably complete earthquake listings, and most seismologists are unwilling to invest the time. So any seeming increase in earthquake activity is due to a lack of complete records, or to worldwide instrument monitoring since 1897. Modern records include earthquakes far out to sea, which would have passed unnoticed in earlier times.

Entire continents such as South America and Australia have no records at all from before about 1500. A few people have undertaken detailed studies of large magnitude quakes in the 19th century and found that both the frequency and yearly average death rate are comparable to the 20th.

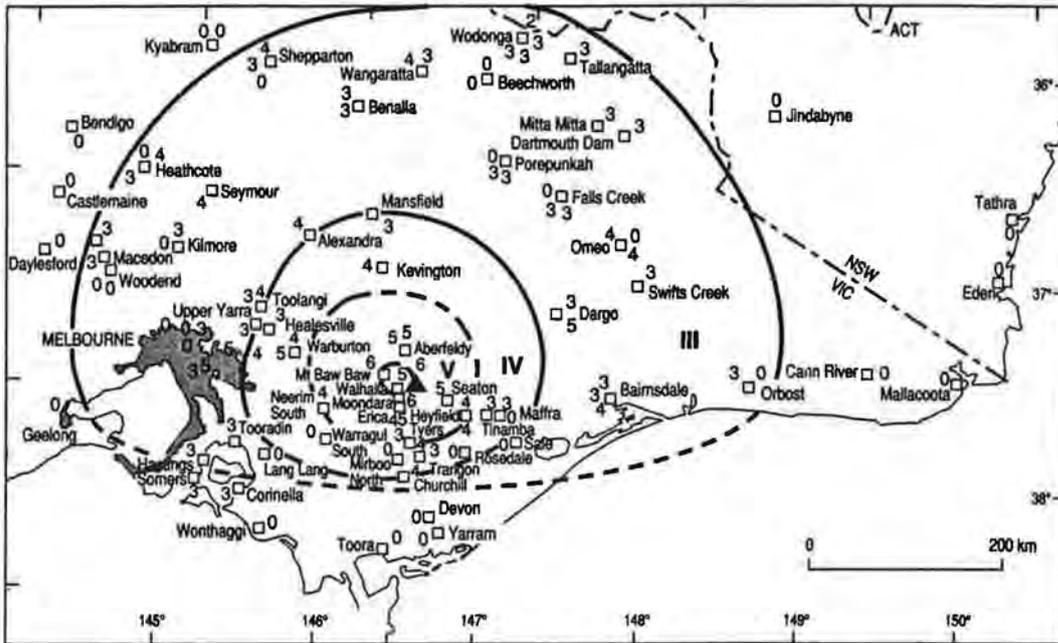
Earthquakes seem to occur pretty much at random, so there can be major statistical fluctuations in frequency. For example, the two decades prior to 1914, from 1894 through 1913, had a total of 57 quakes of magnitude 8 and up, while the 73 years from 1914 through 1986 had 105 such quakes.

That means that on average twice the number of large quakes occurred per year in the 20 years before 1914 as in all the years since. When all earthquakes from magnitude 7 and up are checked for those years, one decade is statistically indistinguishable from any other.* See the charts below.

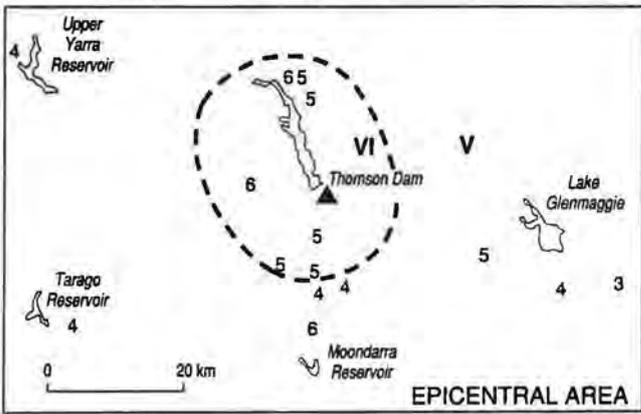
A plot of the number of earthquakes occurring in a given year versus time looks very much like a stock market chart. Like a stock market chart, if the time period under examination is short enough, trends can seem to appear. In 1986, one seismologist wrote, "There are indications that worldwide seismic activity -- if expressed in terms of earthquakes with magnitude

* Source -- Database from the National Earthquake Information Service, Denver, Colorado. This CDROM database contains a listing of some 438,000 earthquakes from 2100 B.C. through 1988.

**ISOSEISMAL MAP OF THE THOMPSON DAM EARTHQUAKE, VICTORIA
25 SEPTEMBER 1996**

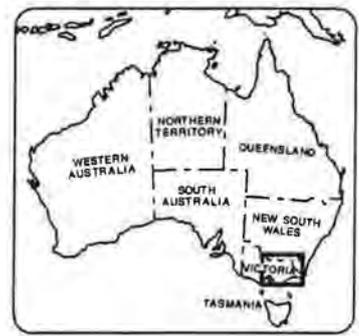


24N/13



DATE: 25 SEPTEMBER 1996
 TIME: 07:49:57 UTC
 MAGNITUDE: 5.0 ML
 EPICENTRE: 37.881°S, 146.46°E
 DEPTH: 10.5 km

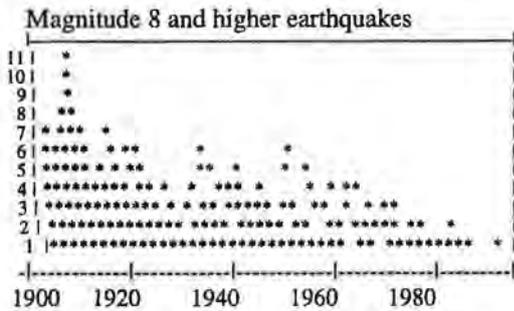
- ▲ Epicentre
- VI Zone intensity designation
- 4 Earthquake felt (MM)
- 0 Earthquake not felt



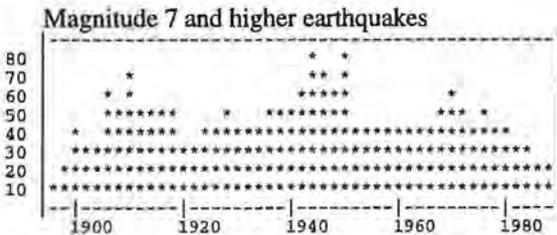
7 or over -- has decreased steadily in the time from the beginning of the 20th century until now." However, there is not enough long-term data to say anything about long-term trends.

Compare the above discussion with the plots of number of earthquakes per year below. The data for these plots was taken from the NEIS CDROM database. The data for the magnitude 8 and 7 quakes was checked to eliminate duplicate quakes. Data earlier than 1897 is not included because magnitude estimates are generally unavailable.

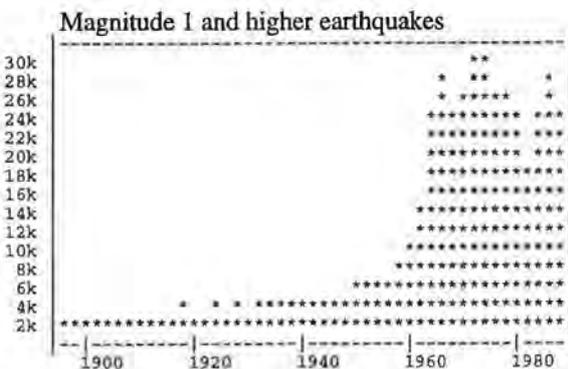
The plot of magnitude 8 quakes clearly shows the large temporary increase in frequency of magnitude 8 quakes up through 1920. Note that some seismologists have recently suggested that magnitude estimates prior to about 1920 may have been too high by .1 to .2 on the Richter scale, so that the data may be slightly skewed. If that is the case, then very little change can be seen during the 20th century.



The plot of magnitude 7 quakes clearly shows the effect of instrument recording on the recorded number of quakes. No increasing trend appears after 1940; if anything the local trend is *decreasing*.



The plot of magnitude 1 quakes clearly shows the effect of the completion in the early 1960s of the installation of worldwide instrument recording on the recorded number of quakes. (Some duplicates)



Some people might complain that it is not the raw frequency of quakes that is important, but the death rate due to them. Here again, actual data do not support such claims. The following chart proves that there is no trend in death rates either in the 20th century or since 1940. This is surprising since population densities in the 20th century are much higher. Likely this is due to many countries' building for earthquake resistance.

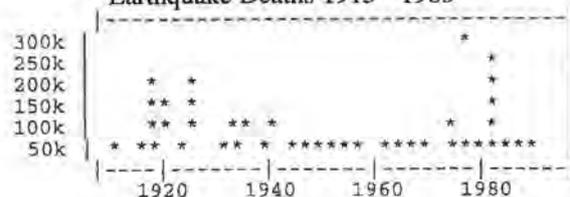
A Comparison of Earthquake Victims

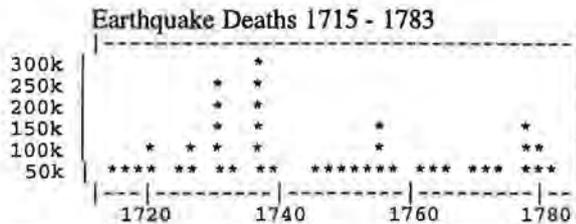
1715-1983:			1915-1983:		
Year	Location	Deaths	Year	Location	Deaths
1715	Algeria	20,000	1915	Italy	29,970
1717	Algeria	20,000	1920	China	180,000
1718	China	43,000	1923	Japan	143,000
1719	Asia Minor	1,000	1927	China	200,000
1721	Iran	100,000	1932	China	70,000
1724	Peru(t)	18,000	1933	USA	115
1725	Peru	1,500	1935	Pakistan	60,000
1725	China	556	1939	Chile	30,000
1726	Italy	6,000	1939	Turkey	23,000
1727	Iran	77,000	1946	Turkey	1,300
1730	Italy	200	1946	Japan	2,000
1730	China	100,000	1948	Japan	5,131
1730	Japan	137,000	1949	Ecuador	6,000
1731	China	100,000	1950	India	1,500
1732	Italy	1,940	1953	Turkey	1,200
1736	China	260	1953	Greece	424
1737	India	300,000	1954	Algeria	1,657
1739	China	50,000	1956	Afghan	2,000
1746	Peru	4,800	1957	N Iran	2,500
1749	Spain	5,000	1957	W Iran	2,000
1750	Greece	2,000	1960	Chile	5,700
1751	Japan	2,000	1960	Morocco	12,000
1751	China	900	1962	Iran	10,000
1752	Syria	20,000	1963	Yugoslav	1,100
1754	Egypt	40,000	1964	Alaska	131
1755	China	270	1966	Turkey	2,529
1755	Iran	1,200	1968	Iran	11,588
1755	Portugal	60,000	1970	Turkey	1,086
1755	Morocco	12,000	1970	Peru	66,794
1757	Italy	10,000	1971	USA	65
1759	Syria	30,000	1972	Iran	5,057
1763	China	1,000	1972	Nicaragua	6,000
1765	China	1,189	1973	W Mexico	52
1766	Japan	1,335	1973	C Mexico	700
1771	Japan (t)	11,700	1974	Pakistan	5,200
1773	Guatemala	20,000	1975	China	200
1774	Newfoundland	300	1975	Turkey	2,312
1778	Iran	8,000	1976	Guatemala	23,000
1780	Iran	100,000	1976	Italy	900
1780	Iran	3,000	1976	Bali	600
1783	Italy	60,000	1976	China	242,000
1783	Italy	1,504	1976	Philippines	3,373
1783	Italy	1,191	1976	Turkey	1,790

1977-1983 addition: 44,623

Total 1715-1783: 1,373,845 Total 1915-1983: 1,210,597
 Annual average: 19,911 Annual average: 17,545

Here are graphs showing the above tabulated data:
 Earthquake Deaths 1915 - 1983





Of course, data has no effect on the beliefs of many people.

Some will read and ignore the above information, and simply claim that their own increased *perception* of earthquakes and other natural disasters is somehow a fulfillment of Bible prophecy. Such an intellectual copout is only to be expected from those who refuse to think.

by: Alan Feuerbacher alanf@atlas.pen.tek.com

EOL

Previously, I have mentioned that IEAust provides a system called Engineering OnLine. At my request on behalf of the Society, EOL provides access to one of the Usenet NewsGroups called "sci.geo.earthquakes". This newsgroup is currently available to anyone with basic access to the Internet worldwide for discussion of any topic related to the title. Usually I scan this newsgroup most days panning for gold in the way of useful information, ideas and any item that might be of interest to AEES.

There is a regular weekly report from USGS which concentrates on the USA but it does have a small section on Planet Earth. Usually I extract this and post it on to the Earthquake Folder in the EOL system. This is a Folder in the Societies Section of EOL which we have had established on EOL for all IEAust members interested in earthquakes and of course especially those who are also AEES members.

There is of course a lot of stuff from and about people trying or pretending to predict earthquakes and other disasters and I can now pick most of that which is rubbish, without actually having to read it.

There are also long discussions about matters which are not germane to us for various reasons, for example a current thread is on "slow earthquakes". Probably this does not interest us as intraplate dwellers, but it is still a good read.

Now and then the panning produces a "nugget" and with the help of the Hon Editor one is reproduced below.

EEVL, the new free UK based virtual library for Engineering, now live! [<http://www.eevl.ac.uk/>]

The Edinburgh Engineering Virtual Library (EEVL) went live on Friday 13th September. The EEVL gateway to Internet resources in Engineering will be extremely popular with the engineering community and will solve one of the main problems facing users

of the Internet - locating useful resources from the millions available.

Earlier in the summer EEVL launched two useful services for engineers, the EEVL Engineering Newsgroup Archive, and the Offshore Engineering Information Service, both of which have proved successful. Now EEVL's Main Service, its searchable database of high quality engineering networked resources, will be freely available to anyone anywhere in the world with an Internet connection and appropriate World Wide Web browsing software.

The database, containing descriptions and links to over 1300 Internet resources in engineering, has an extremely user friendly interface, and allows practising engineers, academics, researchers, students, and information specialists to search or browse for engineering resources by title, keyword, or subject.

The database is actively managed by a team of engineering information specialists, with headquarters at Heriot-Watt University Library, in Edinburgh, UK. Resource descriptions and links are checked regularly, making EEVL the premier site on the Internet for locating UK engineering sites.

Resources in the EEVL database include Web sites for engineering e-journals and electronic newsletter, engineering companies, professional societies and institutions, engineering departments within higher education, government sources, engineering email lists, resource guides and directories, research centres, recruitment services, software, and more.

EEVL fills a large gap for engineers and industrialists as far as Internet resources are concerned and it is likely that EEVL will become the first port of call for anyone looking for Engineering information on the Internet.

EEVL is funded through the Electronic Library Programme (eLib), managed by the Joint Information Systems Committee (JISC) on behalf of the UK Higher Education funding councils. The EEVL Project lead sites are Heriot-Watt University Library, and the Heriot-Watt Institute for Computer Based Learning (ICBL). Partner sites are the University of Edinburgh, Napier University, Cambridge University, Imperial College of Science, Technology and Medicine, the Nottingham Trent University, and the Institution of Electrical Engineers (IEE).

For more information, see the Web site at: <http://www.eevl.ac.uk/> or email eevl@icbl.hw.ac.uk

Charles

Your Society - AEES

AEES Executive:

President: Prof Graham Hutchinson¹
Secretary: Mr Gary Gibson²
Treasurer: Mr John Wilson¹
Immediate Past President: Mr Charles Bubb

Committee:

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Peter Gow (WA)
Vagn Jensen (Tas)
Bill Buckland (NSW)
Mike Griffith (SA) and
Kevin McCue (ACT) & Newsletter Editor.

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The AEES subscription year is from 1 Dec to 30 November. It is difficult and expensive to send each of ~ 400 members an individual reminder that fees are due so please help us by sending your subscription for 1996/97 to AEES now (att: John Wilson, 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, many newsletters are returned.

Conference Proceedings AEES

The main function of our Society is the Annual Seminar. You can keep informed about the latest developments in Earthquake Engineering and Engineering Seismology in Australia by purchasing the Proceedings. 1994 Proceedings \$30.00, 1992 and 1993 Proceedings \$25, or \$45 for both. Postage within Australia is an additional \$5.

Conference Proceedings PCEE

•1995 Melbourne Proceedings \$185 from Mrs Barbara Butler, Melbourne Uni phone 03 9344 6712 / fax 03 9348 1524
•1987 & 1991 Proceedings NZ\$50 plus P&P from Admin Sec NZNSEE, PO Box 312 Waikanae New Zealand

FORTHCOMING CONFERENCES

(Flyers for some conferences are available from Ed)

INTERNATIONAL CONFERENCE & COURSE ON: STRUCTURAL DYNAMICS

Dynamic load problems on structures

November 25 - 27, 1996 ITB, Bandung, INDONESIA
CONFERENCE: November 28 - 29, 1996, Aula Barat ITB, Bandung, INDONESIA

TOPICS:

This conference is intended as a media to exchange knowledge and experiences, consultation and problem solving in structural dynamics, such as:

- Finite element
 - Modal analysis
 - Sub-structuring
 - Vibro-acoustic
 - Active and passive control
 - Optimization
- and other aspects related to vibration analysis in the following major fields:
- Civil engineering
 - Transportation
 - Off-shore structures
 - Aerospace and aeronautics

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8th INTERNATIONAL CONFERENCE ON SOIL DYNAMICS AND EARTH- QUAKE ENGINEERING SDEE '97

July 20-24, 1997 Istanbul, Turkey

Organized by: Bogazici University, Istanbul
Princeton University, Princeton, NJ

Hosted by: Kandilli Observatory and Earthquake
Research Institute, Istanbul, Turkey

In Association with: Turkish Chamber of Civil
Engineers, Istanbul Branch Seker Insurance Company

Under the Sponsorship of: UNESCO, United Nations
Educational, Scientific and Cultural Organization
IDNDR, United Nations International Decade for
Natural Disaster Reduction Secretariat

BACKGROUND AND OBJECTIVES

Despite significant advances in the fields of Structural and Geotechnical Earthquake Engineering, year after year earthquakes cause substantial loss of life and property and bring intense human suffering. It is clear that the Earthquake Engineering community has still a long way to go towards mitigating these disasters. These series of conferences aim to contribute to the international understanding of the problems and progress in Soil Dynamics and Earthquake Engineering and, as such, complements the objective and the role of the International Journal that bears the same name with these conferences: "Soil Dynamics and Earthquake Engineering".

The conference is being held under the United Nations
International Decade for Natural Disaster Reduction

(IDNDR) framework and is intended to address the relevant IDNDR issues. The specific purpose of this conference is to present a forum for the presentation and discussion of current activities and progress in soil dynamics and earthquake engineering as they become part of Geotechnical Earthquake Engineering, with the hope of stimulating greater interest in this important interdisciplinary field. The conference is aimed at a better understanding of the earthquake response of ground-structure systems through exchanging the knowledge and the experience of the participants, and to enhance the combined efforts of geophysics, geology, earthquake engineering and civil engineering for the reduction of earthquake risk to people and the physical environment. The conference will encompass a special session on "Historical Structures" in collaboration with the organizers of the International Conference on Studies in Ancient Structures. This session will take place during the first day of the conference.

CALL FOR PAPERS

Papers are invited on the Conference Themes and other topics that fall within the general scope of the conference. Abstracts of one page, stating the purpose, methodology, results and the conclusions should be forwarded (mail, fax, e-mail) to the either of the Chairs of the Organizing Committee by January 30, 1997. The name, title, affiliation, postal and e-mail addresses, and the telephone and fax numbers should be provided on the abstract page. The abstracts will be reviewed by the Advisory Committee for inclusion in the Conference program. The results of review will be communicated to the authors by March 15, 1997 for the preparation of "Extended Abstracts" in camera-ready format which will be printed in Conference Proceedings. Authors of selected papers will be invited to publish their full papers in the special edition of the international journal "Soil Dynamics and Earthquake Engineering".

CONFERENCE THEMES

1. Seismicity, Ground Motion and Site Effects
2. Seismic Hazard and Risk Assessment
3. Laboratory and Field Tests of Soils and Foundations
4. Analysis of Soil-Structure Systems and System Identification
5. Special Structures and Systems (Bridges, Dams, Earth Structures, Offshore Structures, Underground Structures)
6. Extended Structures and Systems (Lifelines, Urban Systems)
7. Seismic Evaluation and Rehabilitation of Structure-Soil Systems
8. Seismic Codes and Standards
9. Earthquake Insurance and Other Socio-Economic Issues
10. Experiences Derived from Recent Earthquakes
11. Historical Structures and Monuments

LOCATION AND DATES

The Conference will take place in Istanbul, Turkey July 20 through July 24, 1997 at the Hyatt Regency

Hotel. Rooms have been reserved on behalf of the participants at special rates. Detailed information can be obtained from the SDEE'97 WWW Home Pages at <http://www.ceor.princeton.edu/sdee.html> and <http://www.boun.edu.tr/sdee.html>

- 1997, 14-16 March NZNSEE Technical Conference and Annual Meeting. A decade of progress since the Edgumbe earthquake. Abstracts by 30 September to The Admin Sec. NZNSEE, PO Box 312, Waikanae New Zealand.
- 2000 - WCEE/PCEE New Zealand - Watch this space.

NEW BOOKS

- Report on the January 17, 1995 Great Hyogo-Ken Nambu (Kobe) Earthquake. Lam Pham & M Griffith. CSIRO DBCE 95/175(M)
- Earthquake Engineering *Proceedings of the 10th European Conference*, Vienna Austria 28 Aug - 2 September 1994, Balkema, Ed G Duma, price \$593.00
- Tsunami - Progress in Prediction, Disaster Prevention and Warning in *Advances in Natural and Technological Hazards* Eds Yoshito Tsuchiya & Nobuo Shuto. Kluwer Academic price \$240
- Isoseismal Atlas of Australian Earthquakes - Part 3 AGSO Record 1995/44, \$50 + pp. AGSO Sales Centre phone: 06 249 9519, fax: 06 249 9982
- Australian Seismological Report - 1994 AGSO Sales Centre ph: 06 249 99519, fax: 06 249 9982
- Fundamentals of Earthquake Prediction by Cinna Lomnitz: John Wiley & Sons.
- The Geology of Earthquakes by R.S. Yeats, K.E. Sieh, and C.R. Allen: Oxford University Press, 576 p., price \$65.00.
- Paleoseismology, edited by James P. McCalpin. Academic Press, 576 p., price \$89.95.

ABOUT SOME OF THE BOOKS

Report on the January 17, 1995 Great Hyogo-Ken Nambu (Kobe) Earthquake. Drs Lam Pham & M Griffith visited the Kobe region from 2 - 10 February 1995 and have put together a most interesting report on their observations with 54 spectacular colour photographs to illustrate their analysis of structural failures. It is worth having the book for the photographs alone but they have included in Ch 7 titled 'Lessons for Australia' another reason why this report is a must for your bedside table. It is available from either author, Lam Pham at CSIRO Melbourne or Mike Griffith at Adelaide Uni.

Archaeoseismology edited by S. Stiros (Athens) and R.E. Jones (Glasgow) Fitch Laboratory Occasional Paper 7, 1996 (Oxbow, Oxford)

A joint publication by the Institute of Geology and Mineral Exploration Greece and The British School (of Archaeology) at Athens Greece

Many of the earthquakes that occurred in the last few thousand years left their traces not only on the physical environment, but on human constructions as well. The study of remains of ancient constructions to identify signs of ancient earthquakes and their

parameters led to the advent of a branch of Palaeo-seismology, called Archaeoseismology. The latter focusses on surface deformation of ancient sites and architectural remains, but especially on the results of ground shaking on ancient constructions.

"Archaeoseismology" is a collection of articles, case studies and theoretical approaches that address this branch of Palaeoseimology. The first part consists of 17 papers that examine archaeological and historical evidence for archaeoseismic events, together with their social and cultural impacts. The second part presents 8 papers that discuss scientific approaches to studying the archaeoseismic record. Examples are taken mainly from Greece and the Eastern Mediterranean, and include reference to a wide range of archaeological structures, from modest domestic buildings (like those found in nearly all continents) to monumental architecture.

The book is available from :
Oxbow Books, Park End Place, Oxford, UK.
Hardback, 269pp- UK price GBP35 (plus p&p)
(Phone: +44-1865-241249; fax: +44-1865-794449;
e-mail: oxbow@patrol.i-way.co.uk)

A NEW NATIONAL FACILITY FOR DYNAMIC TESTING AND RESEARCH AT UTS

Discerning Society members who read the Science & Technology section in the weekly newspapers would have recently seen an interview with Professor Bakoss from the University of Technology Sydney. Charles Bubb and Kevin McCue rang Steve Bakoss and accepted his kind invitation to inspect their new research facility. We clamboured over, under and around the 1-dimensional 3mx3m shake table and spent an hour or so with Prof Bakoss and Assoc Prof Samali learning about its capabilities and their plans for future research and developments.

Professor Bakoss prepared an article which we will reproduce in full next issue but here are some of the salient features. Not many tall buildings have an inbuilt facility for dynamic testing of the structure!

The National Facility for Dynamic Testing and Research was opened by the Minister of Science and Technology Senator McGauran at the University of Technology, Sydney on 2nd October, 1996. The opening of the facility received extensive media coverage and was attended by over three hundred leading engineers and researchers from industry, state and federal government instrumentalities, local government and universities.

This major research and testing facility was established under a grant of \$300,000 provided by the Australian Research Council (ARC). Substantial additional funds were made available by the Faculty of Engineering UTS, the School of Civil Engineering UTS, the Department of Civil Engineering and the Wind Engineering Services of the University of Sydney, and the Road and Traffic Authority of NSW.

The ARC grant was awarded in recognition of the need to develop Australia's capacity to safeguard its physical infrastructure against destructive events such as earthquakes, cyclones, and to develop new approaches to minimize the damage that can be caused by the dynamic effects of storms, wave action, traffic etc.



The core component of the experimental testing facility is a shaker table capable of subjecting test specimens of up to ten tonnes in mass to pre-programmed vibrations or, seismic displacements within a wide range of frequencies and amplitudes. This versatile, advanced testing facility can meet the requirements of a wide variety of applications, from testing the performance of products and materials subjected to cyclic loading to the testing of prototype sized structures and components subjected to complex dynamic load/displacement regimes such as simulated earthquakes.

Negotiations have commenced with ABB Transmission and Distribution Ltd to conduct seismic response tests on transformers and switching gear. The equipment to be tested is manufactured in Australia for installation in a nuclear power station in North China. The conduct of the specified stringent performance certification tests at UTS could obviate the need for sending these units, which weigh up to 6 tonnes, to Germany for testing prior to installation.

Further information may be obtained from:

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