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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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Note: Our new president Mike Griffith was elected in absentia so we were not able to elicit a contribution for this issue but I am sure he would want us to send you all Seasons Greetings .

AEES 2001 Conference

The statistics of the 10th AEES conference held recently in Canberra, summarised below by Barbara Butler, tell one story of success. The other less tangible measure is that of the contacts renewed or established, the achievements and business arising from those contacts, and the learning and pleasure derived from the talks and posters. All I can say is that it worked for me and for many others I talked with.

Bill Boyce introduced Prof Steve Yeomans who welcomed us to ADFA and its wonderful conference venue with steeply tiered 90-seat lecture theatre and open vestibule where the posters were on display and where we had lunch and tea breaks.

Dr George Walker, in opening the conference proper, presented a stirring theme speech which I can only regret was not televised to the nation. He expanded on the *REAL WORLD* in the title and pointed out that reinsurance for earthquakes in Sydney is more expensive than for any other natural hazards.

The two keynote speakers Jim Beavers and Graham Shorten entertained the audience with real world experiences in the US and SW Pacific respectively. The nuclear lobby in the US were apparently able to subvert the intent of the Uniform Building Code for a decade or so in the 70's and one wonders whether organisations could or have tried to influence the Codes here to that extent.

Some of the problems of the SW Pacific: vulnerable buildings, poor foundations, lack of preparedness, are

shared with Australia. In addition they face a high earthquake hazard. Their communities traditionally have a high level of risk acceptance compensated by strong community resilience and support which may not be sufficient after an earthquake event on a modern city.

Athol Yates addressed the theme from a different perspective pointing out the deficiencies in our modern society so focussed on outsourcing of services and responsibility. He suggested AEES provide feedback about the lack of an appropriate chain of responsibility to IEAust.

John Wilson and Gary Gibson explained the background to and deficiencies in the engineering and seismological aspects of the draft joint loading code. Considerably more work needs to be done before the draft is acceptable in Australia. Nelson Lam made a plea for the response spectrum to be enhanced in the long period range ($T > 0.8$ sec) despite the small contribution of M7 or greater earthquakes to the computed hazard.

Disaggregation plots were shown in several of the hazard papers presented by John Schneider and Cvetan Sinadinovski in the last session hosted and organised by Geoscience Australia. The plots confirm this low contribution rate but some conservatism may need to be adopted given the lack of data.

The student papers by Amy Brown, Tuan Ngo, and John Prahbaharan were well received and the presenters were warmly congratulated by George Walker.

Sponsors Geoscience Australia and the Seismology Research Centre are gratefully thanked for contributing so generously once again to this annual event.

The integrated space at ADFA contributed to the success of the poster sessions but the quality of these posters was unusually good.

Doug Finlayson proposed that a wrap-up forum be convened and six speakers proffered their views.

- John Wilson proposed a report card by AEES on post-disaster structures, akin to the recent IEAust infrastructure report card.
- Andrew King said that engineering judgment needed to be recognised and that design engineers should

take professional responsibility for defining the level of acceptable risk for their structures.

- Gary Gibson said that more work needed to be done urgently on the loading code spectrum and magnitude derivation in Australia.
- Bill Boyce reminded us not to forget the ordinary engineers at the coal face when writing codes.
- George Walker observed that AEES goals appear to be short term and we need to consider the longer term, 5 to 10 years.
- Athol Yates suggested that AEES bring issues of concern to IEAust, issues such as the apparent lack of compliance with the earthquake loading code.

The Excursion Dan Clark prepared a comprehensive set of field notes for the inspection of the Lake George Fault scarp near Canberra. These notes were largely based on the earlier work of BMR hydro-geologist Bob Abel who generously joined us for the outing and joined in the discussion.

The fault is significant; it was used as a design earthquake source zone for the Telstra Tower in Canberra. The question is: should it be considered an active fault (see photo later)?

The conclusion of the discussion was that further study was required, not only to determine the recency of movement but also whether it is or ever was a reverse fault, consistent with what is known of the current stress field.

We hope to see you all in Adelaide in 2002 for the next Conference hosted by the new executive headed up by Assoc Prof Mike Griffith.

Conference Statistics

On Day One there were 53 attendees, with 58 on the 2nd day, out of a membership base of 245. The Official dinner at the Officers' Mess attracted 59, with a pleasing number of partners also attending this year. The excursion was also well attended, with 32 people participating in a great day. Not all invoices are in, but indications are that the Conference has done better than "break even".

Barbara

The New Society

President - Prof Mike Griffith (Adelaide University)

Secretary - David Love (PIRSA)

Treasurer - Peter McBean (Wallbridge and Gilbert)

The state representatives are:

NSW	Michael Neville
Qld	Gary Huftile
Vic	John Wilson
Tas	Vagn Jensen
ACT	Gerhard Horoschun
SA	Jim Wilson
WA	Peter Gregson

IAEE National Delegate to 2004 is John Wilson (The University of Melbourne).

The AEES Webmaster, Vaughan Wesson (SRC) was re-elected.

Barbara Butler was thanked for her sterling efforts and continues to manage the Secretariat from The University of Melbourne.

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 Vaughan Wesson vaughan@seis.com.au

Vaughan Wesson

NUGGETS - A Regular Feature By Charles Bubb

The following articles appeared in the Sydney Morning Herald the week after our AEES Conference, what a timely conference theme! As we have said before, an earthquake will expose any hidden flaws in a building, so by not designing and building to the codes we are truly gambling with lives; ours and those of future generations. The articles have been abridged to fit the available space (Ed).

Shoddy building faces MPs' scrutiny

From Saturday's Herald

Gerard Ryle

Towers of trouble: the full investigation

A parliamentary inquiry into building standards in NSW is now almost certain after the Liberal, Greens and Democrats parties backed the move yesterday.

Their push for an Upper House investigation early next year follows revelations in the *Herald* that up to one-third of new residential buildings may be faulty, that regulation appears to be failing, and that the HIH collapse has led to a surge in illegal work.

The Opposition spokesman on fair trading, Mike Gallagher, said "I am inundated by complaints by builders and from consumers," he said. "I have got builders who tell me that they are being forced to work illegally trying to get around the problems with insurance.

The Upper House Democrat, Dr Arthur Chesterfield-Evans, said "We need a regulation system that excludes builders who have bad records and a rectification system that actually works ... the regulation system at the moment is mickey mouse," he said.

The Greens MLC, Ian Cohen, said he was being deluged with complaints about the relationship between private building certifiers and builders.

The complaints centred around allegations that substandard work was being certified since the Government introduced a scheme three years ago to allow private building surveyors to certify buildings.

"We warned of all these problems about private certifiers when they proposed the legislation in 1997. They refused to recognise then that they were taking the checks and balances out of the system and I think the relationship between private certifiers and the building industry is not properly regulated."

Towers of trouble

Some of Sydney's new high rises are so plagued with faults that the units fail building codes and are difficult to resell. Gerard Ryle, Harvey Grennan and Jane Burton Taylor report on a system that has gone dangerously wrong.

The unfortunate events at Regis Towers - one of Sydney's newest and biggest apartment blocks - started to unfold in January when Beryl Hardy Nisbett decided to sell. Things might have remained hidden for longer if the couple who wanted to buy her apartment hadn't insisted on bringing along a building inspector. The inspector produced a 16-page report which concluded that "reasonable habitation of the unit would be extremely difficult".

The apartment had cost \$500,000 three years earlier, but the list of alleged building defects was long: cracked plasterwork, incomplete walls screened by false ceilings, mechanical exhaust fans that were inoperable and a fire door that was considered unsafe, according to the report.

Moreover the inspector, Dominic Ogburn, determined that the problems in the Meriton development were unlikely to be isolated. There were, after all, 554 other residential units in the three Castlereagh Street, Pitt Street and Campbell Street buildings that make up the block.

"We strongly recommend that a comprehensive building survey be undertaken on the common areas by the owners' corporation," he said.

Sydney City Council agreed to inspect a sample of 15 units. The council inspectors found 14 to be in breach of the Building Code of Australia and notices under the Environmental Planning and Assessment Act began to rain down on the owners' corporation.

So, because there is no suggestion that any laws were broken, what laws could allow this situation to occur?

In each case the developers have agreed to fix the problems.

You might have heard the complaints without realising where they fit into a bigger pattern. Because, taken in isolation, no single complaint would be enough to lead to calls for reform. But taken together, according to some observers, they amount to a crisis. They say it is

a crisis that is costing hundreds of millions of dollars in unnecessary inconvenience to thousands of consumers each year.

"I think the tragedy is already there," said Jerry Tyrell, a private building inspector. "People are living in noisy buildings ... defective buildings. A lot of people's lives are being altered by it, both financially and emotionally."

To better understand the source of the discord, *The Herald* interviewed dozens of State Government and council officials, industry and insurance executives, property owners and private building inspectors.

Where once there was only one major body that handled building complaints, there is now a plethora of confusing, and sometimes very expensive, options. These can involve tribunals, courts and insurance claims.

Responsibility for building standards is spread across two State Government departments and relies to a great extent on 151 private building surveyors who are accredited by an organisation based in Adelaide.

Local councils, it would appear, are often just the keepers of records supplied by private contractors. Councils don't always check new residential buildings themselves and they often don't hear about problems until well after people move in.

Some say the rot began in 1994 with the effective abolition of the Building Services Corporation (BSC), after its board was dismissed.

Established five years earlier, its role was to handle consumer complaints about builders and to administer a fund gathered from selling home indemnity insurance.

In 1992 the BSC brought 1063 prosecutions for bad building practice before the local courts. Last year, the number of successful prosecutions was 32, according to figures obtained from the Department of Fair Trading.

As part of the merger of the BSC with the Department of Fair Trading, the Government decided that it would privatise building insurance something builders used to have to get from the BSC before starting a new building.

The concept behind private insurance was that it would force bad builders out of the industry. But the reality appears to have proved quite different. Two of the three major private insurers turned out to be FAI and HIH companies which are now the subject of a royal commission.

According to the Master Builders Association, private insurance proved so easy to get that builders were even being offered three months' free cover. Regardless of their histories, even the bad builders were being reinsured.

Those events might have contributed to the decline in building standards, but some observers claim that the biggest single reason has been the growing incapacity of public authorities to act as a proper watchdog.

Graham Jahn, the president of the Royal Australian Institute of Architects, said the shift began as early as 1993 when tradespeople began to certify their own work and these certificates began to be relied upon.

"There has been a general drift away by councils and other bodies from getting involved in the private building area," he said.

"That general drift away has created a climate ... where there is not much of a culture of having your work inspected pretty much by anybody, including architects or arms-length contractors or by local councils."

In today's NSW, the person who installs your fire door is the person who issues the certificate to say that it has been installed correctly.

The person who says that your new building complies with the national building code can be a private contractor who is being paid by the developer. And this can be the same person who certifies that the building has been built correctly.

Three years ago, just as the reliance on so-called "self-certification" was growing, the State Government introduced a scheme that offered developers an option to almost completely privatise the process.

The change opened the way for private building surveyors to do much of the work of local councils by allowing them to issue construction certificates, to inspect various stages of construction and to issue certificates that stated buildings were fit for habitation.

Under the change these "private certifiers" would report directly to the developers who had contracted them to inspect the buildings.

The *Herald* has learnt that private certifiers are used in up to 30 per cent of all new buildings in NSW. Significantly, the majority of those jobs are the bigger projects being undertaken by the larger developers.

Patricia Gilchrist, the executive director of the Urban Development Institute of Australia, which lobbied for the change, said the new system was working well and had cut down on the lengthy delays of the old system.

But Peter Woods, the president of the Local Government Association, which opposed the move, said he didn't think the Government had thought the consequences through.

"Our view in local government is that it's not just about maintaining bureaucratic control, it's about representing people to protect their interests," he said. "One of those interests is to ensure quality control.

"We saw enough bad practice before private certification came in ... what happens when we open the floodgates and say all we want is a signature on a piece of paper?"

Some local councils claim to have been left confused by the change.

"[The process] has been done in the absence of the necessary level of detail as to who is going to be responsible for what when things start to go wrong,"

said James Harrison, who until recently was the director of planning and building at South Sydney Council. "Under the new system it is a lot less clear as to who should or shouldn't be investigating complaints."

Harrison said 13 problem buildings passed by private certifiers had already been identified in South Sydney. In one case, a private certifier had signed off on 39 unauthorised additions, including 14 illegal rooms.

The Lord Mayor of Sydney, Frank Sartor, said his council had also identified a number of problem buildings. "Any fool should be able to see the enormous conflict of interest they [private certifiers] have got," he said. "They should be able to see that this is a major problem.

"The simple fact is that if I am a certifier I will be loath to make trouble for a major developer who gives me a lot of work, so they have a major conflict of interest. I cannot believe that such bad legislation ever got enacted."

The *Herald* has learnt that the main accreditation body for private building surveyors the Adelaide-based Building Surveyors and Allied Professions Accreditation Board (BSAP) is now under review by the State Government. Of particular concern to the Government is whether BSAP is capable of investigating complaints against its members.

So far, 34 complaints about work carried out by private certifiers in NSW have been made to BSAP, yet none of the complaints has led to the withdrawal of accreditation for any of the surveyors complained about.

BSAP became involved in the process in NSW after the Government called for interested parties to apply for the right to accredit private certifiers.

One of those who answered the call was the Australian Institute of Building Surveyors the organisation behind BSAP.

Geoff Mitchell, the institute's national president, said it set up a system whereby surveyors who had previously worked for local government but who now wanted to work for themselves could apply for recognition.

"Certainly the professional ethics of my members put a lot more accountability into the process than what was there before," he said.

"A lot of complaints that have been received [about members] have been purely driven by a misunderstanding of issues rather than technical incompetence."

But the *Herald* has learnt that the process to determine who a "suitably qualified" person was under the changes was left largely to BSAP because the laws did not stipulate what qualifications were needed.

Now, three years into the scheme's operation, the Planning Minister, Dr Andrew Refshauge, is so concerned about the accreditation criteria being used he intends to introduce major reforms to the process early next year. "There has been some suggestion that

there have been some problems," he said. "There are some significant changes occurring ... Making sure the skills, the competences, are appropriate and that [certifiers] are assessed appropriately." In relation to Regis Towers, it would seem that private building surveyors cannot be blamed, because the buildings were signed off by Sydney City Council. There does appear, however, to be an issue about the extent to which the council relied on the honesty of the various subcontractors used by the developer, Meriton.

The *Herald* was able to obtain access to thousands of documents in the council's own files in relation to Regis Towers, and the picture that emerges is sobering. The documents show that Sydney Council relied to a major extent on dozens of certificates issued by the numerous subcontractors who built the building and who checked its safety aspects. The subcontractors said the work had been completed and the council appeared to have believed them.

Ross Kocass, a Meriton spokesman, said: "It was done under the old system [where] we employ subcontractors, they certify to us that they have done the work as per the plans, and we then certify to council. "What they [the council] inspect or what they look at is not up to us. And basically it can't be, because it needs to be random."

At least one other local authority was also involved. The documents show that in January 1999 and again in September 1999 officers from the NSW Fire Brigades visited and inspected parts of the buildings on a random basis.

Three of the resultant reports carried the following paragraph: "Based on certification received and inspections of the building, it is considered that adequate provisions have been made for the preventing and extinguishing of fires, and the protection and saving of life and property in case of fire."

And yet, in April 2001, the City of Sydney issued a fire safety order against the building an order that has yet to be lifted.

Sartor said that under the Local Government Act 1993 the council had no choice but to accept the certificates from people the act defines as "appropriately qualified" persons. Again, the law does not define who an appropriately qualified person is. "We relied on the certificates that were given to us," Sartor said. "We were obliged under the act to accept these certificates."

Meriton said that once the problems were brought to its attention by the council, the company immediately went back in and fixed them, even though there was no legal obligation do so.

"We were under the impression that everything done there complied with the Building Code of Australia and that, as you know, is one of the most stringent codes in the world," Kocass said.

"At our own cost we went back there and we inspected every unit in the whole place, with the exception of 18 units. We didn't inspect those 18 because we couldn't get access. It was basically a commercial decision [to go back in] because our name obviously helps us

succeed in the market. Without that we have a lot of problems."

Meriton said it had hired private certifiers to convince the council that the building now met the building code.

For its part, the council wrote to residents this week to say that it would be undertaking its own inspections, beginning on Monday. The *Herald* understands the council will inspect only 10 per cent of the units.

Breaking News: The newly elected ACT Government has just announced that it will amend ACT legislation to allow a choice between private certifiers and ACT Government inspectors.

Charles

Earthquakes in Australia ML! 2.5 or felt

July to November 2001

The following extract is from the Geoscience Australia database which includes data from Primary Industries and Resources SA, the Seismology Research Centre Victoria and Universities of Tasmania and Queensland. Minor damage was reported at Swan Hill, Vic on 27 October and the largest was the ML 5.2 event near Ravensthorpe WA where a prominent fault scarp is evidence of a pre-historic large earthquake.

Date	time	Lat	Long	M	Place
703	51355.3	-28.76	121.79	2.8	Leonora WA
704	41642.3	-38.47	146.34	3.4	Boolarra South, Vic
709	101433.1	-19.83	134.01	3.2	Tennant Creek NT
712	52602.2	-26.30	131.08	2.7	Musgrave R SA
715	82514.3	-34.46	148.42	2.4	Harden NSW. Felt Harden & Boorowa
716	14332.7	-42.81	146.36	2.9	Lake Pedder Tas
723	55551.7	-19.63	111.41	3.3	Indian Ocean
727	42337.3	-18.38	124.37	3.4	Myroodah WA
728	194925.3	-22.03	126.66	3.7	Gibson Desert WA
803	110047	-34.91	149.59	2.1	Collector NSW
804	133336.5	-19.82	133.94	2.5	Tennant Creek NT
804	134839.7	-38.15	112.58	3.3	Southern Ocean
810	101403.3	-12.49	131.23	3.0	Darwin NT. Felt
810	125139.2	-34.00	147.38	2.7	W Wyalong NSW
810	133518.9	-34.44	148.66	2.6	Boorowa NSW
812	152748	-32.13	117.80	2.4	Bruce Rock WA. Felt
812	153214.5	-32.11	117.78	2.5	Bruce Rock WA
814	80337.7	-22.95	127.58	3.8	Lake Mackay WA
814	211852.6	-22.95	127.61	3.2	Lake Mackay WA
815	55833.2	-42.04	145.54	2.4	Queenstown Tas. Felt
815	143252.6	-33.03	151.67	1.9	Felt Belmont, Newcastle, NSW.
818	20542.2	-33.57	122.55	3	Esperance WA
819	104033.3	-30.42	117.28	2.4	Cadoux area WA
821	231303.5	-38.18	145.45	3.6	Tooradin, Vic. Felt in Melbourne.
825	33849	-18.87	120.94	3.4	Indian Ocean, SW of Broome WA
828	45127.8	-36.29	148.81	2.9	L Jindabyne NSW
830	100932.5	-30.25	116.86	2.2	Dalwallinu WA. First swarm event

				eight felt.	1026	110615.5	-30.52	117.05	2.6	Burakin WA
903	162820.6	-37.99	150.05	2.5 Cape Howe, Vic	1027	75848.5	-35.36	143.69	4.8	Swan Hill Vic. Minor damage, some chimneys toppled.
904	165650.1	-27.39	114.75	3.4 Northampton WA.						
906	184349.9	-35.38	135.87	2.9 S Pt Lincoln SA						
907	174256.6	-30.53	117.09	3 Kalannie WA. Felt	1027	185600.5	-32.43	146.41	2.7	Nymagee NSW
908	71352.3	-38.49	146.31	2.9 Boolarra South Vic	1029	85941.3	-24.65	116.69	2.7	Landor area WA
911	35649.5	-24.82	114.99	3.3 Kennedy R WA	1101	161110.5	-30.14	144.22	2.8	Wanaaring NSW
911	163822.3	-36.11	146.90	1.3 Bonegilla Vic Felt	1108	105042.5	-34.71	138.31	2.9	Adelaide SA
912	5938.8	-36.10	146.92	2.5 Wodonga Vic Felt	1109	182646.2	-32.84	152.10	2.6	Nelson Bay NSW
914	151830.3	-19.70	133.88	4.9 Tennant Creek NT. Woke some res. No damage reported	1111	115832.8	-29.41	144.29	3.2	Wanaaring NSW
918	34327.4	-24.27	153.80	3.6 75 km E Poyungan Rocks off Fraser Island Qld. Felt.	1111	130056.9	-29.42	144.30	2.5	Wanaaring WA
928	25456.6	-30.49	117.05	5.1 Burakin WA. Felt as far as Perth.	1118	235538.4	-34.58	115.09	2.7	Augusta WA
928	30014	-30.49	117.01	3.5 Burakin WA	1122	162931.1	-31.56	138.71	3.5	Hawker SA
929	329.2	-30.52	117.02	2.7 Burakin WA. Felt.	1123	33332.7	-33.88	148.27	4.0	Grenfell NSW
929	35349.3	-30.53	117.02	2.7 Burakin WA. Felt.	1123	140753	-11.77	125.67	2.8	Timor Sea
929	40533.4	-30.52	116.96	2.7 Burakin WA. Felt.	1125	32116.8	-19.68	133.94	2.5	Tennant Ck NT
929	140218.1	-30.51	117.06	2.5 Burakin WA. Felt.	1127	152953.8	-32.55	146.59	2.8	NW Condoblin NSW
930	40238.6	-30.50	117.01	3 Burakin WA. Felt.						
930	43736.2	-30.50	117.04	2.6 Burakin WA. Felt						
930	232407.5	-30.53	117.03	2.6 Burakin WA. Felt.						
1001	45215.8	-30.53	117.03	3.8 Burakin WA. Felt.						
1001	53223.4	-30.53	117.01	2.6 Burakin WA						
1001	135214.4	-30.53	117.01	3.1 Burakin WA.						
1002	212957.9	-30.50	117.09	2.7 Burakin WA.						
1004	180153	-22.51	134.29	2.6 Macdonnell R NT.						
1005	145553.8	-30.52	117.08	3.7 Burakin WA. Felt.						
1006	163154.6	-17.66	120.05	3.5 Rowley Shoals WA						
1007	23124.6	-30.54	117.04	2.6 Burakin WA						
1007	23342.8	-30.52	117.04	2.8 Burakin WA.						
1007	135439.2	-24.93	139.77	3.0 L.Mackattie Qld						
1009	13805.1	-36.26	148.68	2.7 Eucumbene NSW. Felt Bullenballong, Rocky Plains, Berridale, Wambrook Hill, Angledale NSW						
1011	62841.2	-30.53	117.04	2.6 Burakin WA.						
1012	553.3	-24.12	152.88	4.0 North of Fraser Island QLD. Felt Lady Elliot Is.						
1012	102914.6	-30.54	117.05	2.9 Burakin WA.						
1013	44205.2	-36.85	147.65	3.9 Benambra Vic.Felt.						
1013	50712.5	-30.50	129.01	2.8 Deakin WA.						
1015	61607	-22.48	113.71	2.5 Bullara WA						
1019	41846	-23.60	129.55	4.0 Kintore NT						
1019	174323.4	-33.61	120.59	5.2 Ravensthorpe WA Felt in SW WA.						
1019	181726.5	-33.90	120.75	2.5 Ravensthorpe WA						
1019	191951.6	-33.60	120.67	2.6 Ravensthorpe WA.						
1019	192356.1	-33.60	120.52	2.7 Ravensthorpe WA.						
1019	202440.1	-33.55	120.45	2.5 Ravensthorpe WA.						
1019	223336.4	-33.69	120.61	3.5 Ravensthorpe WA. Felt.						
1019	234448.5	-33.64	120.61	3.8 Ravensthorpe WA. Felt.						
1023	61712.1	-28.58	124.41	2.9 L Rason area WA						
1025	185618.2	-35.28	148.30	2.9 Tumut NSW. Felt.						

Do large earthquakes recur at the same place in Australia?

On 22 January 1988 between local noon and midnight a series of three large earthquakes shook Tennant Creek in the Northern Territory, only 40 km away. Most buildings in the town including the local hospital suffered considerable non-structural damage but remarkably little real damage considering the size and proximity of the three events. The earthquakes were rated Mw6.3, 6.4 and 6.7 and caused a 35km long, 2m high fault scarp.

A study of the fault scarps was made by USGS paleoseismologists Mike Machette and Tony Crone with ANU's Roger Bowman. They dug two 25m long trenches through the Western lake Surprise fault and could not *conclusively demonstrate that an ancient fault scarp existed at the 1st trench site but did find our best evidence of prehistoric surface rupturing in the 2nd trench.* Similar short trenches through the Eastern Lake Surprise and Kunayungku scarps showed no evidence of previous faulting. This study led to speculation that large earthquakes in Australia do not occur at the same place, not within 10 000yrs or more. The implication is that the site of an historic large event may be a safe place to build a high hazard facility.

This is *not* the philosophy of the working group who have compiled the code hazard map.

So what does the historical record tell us? Extensive study of the 19th century pre-seismograph record has been undertaken and is continuing in Australia mainly through the examination of old newspapers. A contemporary report has provided the following table:

27 August 1883, ~10 am local time	
Daly Waters	explosion like blasting and vibration
Alice Springs	two distinct explosions
Sheep camp (9miles W Alice Springs)	ditto

Undoolya	ditto
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Eminent authors of this report of Committee No 1 of the Australasian Association for the Advancement of Science included Biggs, Ellery, Russell, Todd and Hogben. They assigned the felt reports intensity RF3 which is equivalent to MM3. Given the time of day this assigned intensity may be on the low side.

Daly Waters and Alice Springs are almost equidistant from Tennant Ck so the radius of perceptibility is at least 400 km and the epicentre was probably nearly midway between them. According to empirical relationships developed from more recent earthquakes, this felt area would correspond to an earthquake with magnitude at least ML 6.2. The further east or west of Tennant Ck, the larger the earthquake magnitude would have to have been.

The authors mention that Daly Waters was struck by another earthquake at about midnight the previous day, sufficient to wake the sleepers.

Data are sparse but we conclude that the 1988 large earthquake sequence near Tennant Ck was preceded by one, possibly two large earthquakes 105 years earlier and therefore the code committee premise is not unreasonable. On the other hand we should be wary of accepting the alternative suggestion that sites of large recent earthquakes are relatively safe.

Kevin McCue

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.

News

IGA-IASPEI General Assembly, Hanoi, Vietnam, 19-31 August 2001 Report #2.

There were many interesting presentations given during the assembly and I had the opportunity to meet and talk to a number of people about earthquake hazard analysis. Following is a summary of the two week of the general assembly.

A number of presentations highlighted issues in earthquake hazard evaluation, suggesting both areas that may need further investigation and care when undertaking an earthquake hazard analysis, and highlighted new methods that could be used in earthquake hazard evaluation.

Issues raised included the determination of maximum magnitude, estimation of slip rate on active faults, determining the dimensions of active faults, treatment

of dependant events in earthquake hazard analysis, and uncertainties in estimation of seismic parameters in the earthquake hazard evaluation process.

Most of the presentations will need to be followed up with literature reviews and testing before any new methods can be implemented.

There is a world stress map database that contains 11,000 data sets. The Heidelberg Academy of Sciences and Humanities maintain the database and are happy to receive any focal mechanism that we may calculate. The data is freely available and located at <http://www.world-stress-map.org>.

A presentation was given by John Stamatakos on new 3D Stress Software.

Y. Bartal gave a presentation on defining areas of exclusion when the CTBTO network detects a suspect event. The methods that his study employs in Israel need seismographs that can record 250 samples per second or faster.

There was much interest in our poster on earthquake hazard determination using geologically defined models. Many people expressed interest in the methodology and particular interest was shown by the Vietnamese seismologists.

Seismologists in Vietnam are currently re-evaluating the earthquake hazard and risk in Vietnam. A new regional loading code is being developed and a national monitoring network is being designed based on the outcomes of the earthquake hazard studies. There may be an opportunity to develop a relationship with the Vietnamese by helping them with the evaluation of earthquake hazard and risk. Gary and I discussed earthquake hazard with many of the Vietnamese and Gary has made some suggestions and started to develop this opportunity.

Amy Brown

Life Sciences Building - University of Newcastle NSW

Spotted in National Precaster #27, November 2001.

This building (see figure) won the 2001 Sulman Architectural Award for public buildings and the 2001 Concrete Institute of Australia *Excellence in Concrete Award* - Projects. The unusual engineering design featuring a 21m cantilever is a major feature of the building and designing for earthquake resistance would have been challenging. Your editor will be contacting the structural engineer Northrop Engineers for more details for our next Newsletter.

FORTHCOMING CONFERENCES

- 18 - 20 March 2002 NZSEE, The Society will hold its 2002 Technical Conference and Annual Meeting the War Memorial Centre, Napier from Friday 15 March to Sunday 17 March.

Conference Theme: **Learning From Earthquakes: What Are the Gaps in Our Mitigation and Preparedness?**

- **28 April - 1 May 2002** 3rd National Seismic Conference and Workshop on Bridges and Highways <http://mceer.buffalo.edu>
- **21 - 25 July 2002** 7th US National Conference on Earthquake Engineering, Boston USA.
- **9 - 13 September 2002** The 12th European Conference on Earthquake Engineering, Barbican Centre London.
- **16 - 19 September 2002** 3rd International Conference on Continental Earthquakes. www.icce.ac.cn

NEW BOOKS (& OLD) / REPORTS

Australian Seismological Report - 1997 AGSO Sales Centre ph: 02 6249 9519, fax: 02 6249 9982
Caught in the Crunch - Earthquakes and Volcanoes in New Zealand 1999 by Rebecca Ansell and John Taber. Harper Collins NZ.



