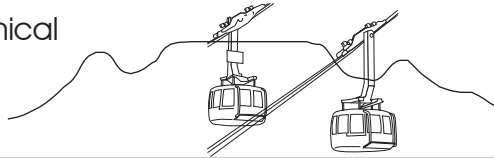


WCB ENGINEERING BULLETIN

The Institution of Certificated Mechanical
and Electrical Engineers
Western Cape Branch (WCB)
P.O. Box 504, Rondebosch 7700



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MISSION STATEMENT: 1. To uphold the image & status of the Certified Engineer. 2. To represent the Certified Engineer at ECSA and other decision-making bodies concerning legislation, safety & health standards, the environment and machinery regulations. 3. To promote continued education & training of its members and future engineers. 4. Promote fellowship in the engineering profession

Editorial

The workshop held on 3 February 2005 to bring to the attention of our members and members of SAIEE the subject of the Reservation of Work Functions of engineering professionals was very well attended and created great interest. Many of those present contributed to the discussion at the end and notes were made on the flip chart of fresh suggestions which would be studied by du Toit Grobler and Rod Harker with a view to conveying suggested guide lines to ECSA, who has the task to provide the Department of Public Works with suitable regulations for defining the work functions of engineering professionals registered under the Engineering Professional Act No 46 of 2000. There is an urgency to put a set of regulations into effect or the Act will be of no effect.

The task set for ECSA is extremely difficult because to define what an engineer may legally do in his sphere of competence requires the knowledge of the details of the functions that make up his activities. There is also a large degree of overlap of different categories of engineers. It may be easy to define what a Lift Inspector may do in ascertaining the safety of a lift and to what extent it complies with set standards, or what an electrician may do in wiring a premises, but when it comes to say a consulting engineer who by his academic knowledge and experience could introduce new and better standards than some approved procedures, who is to say he is wrong to deviate from the functions laid down by regulation?

Setting up the regulations will be tricky because law is involved, and contravention of what is laid down could involve the courts in technical matters which may pit one expert against another in drawn out cases. But engineers being the daring-doers that they are, ECSA will tackle the task with the best competence in their armoury.

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Local Branch News

Hello once again everybody.

We held our AGM in February with a talk on "Experiences gained and pitfalls to avoid in CMMS implementation", presented by Hannes van Zyl, SAP Solution Centre, Plant Maintenance, City of Cape Town. Unfortunately very few members attended.

On 25 February three committee members met with 3 members of the Eastern Cape committee in Mossel Bay. Our discussion centered around what we could do to form a closer relationship. Thereafter we visited the PetroSA plant (ex Mosgas), which proved to be very interesting visit.

3 March: We co-hosted a workshop with SAIEE on the "RESERVATION OF WORK FUNCTIONS IN ELECTRICAL ENGINEERING". This workshop was well attended and the participation excellent.

On 24 March a fairly large group of us visited Boschendal Wine Estate where we were treated to an informative tour of the winery after which we tasted a selection of wines. This visit was certainly well worth the effort.

Proposed activity list for next few months as follows:

April – Talk on Battle of Blouberg

May – Visit the new plant at SAPPI – Montagu Gardens

June – talk on Regulatory Certificate of Compliance

Lastly, I would like to thank Jerome for his many years of dedicated editorship of this News bulletin, as he is going to spend the next 9 months in England. We all wish you well for the future Jerome!

Ciao for now!

Chris Schnehage

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Important notice

The editor has reached the stage when he has realised he is not indispensable. He is now in his eleventh year of editing the Bulletin and what with spending half years in UK and SA and not being sufficiently computer literate, the time has come to find new blood.

Michael Jaffe has agreed to take over the editorship as from the June 2005 edition and we are delighted that he has been willing to tackle the task. Please give him your support and encouragement. He has much to offer. He has been an Inspector of Machinery in the Department of Labour and since his retirement has continued to inspect boilers and pressure vessels and to audit health and safety in factories.

Michael Jaffe, Prof Cert Eng

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Reservation of work functions in electrical engineering workshop held in Cape Town on 3 February 2005

The Western Cape Branch of ICMEESA, in conjunction with Du Toit Grobler of ICMEESA and Rod Harker of SAIEE, set up the workshop. The two speakers were du Toit Grobler and Rod Harker, who took turns to present their cases. They were both very lively and enthusiastic speakers and the audience were very interested listeners, as shown by the active debate that ended the evening. The comments from the floor were very well received by the speakers and copious notes were made of these contributions.

The material handed out included the talks given by a large number of diverse speakers of the workshop held on similar lines in Johannesburg on 13 October 2004. Of those twelve well qualified speakers two appeared to be of special significance: Prof Hu Hanrahan of Wits University who is a consultant to ECSA on the development of system standards for registration and accreditation, and advocate Janette Botha who is involved in drafting government legislation, including the Built Environment Professions and the Construction Industry Development Regulations.

At this workshop du Toit first spoke for 24 minutes, then Rod for 22 minutes, then du Toit for 36 minutes, then a 20 minute tea break. After the break du Toit spoke for 28 mins followed by Rod for 17 mins. The debate that followed covered 74 min with meaningful remarks by people who obviously knew what they were talking about. This shows that it is eminently possible to run an important meeting efficiently timewise, leaving adequate time for discussion.

Some random comments from the floor:

- *Holistic approach needed*
- *Engineering is a generic term*
- *Computer industry needs regulation*
- *Certificate of Compliance needed for instrumentation*
- *NRS 048 Professional development*
- *Employment equity must be considered*
- *Engineering is complex and overlapping*
- *Market driven vs Regulations*
- *Public Relations road show suggested*
- *Emphasis must be on ethical standards*

ECSA sets standards for registration of various categories of engineering and registers persons in the categories and needs as to what work must be carried out by whom. The only category that meets these conditions is that of the Registered Lift Inspector; his competence and work function are defined, and he needs to be registered. ECSA also takes cognisance of the effect of all registrations on the health and safety of workers and the public and damage to the environment.

In the final analysis it was emphasised that time is of the essence and whatever comes out of these workshops will need to be available to ECSA by August 2005. The Built Environment Act 2000 urgently requires regulations to be drafted so that the Act can be put into effect.

Gathering at the river

The party of clergymen was attending a conference in Scotland. Several of them set off to explore the district. Presently they came to a river spanned by a temporary bridge. Not seeing the notice that said it was unsafe, they began to cross. The bridge keeper ran after them in protest.

"It's all right," declared the spokesman, not understanding the reason for the old man's haste. "We're Presbyterians from the conference."

"I'm no caring about that," was the reply. "But if ye dinna get off the bridge ye'll all be Baptists!"

Clyde Murdoch, A Treasury of Humour

From Readers Digest June 1974, Laughter the Best Medicine

Building work danger

On a building site a gangboss and three workers were given the task of removing four heavy, reinforced concrete slabs, each weighing about one tonne, which had been wrongly located between two columns. These slabs were to act as sun screens.

Four stainless steel rods had been cast into each slab. The protruding ends were embedded into the columns on each side. The contracts manager had laid down the method of removal. A slab was to be weakened in its centre and the collapse would pull it away from the holes in the columns and the slab would fall straight down. Three of the four slabs had already been dropped in this manner, starting with the lowest one to make space for the one above to fall through. The contracts manager left at about 12:30 after witnessing the third slab dropping. He instructed the gangboss to proceed in the same manner. At the same time he appointed a leading hand to supervise the remaining work. The supervisor went into the building to supervise the cleaning up. He was away for about 20 minutes. Work would stop after the fourth slab was removed as it was a Saturday and work for that day would be completed.

The gangboss decided to work out another method to speed up the removal. His method was to remove the concrete around the embedded rod ends in the slab. With a worker at each end using a jackhammer the top rod ends became exposed. The slab was then hinged on the two lower rods and with the centre of gravity now being above the rod ends it swung over striking and jolting the scaffolding upon which the four men were standing. One of the workers was hit on the head by a protruding rod end. His injury was so severe that he died at the scene. The others were not affected.

This incident reveals the importance of continual supervision when a potentially dangerous job is undertaken. The new supervisor should have been present to ensure that the proven method was used. He failed in this duty. Also the gangboss did not have the knowledge to realise that his method might be dangerous, as indeed it was. He should have obeyed instructions. The time element may also have been a contributing factor with the remaining persons probably eager to finish for the day and be free to use the benefit of the rest of the day.

Adrian Wyntje in the news

We have pleasure in reporting that Adrian Wyntje has been appointed by the SAQCC as an APPROVED TRAINING BODY for the training of persons to sit the theoretical examination requirement for Competent Person for Boilers and Pressure Vessels. He was approved on 8 December 2004.

Adrian is a Professional Certificated Engineer who has had 16 years experience as an Inspector of Machinery with the Department of Labour, amongst other activities inspecting boilers. For 13 years prior to joining the DoL he was Chief Engineer on the RSA to the Antarctic.

He will cover the syllabus for the Competent Person examination in 27 hours spread to suit the candidates.

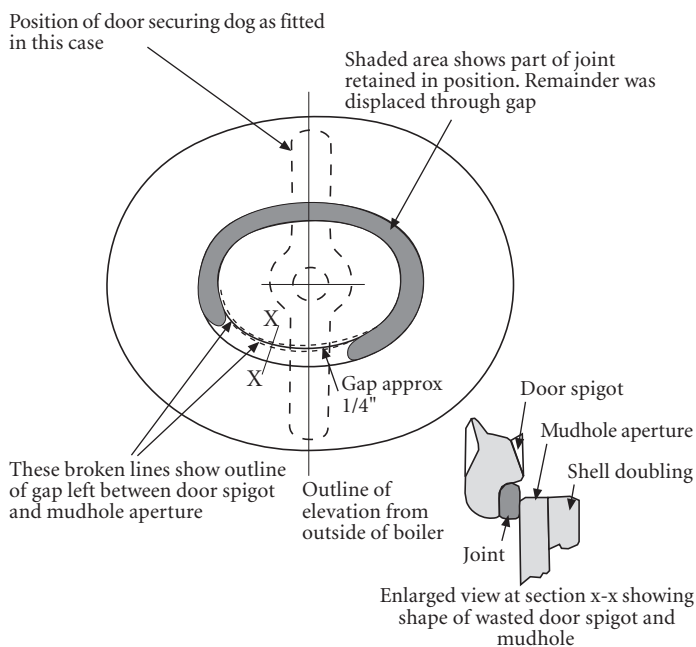
He also runs courses on the Occupational Health & Safety Act which interested persons would find very valuable because of his experience as a H & S inspector.

A boiler calamity on steam ship

Although this incident goes back to May 1958 on steam ship Fulham II (1598 tons), it should be of interest to users of boilers because of the importance of the clearance between handhole and manhole doors in relation to their openings. The ship was under repair alongside the quay at Willington, Northumberland in the UK.

The vertical Cochran coal fired auxiliary boiler had been opened up for cleaning, overhaul and survey whilst the ship was under repair. It was closed up on 21 May and the mudhole and manhole doors were rejoined by the ship's second engineer. The door securing nuts had been tightened before filling to working level, but was not further tightened after warming through by natural draught when the fire was set on 22 May. By 9.30 am on the morning of the 23rd the steam pressure was up to 275 kPa. At 11.30 am the surveyor of Lloyds' Register of Shipping and a fitter were standing on a 625mm wide steel plate near the top of the boiler in a very confined space to adjust the safety valves. As the pressure reached 655 kPa adjustments were made to the safety valves and at 675 kPa the joint of the mudhole at the bottom of the boiler to the left of the firing hole 2.4m below them blew and the place where the two men were standing filled with exceedingly hot steam vapour. Covering his face as best he could the surveyor slid down the boiler on the side away from the leak to the stokehold floor. The fitter was not so fortunate as the access ladder was on the rising vapour side. He eventually fell to the floor badly scalded.

The investigation into the incident revealed that the metal of the left hand bottom mudhole door was so badly corroded both on the door itself and the opening that 85mm of gasket material had been forced out through a gap of about 6mm by steam pressure with the resultant escape of steam. The drawing illustrates the defective joint.



The fitter was severely scalded about the face, hands and arms and hospitalised for two months. The surveyor was slightly scalded and resumed normal duties after 5 days.

The boiler was 22 years old and had been periodically inspected by Lloyd's surveyors. The last inspection was on 14 May, nine days before the occurrence. Could this defect have been spotted before the occurrence?

(Information obtained from the Report of Preliminary Inquiry under the Boiler Explosions Act, 1882 and 1890.)

Disturbing drama

A couple from Minneapolis decided to go to Florida for a long weekend. They planned to stay at the very same hotel where they had spent their honeymoon 20 years before.

Because both had jobs they found it difficult to co-ordinate their travel schedules. It was decided that the husband would fly to Florida on a Thursday and his wife would follow him the next day. Upon arriving as planned, the husband checked into the hotel. In his room there was a computer, so he decided to send his wife back in Minneapolis an e-mail.

However, he accidentally left out one letter in her address, and sent the e-mail without realising his error.

In Houston, Texas, a widow had just returned from her husband's funeral. The dearly departed was a minister of many years who had been called home to Glory following a heart attack. The widow checked her e-mail, expecting messages from relatives and friends.

Upon reading the first message she fainted. Her son rushed into the room, found his mother on the floor and saw the computer screen which read:

To my loving wife

Subject: I've arrived.

I know you are surprised to hear from me. They have computers here now and you are allowed to send e-mail to your loved ones. I've just arrived and have been checked in. I see that everything has been prepared for your arrival tomorrow. Looking forward to seeing you then!

Hope your journey is as uneventful as mine was.

Your loving husband

P. S. Sure is hot down here.

Super computer on a microchip

(From The Weekly Telegraph Issue No 708 22 February 2005)

Details of a new microchip, the size of a postage stamp, were released at the International Solid State Circuits Conference in San Francisco during February 2005. The three electronic giants Sony, Toshiba and IBM have been working on a single Cell processor at a laboratory in Austin Texas for three years and have now produced a microchip so powerful that it could turn a mobile phone into a pocket-sized desktop computer.

The chips were initially intended for the computer games market and will appear in the new Sony Playstation 3 games console due out next year. They were also expected to be used in the new high-definition televisions from Sony and Toshiba and be in home and office computers soon after. It will also bridge the gap between the cinema and video games, allowing graphics and special effects designed for the cinema to be inserted directly into computer games.

Dolby sound

From the Weekly Telegraph Issue No 709 March 1 2005

Ray Dolby is now 71 and lives in San Francisco. He began his career when at college in California he worked for the team that developed the first video recorder. He gained a doctorate at Cambridge University and launched the business of Dolby Laboratories in 1956.

The company's first invention was Dolby A, a form of audio compression which dramatically reduced the background noise on tape recordings. He manufactured the new system and marketed it mainly at record companies. It enabled producers to combine separate tracks onto a single recording.

But it was the development of surround sound for film sound tracks that made the company a household name. It was featured on *Star Wars* and two presidents of the company won Oscars in 1978 and 1988. Dolby still goes into the office every week, though he filed the last of his 50 patents 10 years ago.

SafeNet Thought for the Day

8 April 2005

Requirements for the training of lifting machine operators

In the Safety Thought dated 11 March 2005 we reported on the recently published "National Code of Good Practice for Training Providers to Lifting Machine Operators". The National Code of Good Practice was published in Government Gazette No. 27292 dated 18 February 2005 and mainly applies to stakeholders or training providers registered to provide training to forklift and other lifting machine operators.

The Code of Good Practice contain the following requirements that may be of interest to companies who operate forklifts or other lifting machines for which formal training is required by the Occupational Health and Safety Act, 1993:

Duration of training for persons without prior training or experience

Learners without prior training in the operation of these lifting machines must be trained for a minimum of 40 hours. Of the 40-training hour 20 hours must be used for theoretical training whereas the other 20 hours will be used for practical operating instructions. The ratio of learner to facilitator is also limited in that a facilitator may not train more than 4 persons simultaneously. This rule will apply for theoretical as well as practical training.

Training for persons who are in possession of a training certificate

Persons who are in possession of a valid certificate of training may be subjected to re-certification training. This will in effect mean that the employee will only have to attend refresher training. The refresher training must consist of at least 4 hours theoretical training and 1 hour practical training. The theoretical training will specifically focus on safety issues. Again the ratio of learner to facilitator is prescribed in that a facilitator may not train more than 4 persons simultaneously in the theoretical issues. The practical training must be done on a one on one basis.

Important though to remember is the fact that re-certification must take place within 90 days after the persons certificate has expired. Failure on the part of the employer to send the person for re-training within this period will result in the trainee having to attend the 40 hour training offered to learners without any experience.

Entrance qualifications for persons undergoing training

The following entrance qualifications and requirements are specified for persons to be trained:

1. The persons must be 18 years of age or older;
2. The person must be physically capable of performing the tasks required of such operators. This will in effect mean that the person must be in possession of a medical certificate of fitness that will specify that the person's medical condition is in compliance with the inherent requirements for the job;
3. The trainee must be in possession of at least a Grade 9 General Educational and Training Certificate. An equivalent ABET qualification will also be accepted;
4. The training provider must, prior to allowing persons to attend the training, require of the employer to submit the following documentation and information for each learner:
 - a. A declaration clearly stating that the person is physically and psychologically fit to be trained as an operator;
 - b. A certificate issued by an optometrist which confirms

that the trainee has adequate day / night vision and depth perception. The optometrist is required to apply the Purdue University Standard Vision Test Number 3. The certificate issued by an optometrist will not be required if the trainee has a valid Professional Driver's Permit*. No mention is made of eye tests conducted and certificates issued by Occupational Health Practitioners and it could therefore be assumed that only certificates issued by optometrists will be accepted; and

- c. Each learner must be in possession of the personal protective equipment as required by the employer.

(* Note: Professional Driver's Permits (PDP's) as mentioned in item 4(b) above, are normally required when transporting goods with a vehicle with a weight in excess of 3,5 ton or transporting 12 or more people, which includes the driver of the vehicle, in a bus or taxi (Public transport).

Certificates issued to successful candidates

The certificate of Competency issued to successful candidates will only be valid for a period of 24 months from the date of issue.

The certificate issued must contain at least the following information:

- a. Name and logo of the accredited provider or authorised body;
- b. Address of accredited provider;
- c. Accreditation number of provider;
- d. Certificate identification or serial number;
- e. Identification of Act and Regulation;
- f. Initials and surname of operator;
- g. Identification number of operator;
- h. Lifting machine code, code description of equipment, attachments and capacity;
- i. Registration number of Learning Material;
- j. Restrictions of operation;
- k. Registration number of facilitator and assessor;
- l. Unit standard number and credit value;
- m. Date of issue and expiry date; and
- n. Authorising signature.

In addition to the certificate issued each successful candidate must also be issued with a carry card, which must at least contain the following information:

- a. Name and logo of the accredited provider or authorised body;
- b. Certificate identification or serial number;
- c. Initials and surname of operator;
- d. Identification number of operator;
- e. Lifting machine code, code description of equipment, attachments and capacity;
- f. Restrictions of operation;
- g. Registration number of facilitator and assessor;
- h. Date of issue and expiry date; and
- i. Authorising signature.

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Space travel

As soon as space vehicles become common, no doubt someone will put in some parking meteors.

S.S.B.