

British Tunnelling Society

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NEWSLETTER

June 2005

INTRODUCTION

The 2004/2005 session finishes on June 16th with an informal meeting on Fire Engineering for Highway Tunnels. This important subject has been highlighted this evening as I write the Newsletter with the death of two lorry drivers in the Frejus tunnel, in France, when a lorry caught fire.

We have had a successful year and we look forward to an even better one in 2005/2006. There is the BTS Course at the end of June, the next informal meeting in September, and Underground Construction 2005 and the Tunnelling Awards in October. Please read the Newsletter, put the dates in your diary and come to these events.

COLIN KIRKLAND

At the beginning of the International Tunnelling Association General Assembly meeting in Istanbul on Sunday 8th May 2005, Einer Brock, from Norway, a longterm friend of Colin Kirkland who worked with him on the ITA and on several projects, gave a tribute to Colin life.



Sheila Kirkland and Harvey Parker at the Presentation

This was followed by the presentation of the ITA Medal by Harvey Parker, the President, to Shiela Kirkland. The medal title was "The Dynamic Underground" and was sculptured by Luciana Penna from Italy.

GOSSIP

Ged Pakes in semi retirement was discovered recently on his long narrow boat near the Harecastle Tunnel He is reported to have said "The peace and tranquility of the waterways is really something to enjoy, but I still get nervous in these nasty, dirty tunnels!"



Susan Knight with Ulla and Ged Pakes

Any interesting news about members to rodneycraig@compuserve.com

FUTURE MEETINGS and EVENTS

All meetings now start at the Institution at 18.00 unless stated, with tea and coffee on the lower ground floor from 17.30. The bar opens at 17.30 and is open until late. Flysheets on the details of the meetings are circulated in advance in T&TI and details are also posted on the website a month or so in advance of the meeting.

16 June 2005 Fire Engineering for Highway Tunnels

22 September 2005 Egnatia Project, Greece

26 October 2005 Meeting in conjunction with Underground Construction 2005, at Olympia. Please note the date and location

BTS COMMITTEE

At the AGM in May Ivor Thomas and Roy Slocombe completed their three year terms on the Committee and resigned. The Committee are very grateful for their hard work during the last three years.

Christopher Bambridge, Mott MacDonald
Michael Francis, Kellogg Brown & Root
Ian Williams, BAA

were elected to the Committee for the next three years.

Details of the Sub-Committees and their Chairman will be given in the next Newsletter.

HARDING PRIZE COMPETITION 2005

The three finalists for the Harding Prize Competition gave excellent presentations at the April meeting.

Caroline Beirne, Mott MacDonald
David Ellis, Morgan Est
Damian McGirr, Donaldson Associates

The Winner of the Harding Prize was Damian McGirr. Damian who was presented with a copy of Sir Harold Harding's book and a Certificate. Damian received a cheque for £500 at the Annual Dinner.



Damian McGirr with David Court, Caroline Beirne and David Ellis

JAMES CLARK MEDAL

The British Tunnelling Society has awarded its 2005 James Clark Memorial Medal for "a contemporary achievement in tunnelling" to Maurice Gooderham.

Maurice is recognised for his promotion of tunnels for the laying of high voltage electricity supply cables. Since construction of the first tunnel some 15 years ago, there are today more than 75km of about 3m diameter cable tunnelling beneath the streets of London.

Man entry utility cable tunnels have several advantages over the previous trench cable laying techniques. Among these are much reduced disruption to traffic and urban routine, ready access for cable maintenance, space available for adding further cables as demand requires and a cost effective alternative for electricity supply infrastructure for the providers.

Maurice began his civil engineering career in 1950 and during those early years, worked for British Rail on a variety of tunnel, bridge and coastal defence schemes. In 1963 he joined the Mitchell Construction Kinnear Moodie Group and began to focus on the challenges of the tunnelling industry. Projects he worked on during that time included the Victoria Line tunnels for London Underground (Finsbury Park to Kings Cross) and tunnels for the Post Office and several of the British Water Boards. He was also Chief Engineer to Kinnear Moodie Construction for the design of culverts and tunnel linings.



Maurice Gooderham at the presentation with David Court

From 1973 to 1988, Maurice was Director of Construction for Thyssen (GB) Ltd. Major tunnelling projects completed during that period included the: Gateshead section of the Tyne & Wear Metro, Newcastle, Kielder Water Supply trial tunnels, Northumberland, the high pressure shaft and other tunnelling works for the Dinorwig Pumped Storage

Scheme in North Wales, Piccadilly Line extension of the London Underground to Terminal 4 at Heathrow Airport in JV with Taylor Woodrow, Hydropower tunnels in Swaziland, Southern Africa, the First application of NATM in the UK at the Barrow upon Soar Gypsum Mine, and the development of the first vacuum segment erector prototype on the Three Valleys water tunnel project.

In 1988, when Thyssen (GB) closed its civil construction division, Maurice made a career change, moving from construction and into consulting engineering, joining Howard Humphreys & Partners (now part of Kellogg Brown & Root) as Head of Tunnelling.

Tunnelling projects designed and managed during that time included the: Third Nairobi Water supply tunnels, Kenya, the A55 Penmaenbach/Pen-y-Clip road tunnels in North Wales, Refurbishment and reconstruction of Central Line and Northern Line tunnels for London Underground, NATM trials for the Heathrow Express project and association with the first phases of the project's actual construction period, promotion, design and construction management of the first systemwide cable tunnels for London Electricity and the GB National Grid.

In 1992, Maurice set up his own consultancy and for the past 13 years, he has been advising prominent UK clients including: BAA, the owner and operator of Heathrow and other main UK airports, Thames Water, the team leading the proposed Crossrail project for London, London Underground.

He has advised contractors, insurers, and consultants both in the UK and overseas and advised on projects including the Channel Tunnel Rail Link, Ramsgate Harbour Road Tunnel, and Dublin Port Road Tunnel in Ireland. He has been a member of Dispute Resolution Boards including the Copenhagen Metro DRB, and has acted variously as an expert witness on arbitration and court cases involving tunnelling projects, and as an adjudicator and a conciliator. He is currently on a panel of experts reviewing the causes of a collapse during a major tunnelling project near Prague, in the Czech Republic.

Throughout his career Maurice has continued to promote tunnelling and the underground solution to urban infrastructure needs. He was a founder member of the British Tunnelling Society, serving on its Committee, in the late 1970s. He is a Chartered Engineer and a member of the Institution of Civil Engineers, and he has been an Affiliate member of the International Tunnelling Association (ITA) for many years. He has monitored the careers of several engineers, managers and professionals, who now work in the tunnelling industry in the UK and in many countries around the world.

Maurice is a popular recipient of the James Clark Medal for 2005.

TUNNEL LOBBY GROUP

Since the General Election discussions are in hand to reform the Lobby Group. Details will be forward in due course.

Further information from Helen Nattrass
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Tel 0207 808 5000

TUNNELLING AWARDS

Entry submissions are now being invited from the tunnelling industry worldwide for the 2005 Tunnelling Industry Awards.

The six categories are:

The BTS UK Project of the year

The T&TI International Project of the Year

Achievement through Innovation (sponsored by J. Murphy & Sons)

Excellence in Tunnel Design (sponsored by Vinci Construction)

Machinery/Materials Award (sponsored by Skanska)

The Young Engineer of the Year Award (sponsored by Edmund Nuttall)

An entry form giving full details can be downloaded from the BTS website at www.britishtunnelling.org/sponsorship.html

An expert panel of judges will assess the entries and presentation to the winners will take place during the evening reception on Wednesday 26 October as part of Underground Construction 2005 at the Olympia Exhibition Centre in Kensington London.

Entries must be returned no later than 24th June 2005, so prepare your entries NOW.

TUNNEL DESIGN & CONSTRUCTION COURSE 2005

The Tunnel Design & Construction course is being held at University of Surrey, Guildford from 27th June to 1st July 2005. If you act quickly it is possible to register for the course. Dayle.long@ice.org.uk

UNDERGROUND CONSTRUCTION 2005

The organisers of Underground Construction 2005, Brintex Limited, are well advanced in their preparations.

British Tunnelling Society Newsletter June 2005

This event is being held at the Olympia Exhibition Centre, London, on Wednesday 26th and Thursday 27th October 2005.

Abstracts have been received and reviewed, papers selected, and successful authors notified. The Conference will showcase the best in British and International practice in tunnelling and underground space, and the Exhibition is on track to be one of the biggest for many years.

Because of the number of high quality abstracts received, it is planned to accept Conference papers both for presentation at six single stream sessions, and for posters. A further two sessions will comprise the BTS October 2005 meeting, which will showcase some of the most interesting International Conference papers, and the IMM Julius Wernher Lecture

BTS CLOSED FACE WORKING GROUP

After more than two years of research, data collation, text composition, review and re-write, the report of the Closed-Face Working Group (CFWG) is expected to be published by Thomas Telford by end June/early July.

The title is "Closed-Face Tunnelling Machines and Ground Stability - A guideline for best practice". The report is similar in size and design to the BTS/ICE Tunnel Lining Design Guide. The report, which will be a 76-page A4 publication, provides state-of-the-art information about the application and safe operation of closed-face tunnelling machine systems.

There are 10 separate chapters illustrated with tables, graphs, and photographs and the report takes the reader through the technical development of the two types of closed-face tunnelling systems (slurry and EPB); the methods by which each system is selected for a given tunnelling project; a description of hazards associated with urban tunnelling; the use of risk management systems; a review of site investigation methods; and an examination of the tunnelling process from the construction as well as the monitoring, recording and data reviewing points of view.

The report also includes an analysis of data collated from more than 100 international incidents of closed-face TBM ground instability and collapse in an effort to identify common factors associated with such events. Given the amount of tunnelling completed each year using closed-face tunnelling machines, the incidents of ground instability are rare. It is, however, critical that the incidence of such events is minimised and avoided through awareness and best possible working practices.

The report ends with a set of conclusions and recommendations that provide a checklist for best possible working practice and establishes a baseline upon

which future development and use of closed-face tunnelling machine systems can be tracked and updated.

The report has been written by a committee of highly experienced and knowledgeable BTS members and industry professionals. Included on the steering committee were Alastair Biggart, Chairman, David Court, and Bill Grose, the report is addressed to all those involved in soft ground and closed-face tunnelling machine development and operation as well as those managing development of major tunnelling projects in urban environments.

The Report will cost £65.00 and is scheduled to be available from Thomas Telford, the ICE bookshop at Great George Street and other outlets by end June/early July 2005.

National Vocational Qualifications (NVQs) for Tunnelling

The Society is pleased to record that the governing body for NVQs, the Qualification and Curriculum Authority (QCA) has now accredited our Level 1 and updated Level 2 NVQs for tunnellers

The Level 2 qualification has been in existence for some time but it is only recently, during the CTRL works, that the need for qualifications at Level 1 that would cover all those working underground and recognise the progression that occurs in the tunnelling industry where underground skills are learnt on the job as a man moves from back up to the face.

The NVQ achievement process is based around a number of units of competence and the qualification is achieved by achievement of a specified number of units relating to the particular type of competence. There is for example a distinction drawn between a Hand Miner, and a Machine Miner, a Pipejacker and a Shaft Miner. Many of the units figure in a number of the qualifications and of course Health and Safety is common to all. Additional qualifications can be gained by adding a small number of additional units.

The qualification requires that the candidate achieves specified knowledge criteria, demonstrates that he can achieve specified performance criteria and is granted on assessment by an industry experienced and trained assessor.

There are currently 76 full NVQs certificates issued and there are 349 individuals registered as currently working towards a tunnelling NVQ. There are also 18 trained assessors.

The Society sees NVQs becoming very much a live topic as the industry are required by standards, and by the Joint Insurance Code, to have competence-assessed workforce in addition to NVQ being a necessary precursor to renewal of CSCS cards.

It is the Society's intention to prepare and issue more information on this topic in the near future.

Bob Ibell is the Chairman (and BTS Representative) of the Occupational Working Group for Tunnelling NVQs
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BTS DATABASE

The Society, four years ago, decided to prepare a database of UK tunnels constructed in the last 30 or 40 years. The data are being collated from published information in UK and from conference papers.

The database will be placed on the website and will cover basic information on each project. There will be a search system based on keywords or project names.

The first 200 projects covering large and small projects across the whole spectrum of tunnel uses from road tunnels to water, sewer and service tunnels will be ready by the end of June, when the database will go live on the website. Over the following months further projects will be added and those on the database updated as necessary.

Further information will be circulated to members when the database goes live.

INTERNATIONAL TUNNELLING ASSOCIATION

The International Tunnelling Association held its 31st meeting in Istanbul from 7th to 12th May, in conjunction with the World Tunnelling Congress 2005 "Underground Space Use – Analysis of the Past and lessons for the Future" organised by the Turkish Road Association and the ITA. The meetings were attended by representative, delegate, observers and Working Group members from 43 of the 53 Member Nations of the Association.

There were elections for two members of the Executive and P Grasso, from Italy, and W Liu, from China, were elected. Claude Berenguier, the Secretary General was re-elected for a three year term.

The ITA News which gives news from the Association, the Working Groups, the Member Nation, forthcoming events etc is sent out by e-mail every two months to anyone who wishes to receive it. Currently it is sent out to 2,200 addresses. **If you would like to receive The ItTA News, please e-mail secretariat@ita-aites.org**

The next three annual meeting will be held in Seoul, Korea, from 22nd to 27th April 2006, in Prague, Czech Republic, from 5th to 10th May 2007 and in Delhi, India, in 2008.

Reports on the Working Group meetings held in Istanbul.

Working Group 2 - Research

The recommendations on "Settlements induced by Tunnelling" is currently being reviewed and should be published in the second half of the year. Two other documents are currently under preparation, on the "Strategy of Site Investigations" and "Monitoring and Control of Underground Works". A detailed review has been completed during the Istanbul meetings of the former document, and an action plan agreed for the preparation of the latter. Over the coming year the group will focus its activity on the production of these documents, with the aim of reviewing the final drafts at the next meeting in Seoul.

Working Group 3 - Contractual Practices in Underground Construction

The Working Group is committed to the development of a systematic web based tool to assist ITA visitors to access information on contractual practices. The Working Group reviewed the ITIG insurance code and concluded that the risk management practices were consistent with the Working Group's contractual propositions and that the code could usefully be used as a framework or guidelines for the joint development of agreed risk management practices on major projects between clients and insurers.

Working Group 5 - Health and Safety in Works

The revision of the "Guidelines for good occupational health and safety practices in tunnelling" has not progressed as quickly as intended and it is now hoped to have the document completed prior to the meeting in Seoul. A new project for a guidance document on "Rescue containers" was begun. Customised versions of the "Safety in Tunnelling" booklet which was completed on CD-rom last year have been printed in German with translations into Arabic, Russian and Portuguese planned. Donald Lamont is Animateur of the Working Group

Working Group 6 - Maintenance and Repair of Tunnels

The Working Group reviewed the final approved draft of the document "Guidelines for Structural Fire Resistance for Road Tunnels", a joint document with the International Road Federation. This document provides guidelines for better protection of road tunnels in the event of a severe fire.

Presentations were made on the latest state-of-the-art of chemical grouts for leak control in tunnels, on the comparison of the performance of various types of fireproofing for tunnels, and on a program outlining the latest developments in tunnel inspection in France. The

Working Group began work on "Guidelines for Structural Fire Resistance for Mass Transit Systems".

Working Group 11 - Immersed & Floating Tunnels

The Working Group members exchanged information on new projects and developments around the world. Presentations were made on the construction of the Bosphorus tunnel, on joints of very large flexibility, on leakage repair and on how to present educative information effectively. It was decided to go ahead with publication of short reports on the ITA website.

Working Group 12 - Shotcrete Use

The Working Group reviewed four topics. The State of the Art Report on Shotcrete will be edited and will be ready to be released in September. A preliminary list of sprayable mortars for fire protection was presented. The final report on nozzle men certification will include information from different countries. An overview report on synthetic fibres for shotcrete reinforcement: the report will include a test program to be conducted by the Working Group.

Working Group 14 - Mechanization of Excavation

The TBM Glossary has been translated into Chinese and Italian. The English, French, German, Japanese, Chinese and Italian versions are now posted on the website., which will be of benefit to prospected authors of scientific papers on tunnelling. The Glossary will be translated into Spanish and Korean in the near future. Definitions and/or explanations of the TBM Glossary in French and English have been completed and will be placed on the website.

It has been decided that since the standards and manuals are so different for each country, a reference book will be drawn up to list related references for mechanised tunnelling for Member Nations rather than writing a new ITA recommendation of mechanical tunnelling.

The next task for the Working Group will be to establish a list of remarkable mechanised tunnelling projects with assessments added by the Working Group. The information of challenging, successful, and troublesome projects will be gathered from owners, contractors, consultants and manufacturers.

A special team will be formed to propose the mission for the Working Group, to be approved by the Working Group. Three sub-groups, and their leaders, have been formed to create a list of remarkable mechanised tunnelling projects. This should be completed by December 2005.

Working Group 15 - Underground Works and the Environment

The Working Group reviewed the draft report on Environmental and Sustainable Development reasons for going underground which will now be finalised. The meeting heard two presentations on projects with water problems which have affected the environment.

The second report on environmental constraints and problems will be drafted later in the year. Future topics will be related to groundwater and based on good practice and case histories. Rodney Craig resigned as Animateur of the Working Group after five years and the Vice Animateur Jan Rhode, from Norway, was elected the new Animateur.

Working Group 16 – Quality

A short meeting was held with Working Groups 2 and 3 to co-ordinate the common activities in the field of reducing risk and claims due to unsuitable procedures, both technical and contractual. The activities of the Working Group are now aimed to the preparation of didactical material, a comprehensive poster and the recreation of a new draft regarding the links between assessed technical construction procedures, methods of control, verification of performances, all addressed to the better knowledge of claims and failures and their reduction in tunnelling activity.

Working Group 17 - Long Tunnels at Great Depth

The Working Group focused on 3 topics. The review of the activities in the past year, presentations of relevant case histories, and discussion of outline of the Working Group's next report on hydraulic tunnels at depth.

The Outline for the Working Group's second report on long hydraulic tunnels were presented and it was agreed how to carry out the review based on the experience from the first report.

Working Group 18 – Training

The Working Group discussed and analysed the first ITA Training Course and the organisation of the new edition of the Post – Graduate Master Course endorsed by the ITA.

There was a French presentation on a didactic tool for teaching purposes which is now available on the website. The Working Group analysed the teaching material prepared by Working Group 5. The Working Group agreed that both were valuable tools for teaching purposes and recommended a diffusion of them through the website.

The next task for the Working Group will be the preparation of a standard list of subjects which would be provided by Universities for a good preparation of a tunnelling engineer, and the preparation of some power point presentations of relevant examples of tunnels to be put on the website.

Working Group 19 - Conventional Tunnelling

The Working Group report will be a state of the art report to engineers who are not specialists in conventional tunnelling and to decision makers in client organisations. The Working Group had interesting discussions on the report. The decisions on the follow up work have been taken with the aim to finalise the report by the meeting in Seoul.

Working Group 20 - Urban Problems, Underground Solutions

The goal of the Working Group is to publish a report on how the subsurface has been used effectively around the world to solve urban problems. The report will be directed to planners and politicians to provide creative and efficient ideas for the solution of urban problems and will serve as a decision aid.

Future work will include an analysis of lessons learnt regarding the longterm experience with "soft" indirect benefits such as attractiveness, visitor spending and property values.

The Working Group is seeking further contributions of innovative underground solutions based upon a revised questionnaire, which was prepared at the meeting.

Committee of Safety of Tunnels in Operation

The General Assembly agreed to create a Committee on Safety of Tunnels in Operation. The initiative started from 7 EU countries launching research project and networks following severe fires in European road tunnels during the last few years. The project represents about 100 institutions, research organisation, academic institutions, owners and suppliers from all over Europe. The Committee will be open to all interested bodies worldwide. The Chairman will be Aslfred Haack, from Germany, with Didier Lacroix, from PIARC, as Vice Chairman.

HAVS

The BTS Sub-Committee have had regular meetings since Christmas and are busily drafting a proposed Code of Practice for the management of HAVS in Tunnelling. The new regulations come into force on 6 July and the Sub-Committee is working hard to finalise the Code.

CONFERENCES

Don't forget to look at the back pages of Tunnels & Tunnelling International and Tunnelling and Trenchless Construction for the conferences coming up over the next two years. Also the International Tunnelling Association website www.ita-aites.org

RETC 17th Rapid Excavation & Tunnelling Conference and Exhibition, June 27th - 29th 2005, www.retc.org

Tunnel China 2005, 7th – 9th September 2005, Intex Shanghai, www.tunnel-china.com

3rd EFEE World Conference on Explosives and Blasting, 13th – 16th September 2005, Hilton Hotel Metropole, UK, www.efee-web.org

International No-Dig, 19th – 21st November., Rotterdam, The Netherlands.

Tunnelling for a Sustainable Europe, AFTES Congress 10th – 12th October 2005, Chambéry, France, www.aftes.asso.fr

Underground Construction 2005, 26th and 27th October 2005, London, UK. www.tunnelling-show.com (see above)

World Long Tunnels 2005 Taipei, Taiwan, 7th – 10th November 2005, www.longtunnel/2005.taneeb.gov.tw

STUVA Conference '05, 28th November – 1st December 2005, Leipzig, Germany, www.stuva.de

ITA 2006 World Tunnel Congress, and 32nd ITA General Assembly, 22nd – 27th April 2006, Seoul, Korea, www.ita2006.com

INTER tunnel 06, 16th – 18th May 2006, Lingotto Fiere Exhibition Centre, Turin, Italy, e-mail intertunnel@mackbrooks.co.uk