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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 PERAMBULATIONS

The reports that I have heard make it quite clear that Conference 2000 in Hobart was a resounding success. The field trip in particular was well supported. I regret very much that I was unable to attend. I had been looking forward to the Tasmanian conference since Vagn first dropped a hint in Brisbane in 1997. My heartfelt thanks to Vagn, Barbara and the other members of the organising committee. You can read reports of the Conference and the AGM Minutes elsewhere in this newsletter.

Among the myriad offerings in 2001, don't forget The New Zealand Society for Earthquake Engineering Annual Conference at Taupo, 23-25 March and our own conference in Canberra later in the year.

It is pleasing to report that David Love in South Australia has been awarded an Australian Disaster Research Grant for 2000/01. However, in that the trigger for the implementation of the grant is an earthquake disaster, it is to be hoped in many ways that David is never called upon.

Applications closing 1 May are invited for the 2001 AEES Earthquake Engineering Research Scholarship and details appear elsewhere in this newsletter.

Many of you will be aware that the draft of the joint Australian/New Zealand standard on earthquake loading is open for public comment. The closing date for comment has been extended to 16 April 2001, so you still have time. A meeting of the Australian

working group was held in Melbourne on 16 February 2001 to discuss the Australian response to the draft. A number of concerns were expressed and recommendations made for improvement of the draft. It is noteworthy, and fitting, that the vast majority of the working group members were AEES members.

Bill Boyce

AEES 2000 Conference - Hobart

16th -18th November

The Hobart Conference, the 9th annual conference if you count the joint PCEE Conference in Melbourne in 1995, was by any measure a great success - it was well attended, well organised, had a range of topics and the weather even smiled upon us! There was some question as to whether the distance to Tasmania would affect the numbers but over 50 people visited the city, a city that all taxi drivers took delight in informing you was older than Melbourne. A quick walk around the city or the suburb of Battery Point soon showed the remarkable array of cottages and buildings from the early 1800s.

I could list all the talks - the ones on seismic networks, seismicity, dam design, loading codes, hazard microzonation, disaster response, insurance - but I would only miss someone out and they may be offended. Instead I would recommend that anyone who did not attend the Conference to contact Barb Butler and get a copy of the Proceedings (check out the Society's web page at: <http://www.aees.org.au> for a listing of the contents and the price).

Once again Barb Butler has done a magnificent job of producing the Proceedings. Authors are now encouraged to write extended abstracts and have the option of having their papers refereed. This has had the effect of gradually improving the quality of papers and the Proceedings are now a valuable reference source.

The Conference Dinner was an enjoyable evening with Warwick Kidd, from the New South Wales Fire Brigades, speaking on his varied experiences, both humorous and tragic, in travelling the world's hot spots in an urban search and rescue task force.

At the AGM the 2000 Federal Executive stood for another term in office. As this is their third term there

will need to be a new Committee for 2002 and several Adelaide members have expressed their willingness to take on this task. The new Constitution, proposed by Bill Boyce, was accepted by all members (a copy has been placed on the AEES web page). The members fully endorsed the continuation of the AEES Student Scholarships and it was pleasing to see that the inaugural recipients, Amy Brown and Jason Chaytor, presented papers at the Conference.

The AEES Newsletter is designed to keep members informed of current happenings and it has performed this task since its inception. It was interesting to note David Brunsdon's comment that the New Zealand Society for Earthquake Engineering is considering implementing its own Newsletter for the same purpose.

The field trip following the Conference was one of the best attended of all AEES field trips. I am not sure what elicited such a good response – was it the engineering content (visits to several of the large dams in the Lake Pedder – Lake Gordon scheme), the seismological content (the recently formed Lake Edgar fault scarp), the tectonics and geology, or, dare I say it, the SCENERY?! It was well organised and informative with numerous comments from Bram Knoop (Tasmania Hydro) and David Leaman on subjects as diverse as the design principles of concrete faced rockfill dams, aboriginal land management practices, and glacial geomorphology.

Selected photos from the Conference, the dinner and the field trip have been placed on the Society's web page (www.aees.org.au) by Vaughan Wesson of SRC. If any other members would like to send their scanned photos I am sure Vaughan could include them as well.

Congratulations and thanks go to Vagn Jensen and Barb Butler for their efforts in organising the event. I am not sure who organised the weather but that was also well done!

With the tenth anniversary of the formation of AEES coming up in December 2000 it appears that the Society is continuing to prosper. We trust that the 2001 Conference scheduled for Canberra will continue the trend.

I spoke with our President, Bill Boyce, just prior to the Conference and he expressed his disappointment at not being able to attend (due to his recent operation). If Bill asks me how it all went I am sorry that I will have to exacerbate his disappointment by telling him it was a most enjoyable and worthwhile three days.

Russell Cuthbertson
Hon Secretary AEES

AEES 2001 Conference and AGM

Earthquake Codes for Australia and the Region

Venue:	ADFA, Canberra
Date:	21-23 November 2001
Excursion:	Canberra Buildings & Structures Designed to Resist Earthquakes, and the Lake George Fault and Wine Industry
Organising Committee:	Kevin McCue, Charles Bubb, Gerhard Horoschun and Doug Finlayson

The Society

President - Bill Boyce (Brown & Root Qld)
Secretary - Russell Cuthbertson
Treasurer - Colin Lynam (Qld Uni)

The state representatives are:

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

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

The AEES Webmaster is Vaughan Wesson (SRC). Barbara Butler manages the Secretariat from Melbourne University.

The Society website/email list

Dear AEES Members,

The AEES web site is at www.aees.org.au We will again use an online form for registrations for the November AEES conference in Canberra and are always looking for suggestions on other things to be included besides copies of the newsletter and details about relevant up coming conferences:

- 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

Cheers
Vaughan Wesson

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

NUGGETS FROM THE NEWSGROUP - A Regular Feature By Charles Bubb

Here is our theme, new buildings fall down, older ones survive. Not new codes but anti corruption is the action needed.

Quake victims turn on 'greedy' builders

Special report from *THE OBSERVER*:’s Neelesh Misra in Ahmedabad Sunday February 04 2001

Anger against unscrupulous builders in Gujarat rose yesterday as officials blamed them for worsening the death toll in the January 26 Indian earthquake, which the authorities now fear could eventually be more than 30,000.

The state’s home minister, Haren Pandya, said 80% of the buildings in the commercial capital, Ahmedabad, had breached construction standards. Many blocks of flats less than a year old collapsed while much older buildings were shaken but undamaged.

The number of confirmed deaths is expected to jump today when demolition crews clear the ruins of larger blocks and uncover more bodies. Almost 67,000 are injured.

By yesterday accusations of murder and fraud had been lodged in Ahmedabad against the owners and structural engineers of 21 construction companies.

Experts said greedy companies made a practice of using poor material, flouted architectural standards, and were part of a cycle of corruption and inefficiency involving officials and politicians.

"The chain is builder, officials, politicians. The riches go to the top," an architect, Ravindra Vasavada, said. "For politicians it is a permanent bank."

The federal minister for urban development, Jagmohan, said laws had been violated across the state. "People don't care, they compromise to cut costs," he said.

The authorities have declared 90 buildings in Ahmedabad unsafe. "At least 69 buildings have collapsed partially or fully. In some cases they were just six to eight months old," the police commissioner, PC Panday, said.

A survey by engineers after the quake showed that in many cases pillars were not secured to the foundations with steel reinforcements, as the law requires. Sinking the pillars into concrete without steel reinforcement saves 20-25% on building costs but made buildings much weaker.

The authorities fear that the eventual death toll in the state could be 35,000. There are more than 600,000 homeless.

At the Parijat building in Ahmedabad, marked for demolition, hundreds of residents scabbled for their belongings yesterday before the wreckers came.

Surrounded by mountains of twisted motorcycles, crumpled cars, clothes, school bags, refrigerators and kitchen utensils, Sudhakar Kamath, 60, looked for the owner of the building company that sold him his flat late last year. His family survived, but he lost his

home. "I have been cheated. I gave him my life savings," he said. "Will he be punished?"

Charles

<p style="text-align: center;">MINUTES Australian Earthquake Engineering Society Annual General Meeting 15 November 2000 Hobart</p>

The meeting was held at the University of Tasmania Department of Earth Sciences and was opened at 17:46 by chair Russell Cuthbertson (Hon Secretary), Hon Treasurer Col Lynam with scribe Kevin McCue.

Twenty four members were present.

Apologies

Apologies were accepted from the following: Bill Boyce, Charles Bubb, Trevor Jones, Mike Griffith and Graham Hutchinson.

Minutes

The minutes of the 1999 AGM in Sydney were published in the AEES Newsletter and distributed at the meeting and were accepted as a fair record of the meeting, moved by John Wilson and seconded by Gary Gibson.

Business arising from the minutes

- Register of engineers for post-earthquake response assistance: Vaughan Wesson commented that few members had registered. The issue of professional indemnity was raised by Amy Brown and it was decided that a background article should be prepared for the Newsletter and discussions held with EMA and others before further promotion of the register.
- SPIRT Grants: No applications received to date so the issue is to be further investigated and a note prepared for the Newsletter.
- Research Scholarships: The two recipients, Amy Brown and Jason Chaytor were present and were applauded by the members. Amy and Jason thanked the Society for the assistance and recommended continuance of the program. There was unanimous approval of the concept.

Reports

• *President* The Chairman noted that Bill Boyce’s report was published in the Newsletter and it was accepted by acclamation. A brief report was made on Bill’s health and it was agreed that a card would be sent from the members thanking him and wishing him a rapid recovery.

• *Treasurer* A written report was distributed by the Hon Treasurer with an audited two year account. John Wilson questioned the need to pay \$350 for the audit in the light of obvious errors in the report

(transposition of income and expenditure for the Perth conference) and assistance from Barbara Butler. The meeting accepted the Hon Treasurer's misgivings about keeping the accounts and preparing a report given the added complications brought about by introduction of the ABN and GST. It was pointed out by the chairman that IEAust required an audit of the accounts which decided the matter. The auditors would be approached to correct their report.

Col raised the issue of costs of executive members attending the meeting out of their own pockets. Mike Turnbull suggested that legitimate costs incurred by Executive in attending the meeting be met from Society funds in the event that travel was not provided by the executive member's business. After considerable discussion the matter was approved by the meeting and the Treasurer's report accepted, moved Michael Neville, seconded Vagn Jensen. Other issues raised in the report were carried over to other Business.

• *Editor* Noted that 3 editions of the Newsletter were prepared by Kevin McCue and collated, printed and distributed by Barbara Butler with regular input from the President and columnist Charles Bubb. According to David Brunson the NZSEE have decided to produce a similar chatty newsletter for members, to complement their Bulletin. A vote of thanks to all was moved by the Chairman.

• *Web editor* Vaughan Wesson reported that there were just 32 members on the Society's email list and that the web site had had 8000 hits. Effort would be made to expand the email list and add earlier newsletters to the web page.

Other Business

The subcommittees (i) on intensity scale study and (ii) aftershock investigation reported via Kevin McCue that there was little progress. David Love's paper in the seminar was progress on the intensity study.

The Queensland chapter of the Society held 5 seminars in 2000 according to Gary Huftile who acknowledged the assistance of Col Lynam. They also provided copy for the Newsletter and agreed to continue the AEES branch activities through 2001.

John Wilson, AEES delegate to the IAEE, reported on last year's meeting of delegates at the WCEE which chose Vancouver BC as the next venue for the WCEE in 2004.

A report on proposed changes to the AEES Constitution prepared by the President Bill Boyce was read to the meeting by the Chairman. These notes were published in the Newsletter and on the AEES web site for consideration. George Walker moved that they be accepted, Gary Gibson seconded the motion which was carried without dissent. The meeting thanked Bill for preparing the document.

There being only one offer from the ACT to host the 2001 AEES Seminar and AGM, John Wilson moved and Vaughan Wesson seconded the motion that a team

led by Kevin McCue would arrange the next meeting in Canberra. The motion was carried.

Elections

Russell Cuthbertson vacated the chair for Kevin McCue to oversee the election of the new Executive. There was only one nomination for each executive position and no nominations from the floor so Bill Boyce, Russell Cuthbertson and Col Lynam were re-elected by acclamation to the positions of President, Secretary and Treasurer. Barbara Butler agreed to support the executive by running the secretariat again from Melbourne and Vaughan Wesson offered to maintain the web page for another year.

The elected State representatives are listed on page 2 of this newsletter.

Russell Cuthbertson resumed the chair.

A South Australian group of members including Dr Mike Griffith and David Love has foreshadowed interest in nominating for election to the executive at the next AGM.

The Hon Treasurer has advised that the AEES subscription fee will increase to \$30 from next year as agreed at the last AGM and that the subscription year will change from calendar to fiscal year. He suggested members pay one 18 month subscription rather than twice (ie \$42.50) to simplify the paperwork.

Russell Cuthbertson extended the Society's warm thanks and congratulations to Vagn Jensen and Barbara Butler for organising a very successful AEES2000 conference and field workshop and declared the meeting closed in time for members to attend the dinner at Mures.

Earthquakes in Australia ML! 3

May to December 2000

This extract is from the AGSO database which includes data from Primary Industries and Resources SA, the Seismology Research Centre Victoria and Universities of Tasmania and Queensland.

No significant damage was reported in this period.

Jun					
11	190625	29.51	150.04	3.5	Biniguy NSW *
13	005900	36.86	147.26	3.0	Falls Ck Vic
19	180448	22.91	131.54	3.5	Yuendumu NT
20	141207	11.73	124.12	3.3	Hibernia Reef WA
22	181359	36.82	144.87	3.3	Costerfield Vic
27	031213	34.16	136.91	3.3	Spencer Gulf SA
Jul					
12	212137	32.55	138.56	3.0	Euralia SA
22	132807	20.57	132.52	3.0	Tanami Desert NT
24	033721	29.41	139.33	3.1	Marree SA
25	033354	24.19	113.63	3.8	Minily WA
29	024508	29.78	123.92	3.2	Laverton WA
Aug					
1	112330	26.78	131.74	3.3	Mintabia SA
3	093144	28.67	143.30	3.2	Hungerford Qld.
3	112935	38.75	146.01	3.0	Fish Creek, Vic

29	120552	38.41	146.29	5.0	Boolarra S Vic*
Sep					
7	010759	23.53	131.52	3.1	Macdonnell R NT
7	235937	34.17	136.87	3.5	Spencer Gulf SA
9	173153	16.60	124.04	3.8	Collier Bay, WA
13	144034	11.99	112.63	4.2	Near Indonesia
16	042911	22.61	113.05	3.0	Exmouth WA
17	144836	19.91	133.90	3.1	Tennant Ck NT
19	102316	30.62	117.08	3.1	Cadoux WA*
22	060448	30.52	117.05	3.6	Cadoux WA*
24	090747	21.95	114.48	3.3	Exmouth WA
25	155013	30.62	117.10	3.5	Cadoux WA*
Oct					
2	113312	22.69	113.14	3.6	Off WA coast near Exmouth
11	192717	19.80	113.06	5.4	Off WA Coast near Exmouth
15	082746	12.09	128.84	4.3	Timor Sea (near Darwin)
21	105228	13.80	129.28	3.3	Joseph Bonaparte Gulf NT
23	213852	34.55	141.77	3.6	Near Mildura Vic*
25	054202	27.37	154.94	3.9	Tasman Sea, 200 km E of Brisbane
30	173034	38.56	146.02	3.2	SW of Dumbalk, Vic
Nov					
11	220036	27.77	126.21	3.3	Gt Victoria Desert, WA
15	084810	22.03	126.54	3.3	Gibson Desert, WA
18	183754	19.79	134.12	3.5	Tennant Ck NT
Dec					
2	113539	19.88	134.04	3.7	Tennant Ck NT*
25	132424	42.59	120.18	5.8	Southern Ocean
25	144752	42.59	120.18	3.3	Southern Ocean
25	145958	42.43	119.67	3.3	Southern Ocean
28	052845	12.54	130.76	3.6	Darwin NT *
29	233945	38.73	144.35	3.6	Bass Strait

* indicates earthquake was reported felt

Clearance offer on Conference Proceedings

Barbara Butler still has copies of our early conference proceedings, more than she can store. We can't sell them quickly so will give them away! Proceedings are yours for the price of postage: fax: 03 8344 4616 or bmbutler@civag.unimelb.edu.au

The AEES subscription year will change in 2001; from calendar to 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 2000/2001 to AEES (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.

News

•Recipient of the EERI's highest honour *The George W Housner medal*, for the year 2000 was Professor Bruce Bolt, Emeritus Professor of Geology and Geophysics at the University of California, Berkeley. The award was in honour of his sustained efforts to reduce earthquake losses through his distinguished career as a scholar, writer, mentor and tireless advocate.

• A recent article in Quake Link, the Newsletter of the ESEE Alumni at Imperial College, focused on former graduates of the Imperial College's Earthquake Seismology DIC course, Charles Bubb (1969) and Kevin McCue (1975).

Visiting Chinese Scholars attempt prediction using Australia's Seismicity

The QUAKES Centre at the University of Queensland has been host to 4 eminent Chinese Seismologists of world significance. They are Professor Xia (Physics Dept, Peking University), Professor Peng (Centre for Analysis and Prediction, China Seismological Bureau), Dr Wang and Professor Yin (Both from Institute of Mechanics, China Academy of Sciences).

Professor Peter Mora, Director of the University of Queensland's Earthquake Research Centre (QUAKES) said that: "My Chinese visitors are part of an ongoing collaboration (known as ACES) amongst the seismologists of the Asian - Pacific economies. These economies support research into the phenomena of earthquakes that will lead to the eventual possibility of forecasting the occurrence of these disastrous events. The ACES consortium is the organisational body that both seeks and distributes funding, so that scientists from China, Australia, Japan and USA can visit and openly collaborate about methods of earthquake forecasting. Each member economy has a differing use for their massive super-computing facilities but all seek the same outcome - comprehensive earthquake forecasting methodologies. "

Professor Xia's research specialty is in the area of microsimulation of earthquakes from the viewpoint of Statistical Mesoscopic Damage Mechanics (SMDM), through the use of statistical Physics and Meso-Damage mechanics theories.

Professor Peng is the Senior Seismologist in charge of earthquake prediction in China and is an expert in micro-simulation of earthquakes using the forecasting technique known as LURR (Load-unload response ratio).

Professor Xiang-chu Yin said: " We have come to the University of Queensland's QUAKES Centre because they have developed a world renowned Lattice Solid computing model and LSM Earth simulation. We hope to use these facilities to research the underlying mechanism of our own LURR theory and a perceived "critical sensitivity" to earthquake generation. We have found it very worthwhile to participate in this academic exchange of opinions and collaboration with the Seismologists of this world class research centre."

Professor Yin who developed the original LURR theory, said that he was keen to understand whether the Lattice Solid computing model developed by QUAKES could demonstrate the same features that their own models have shown just prior to the rupture of an earthquake. These features are known as catastrophe transitions, critical sensitivities and

fluctuations, long-range correlation of the stress field and damage distribution and off course, " the anomalous LURR theory".

In a team effort, Professors Yin and Peng and Dr Wang, will work with Professor Peter Mora's team of QUAKES researchers Dr David Place, Steffan Abe and Dion Weatherly. They will be studying the implications of Australian earthquake occurrence and their potential predictive possibilities. By applying Yin's own LURR theory as a quantitative measurement of proximity to the critical state of an earthquake, they will attempt a computer simulation and forecast of the Australian continental seismicity that could be expected to happen within the next few months to years.

Col Lynam, STO QUAKES

Recent Large Regional Earthquakes

EAST NEW BRITAIN PNG

(Ed. - Three major earthquakes struck the north Solomon Sea region near Rabaul in 24 hours. The first earthquake had a magnitude of 8.1 and occurred on the Weitin Fault, a major strike-slip fault through southern New Ireland. There followed two magnitude 7.5 earthquakes on the main subduction zone in the Solomon Sea, 100 km to the south and west of the original epicentre in the next 24 hours.

Remarkably there were no deaths or serious injuries, perhaps the local people are very well prepared because earthquakes and warnings of earthquakes are common there. The following account gives some feeling of the impact of such an earthquake sequence and tsunami. Incidentally the eruption of Tavurvur in Rabaul Harbour continues, abated but with no sign of ceasing).

By JACK METTA, The National Newspaper, PNG

A STRONG earthquake rocked East New Britain province, causing landslips and a minor tsunami along the coast. The earthquake had similar effects to that which jolted the province 15 years ago. The tremor played havoc in the towns around the province, dislodging store goods and household items from shelves.

The seas rose by up to 2 metres in areas along the coast including Rabaul, Kokopo, Vunapope and the Duke of York Islands.

There were no immediate reports of casualties. The Duke of York Islands district co-ordinator Neville Tokunai reported that several bush material houses at Urkuk and Molot collapsed due to yesterday's rising sea level which reached inland for up to 20 metres on parts of the island following the quake.

Some schools including Kokopo High School, several business houses and government departments and agencies in Kokopo and Rabaul closed prematurely,

sending people home for their own safety. The Nonga Base Hospital reported substantial damages to lighting glass bowls when they were dislodged from their fittings by the quake. The shattered remnants of the glass could be seen littering the interior of the building.

Scores of Rabaul residents fearing the worst packed their gear and could be seen on roadsides waiting for vehicles or loading them onto vehicles to move out of the town.

The earthquake hit at just before 3pm followed by a series of aftershocks. According to the Rabaul Volcanic Observatory, the earthquake was located some hundreds of kilometres north northeast of New Ireland. "The earthquake was tectonic in origin and is not related to the eruptive activity at Tavurvur," the Acting Director of the Rabaul Volcanic Observatory told The National yesterday afternoon.

The National made a quick tour of Rabaul town and observed road slips on parts of the Tunnel Hill area and the road leading up to the RVO, two power poles downed on the waterfront Atam road, and collapsed vendors' shelter at the Rabaul market.

The basements of buildings along the waterfront were deluged when the sea rose inland for up to several metres at intervals soon after the quake. One business house on the waterfront, Blake Commodity Export Company, was lucky to have taken precautionary measures soon after the earthquake was felt, obviously from experiences of past incidents of such nature.

Workers at the shed quickly piled cocoa bags ready for export onto metre high pallets, thus saving thousands of kina worth of cocoa, when the sea flooded the storage shed.

The company's next door neighbours, the East New Britain Provincial Government workers' quarters, were not so lucky. Occupants could be seen late yesterday afternoon dragging their belongings, most of them wet, out of the cement-based building to transport them elsewhere to spend the night.

Damage report could not be ascertained in Kokopo, but commuters reported feeling the quake. Eyewitnesses also told The National that the sea was actually seen deluging parts of the waterfront at Kokopo and Vunapope.

Brian Martin, manager of the Kaivuna Resort in Rabaul town reported several heavy shocks, with the first aftershock sounding like an underground explosion.

He was aware of some damage in the immediate area - the jetty behind the Rabaul Club, formerly Rabaul Travelodge, was split in two, and minor tsunamis flooded Cleland Drive which borders the harbour, resulting in floating containers and other unsecured objects.

Calls to residents at Karavi village on the Kokopo Road between Rabaul and Kokopo revealed fractured water tanks but no substantial damage to the houses of those contacted.

Meanwhile, Kavieng police reported what one officer described as a "minor quake" with no major damage while Lorengau, Buka and Kimbe police reported nothing unusual in their respective precincts.

GUJARAT INDIA

The most destructive earthquake worldwide since the 1976 earthquake in China which killed 250 000 residents of Tangshan struck the Kutch region of Gujarat State in Western India. The death toll is expected to top 25000 and the final toll may never be accurately known. Fatalities resulted from the collapse of buildings onto the occupants.

You might ask how this could happen in a country that has been developing Earthquake Building Codes for more than a century? and what are the ramifications for Australia if any?

AGSO sent John Stehle, an earthquake engineer, to India to join a Risk Management Solutions team to investigate the effects of the earthquake. The photographs in this Newsletter were kindly provided by John and we hope to have an article from him in the next newsletter.

The following story is from UPI.

By Harbaksh Singh Nanda

Gandhidham, India, Feb. 14 (UPI) - Rescue workers have wound down their work in India's quake-ravaged Gujarat state, but Amar Gupta continues to search the debris of his flattened apartment for the 20th consecutive day in search of his 5-year-old daughter's body.

Gupta was at the port city of Porbandar when the devastating, 7.9 magnitude quake struck parts of India's western state of Gujarat on Jan. 26, killing an estimated 30,000 people and injuring 55,000.

Gupta's apartment in Gandhidham was among thousands in the region that were reduced to rubble in less than two minutes. His world -- a wife and two daughters -- perished under the debris. Rescue workers retrieved his wife and a daughter's bodies three days after the earthquake, but said there was no chance that other bodies could be recovered from under the concrete.

There are thousands of others across Gujarat's Kutch region whose relatives are still buried. Government officials said despite recovering 19,500 bodies, 10,000 still remained underneath the debris.

Hitesh Shah's 10-year-old son was participating in

India's Republic Day parade on Jan. 26 when a rain of bricks and mortar buried him in a narrow alley in Anjar, one of the worst-hit towns.

Twenty days have passed, but Shah is still waiting for heavy machines to remove the rubble on the street where his son was killed. Officials said the search was over, but Shah waited to find the mortal remains of his son to cremate it in accordance with Hindu rituals.

More than 400 students were killed in Anjar as they marched through the narrow alley carrying Indian flags in their hands to mark the 51st anniversary of India's adoption of a constitution. Nearly 375 bodies were recovered a week later. A shortage of concrete-cutting machinery along with exhausted rescue workers forced authorities to call off the recovery rescue several days ago.

"It is now time to distribute relief," Gujarat Chief Minister Keshubhai Patel said. "There are no more survivors."

The administration is providing medical attention and succor to survivors. The government, non-governmental organizations, international charities and local volunteers have set up relief camps across the region. People line up each morning at the camps for blankets, medicines, food and water.

Doctors have warned of an epidemic if the corpses are not removed.

"The (foul) stench in the air will take its toll if the debris is not removed," Dr. Nalin Patnaik said at a relief camp in Anjar. He said several cases of gastroenteritis had been reported. "The situation is not alarming, but needs to be controlled." Authorities sprayed disinfectant on the rubble to try to forestall any epidemic.

Although India's Defense Minister George Fernandes said the toll would be as high as 100,000, state government officials estimated it at 30,000.

"The real number (of casualties) will never be known as several bodies have decayed under the concrete," a government official said in Ahmedabad, the state's largest city. "Hundreds of children have been orphaned and they are in no position to tell us the exact number of their family members who died in the quake."

Meanwhile authorities in Ahmedabad arrested three builders for shoddy construction of high-rise buildings that failed to withstand the Jan. 26 quake. Police chief P.C. Pande said more builders would be arrested for using poor quality construction material.

Gujarat and its surrounding regions have been rocked with more than 500 aftershocks and geologists said the tremors would last for at least another six months. Meanwhile, the nightmare for the people of Gujarat continues.

FORTHCOMING CONFERENCES



New Zealand Society For Earthquake Engineering

The Society will hold its 2001 Technical Conference and Annual Meeting at **Wairakei Resort, Taupo** from **Friday 23 March to Sunday 25 March**.

The theme of the conference is ***Future Directions: A Vision for Earthquake Engineering in New Zealand***.

Papers on all other topics including *structures, foundations, geotechnique, microzoning, lifelines, reconnaissance, disaster planning, regulatory issues, and insurance issues, etc.*, will be presented.

A prize for the best paper presentation by a student is being offered with the aim of encouraging excellence in presentation. This prize carries an award of \$200.

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• 29 April 2001. The Australasian Structural Engineering Conference, Gold Coast.

asec2001@kms.com.au

• 18-21 April 2001 2nd International Workshop on Statistical Seismology, Victoria University, Wellington NZ. Themes include statistical modelling for fracturing and earthquakes, probability forecasting, and evaluation of earthquake forecasting.

david.verre-jones@vuw.ac.nz

• 18-20 April 2001 Seismological Society of America, SSA 2001 Meeting, San Francisco, Ca., Commemorating the 95th anniversary of the 1906 San Francisco Earthquake.

• 18-30 August 2001 IAGA-IASPEI Joint Scientific Assembly Hanoi, Vietnam. iaga-iaspei@fpt.vn

• 27-31 August 2001 XV International Conference on Soil Mechanics and Geotechnical Engineering, Istanbul, Turkey. <http://www3.itu.edu.tr/~icsmg/>

• 4-6 September 2001 3rd International Symposium on Earthquake Resistant Engineering Structures, Malaga, Spain. <http://www.wessex.ac.uk/conferences>

• 21-23 November 2001 AEES 2001 Conference and AGM ***Earthquake Codes for Australia and the Region*** ADFA, Canberra. (see page 2).

• The 12th European Conference on Earthquake Engineering will be held in London in 2002 .

NEW BOOKS (& OLD) / REPORTS

Seismicity Patterns Their Statistical Significance & Physical Meaning, Ed Wyss, M. Shimazaki, K. and Ito, A. Birkhauser Verlag AG, 1999

Perils of a Restless Planet. Ernest Zebrowski jnr. Cambridge Uni Press. RRP \$29.95

Australian Seismological Report - 1996 AGSO Sales Centre ph: 02 6249 9519, fax: 02 6249 9982

Acceptable Risks for Major Infrastructure. Eds P Heinrichs and R Fell, Balkema 1995. Proceedings of the Seminar on Acceptable Risks for Extreme Events in the Planning and Design of Major Infrastructure. Sydney NSW Australia, 26 - 27 April 1994

Report on the January 17, 1995 Great Hyogo-Ken Nambu (Kobe) Earthquake. Lam Pham & M Griffith. CSIRO DBCE 95/175(M)

Isoseismal Atlas of Australian Earthquakes - Part 3 AGSO Record 1995/44. AGSO Sales Centre phone: 06 249 9519, fax: 06 249 9982

Risks and Realities, Centre for Advanced Engineering University of Canterbury, Christchurch New Zealand

EARTHQUAKE ENGINEERING RESEARCH SCHOLARSHIP

The Australian Earthquake Engineering Society (AEES) is offering a scholarship of up to \$2,500 to suitably qualified persons to assist research activities related to earthquake engineering. Suitable research areas include most aspects of earthquakes and their effects.

No application form is required. Applications are welcomed from individuals fulfilling the following criteria:

- undertaking post-graduate or under-graduate honours research related to earthquake engineering that is consistent with the objective of AEES;
- enrolled at the time of application at an Australian university;
- a current member of AEES.

Applicants should provide the following information, briefly but clearly:

- a short title describing the research (15 words maximum);
- a clear statement of the nature, purpose and probable outcomes of their proposed research;
- a detailed work plan and budget indicating the amount requested for the Research Scholarship (not to exceed \$2,500) and the specific manner in which it will be used;
- other sources of financial support of the proposed research;
- a statement on the likelihood of the project proceeding if funding from an AEES scholarship is not available;
- a brief curriculum vitae;
- a letter of support from a university staff member involved with the research project.

The Earthquake Engineering Research Scholarship would be awarded under the following conditions:

- the subject of study and the applicant are considered suitable by the AEES National Committee;
- the person who completed the application undertakes the research;
- the Scholarship is awarded for 12 months;
- on completion of the research project, or the portion of the project funded by the Scholarship, the Scholarship holder prepares a paper on the research suitable for publication in the Proceedings of the AEES Annual Conference. Part of the Scholarship will be withheld until this condition is fulfilled.

The closing date for applications is 1!May!2001 and applications should be sent to:

Mrs Barbara Butler
C/- Department of Civil and Environmental Engineering
University of Melbourne
PARKVILLE VIC 3052

The following photographs were provided by AGSO's John Stehle taken on location in Gujarat.

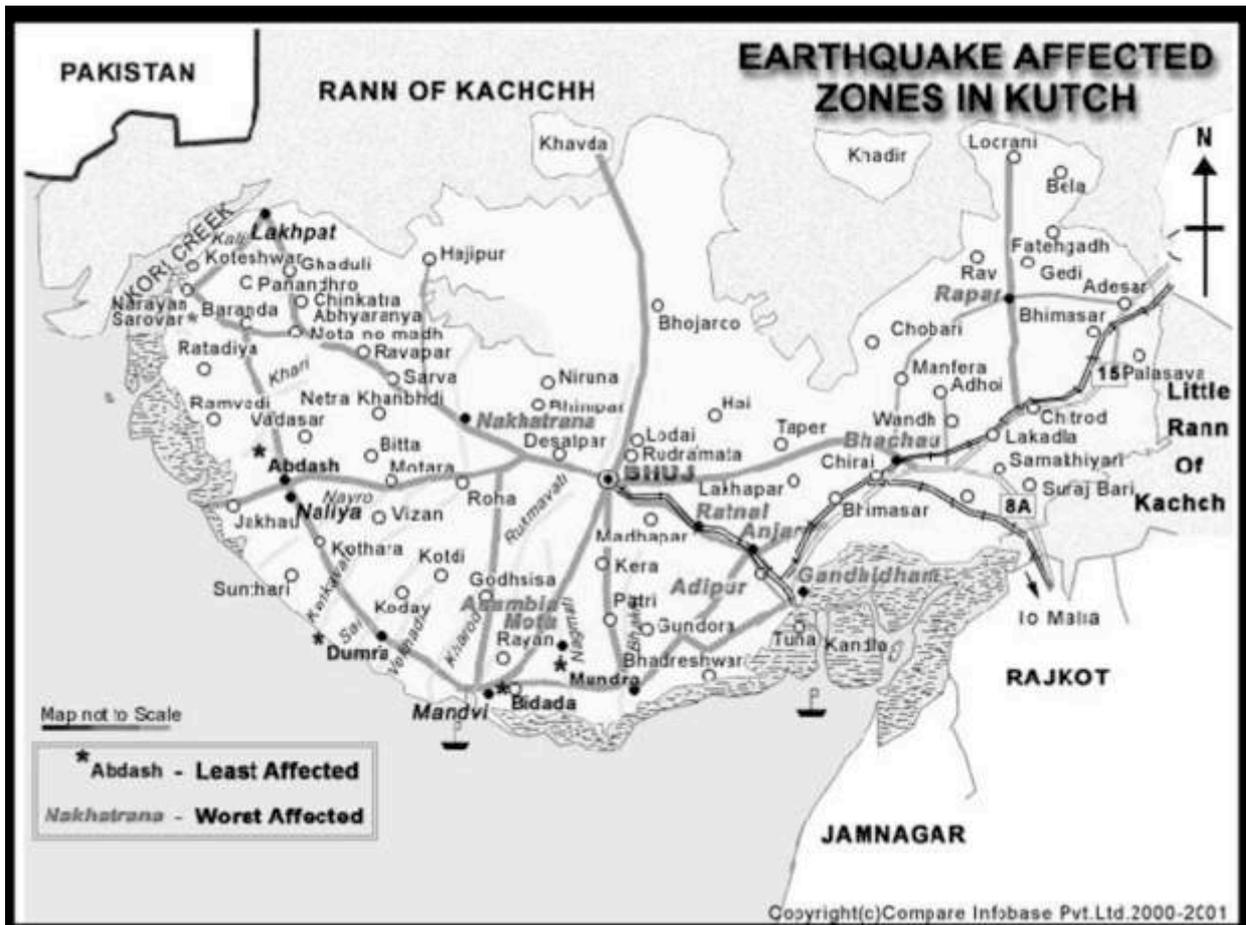


Figure 1.



Figure 2