

British Tunnelling Society

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NEWSLETTER

June 2007

INTRODUCTION

The June meeting, the last before the summer recess, was on the Durban Harbour Tunnel, South Africa. There will be no meetings in July or August and the new session begins on 20th September with a meeting on the DLR Woolwich Extension.

At the May AGM three new members were elected to the Committee. The first meeting of the Committee was held in June when the chairmen of the various Sub-Committees will be chosen. The August Newsletter will list the chairmen of the Society's Sub-Committees.

OBITUARIES

The Society has lost three very trusted and loyal members of the Society in the last two months. Jock Campbell died after a long fight with bowel cancer. Jack Knight died very suddenly within half an hour of leaving the office and John Thompson also died after a few months with bowel cancer. All three will be sadly missed by their colleagues, at BTS meetings and in the bar afterwards.

Jock Campbell

David Gutteridge gave a tribute to Jock at his Service of Thanksgiving and Silvia and the family have agreed to David's words being included in the Newsletter.

"I first came across Jock in 1971 when we both worked for John Cochrane & Sons, although at the time we hardly met. Jock had already moved to Haswell when I went there in 1975 although, again, we hardly met because he was spending most of his time on the Medway Cable Tunnel. We actually saw more of each other in Hong Kong in the late 70s and early 80s,

although this meant that Jock saw less of Silvia at this time. As with many engineers Jock went to Hong Kong for a few months but stayed for a few years and was well known at the Furama Hotel. Jock progressed through Haswell to Partner, Managing Director and then Executive Chairman. There are many fond memories of Jock over these 35 years.



Jock, left, after being introduced as a member of the Worshipful Company of Engineers

Jock was forever honing his engineering skills through DIY at home including a new conservatory and porch. Each Monday morning he would tell us of the successes and trials and tribulations of the previous weekend. In later years Jock often had helpers, willing helpers we were told, in Geoffrey and Jonathan, his two son in laws, although, by this time, the workload had increased because houses of children also need looking after.

Jock was a nervous flyer, which was surprising considering the amount of travelling that he did. I was in Taiwan when Jock came to visit when we flew down island to give some advice on a tunnel. We flew on an airline that was known by the local expats as Far Eastern Accidental Transport. I had to tell him that we were not flying on a dodgy airline but he still gripped the arm rests quite hard during take off and landing. I did own up when the trip was over.

Jock had immense practical knowledge of tunnelling and he was well respected and known throughout the industry. The intricacies of finite element modelling were something that Jock did not try to understand but he knew what made a tunnel stand up. On the Taiwan trip I mentioned earlier we were taken into a tunnel experiencing difficulties. We became increasingly nervous as we travelled past several collapse zones before arriving at the face. It took us less than 5 seconds before we asked to be driven out as the whole thing looked most unsafe, the ground appeared to be moving. We gave our advice in the open air.

Jock had a long running battle with the Institution of Civil Engineers, even though he was a regular at the British Tunnelling Society. He did not have a degree and tried to gain membership through the mature route. This was unsuccessful for whatever reason. In the later part of his career he was persuaded to try again, successfully. He achieved the recognition that was deserved.

Ceridwen and I often met Jock and Silvia at social events, where they always made good company. They were regulars at the BTS dinner and often two of the first on the dance floor.

People sought out Jock from all over to obtain the benefit of his practical advice, particularly in connection with tunnelling. He would always find time to listen, first with a pipe in his hand but over the last 20 years or so with a box of snuff, to tackle any issue in a cool, calm and collected manner. He adopted the same approach in responding to a crisis, imagined or otherwise. Those of us who sought this advice and his many other friends in the industry will miss him".

We give our sincere condolences to Silvia, Jane and Geoffrey, Kirsty and Jonathan, and Cheryl, and the grandchildren.

Jack Knight

Jack began his career, in 1966 after graduation, with Ove Arup & Partners in Edinburgh working on the structural design and detailing of buildings, before moving to A M Carmichael where he was on site on the construction of the M8 Motorway.

He joined Edmund Nuttall Ltd in 1970 initially on a road scheme, before starting his long career in tunnelling. Over the eight years with Nuttalls he worked on three tunnelling projects including a 3km long rock tunnel at Birbeck, ventilation and draught relief in London and the Empingham Reservoir diversion tunnels.

He joined Tarmac International as a Senior Section Engineer in 1978 on the Ahmed Hamdi road tunnel under the Suez Canal, in Egypt.

On his return, in 1979, he joined George Dew & Co Ltd as Senior Site Agent and during the next 7 years worked on four sewer contracts in the Manchester area including two in compressed air.



Jack Knight

In 1985 he joined Monk Tunnelling as Contracts Manager where he was responsible for the firms major tunnelling works in the south of England, including the London Ring Main pipejack between Coppermills and Stoke Newington, in South Wales and in Manchester.

Jack moved to Kilroe Civil Engineering in 1987 as Senior Project Engineer and project managed several soft ground and hard rock tunnels in the North West area. He had a special responsibility for the training of your graduates and incorporated engineers and passed on his great experience in tunnelling. He also acted for the firm in an arbitration case.

Jack moved back to consulting in 1990 when he joined Donaldson Associates Ltd and became a Director in

1991 with special responsibility for design, drawing office procedures and contract liaison. He acted for the firm as an expert witness, worked on projects in Indonesia, India, Turkey and the Middle East and major schemes in the UK on the Jubilee Line, MEPAS Scheme in Liverpool, studies on crossing of the River Thames and Humber and on the Teignmouth Northern Interceptor sewer.

In 1995 Jack joined Haswell Consulting Engineers as a Technical Director working on major tunnel infrastructure works for transportation and sewerage projects. His work covered expert technical reviews of tenders and due diligence for major projects, technical advice, inspection, refurbishment and remedial works of old tunnels.

Jack was particularly interested in old and Victorian tunnels. He worked on the inspection and refurbishment of railway tunnels including the Strood and Higham railway, the Corby railway, the flood alleviation scheme for the Chipping Sodbury tunnel, the Whitcheater tunnel, 12 tunnels on the Great Western Zone and London Underground tunnels.

When Severn Trent closed Haswells, Jack and several other staff joined Scott Wilson in 2005. Jack was appointed an Associate Director in the Tunnelling Division responsible for tunnelling advice to design teams and contractors on major projects in the UK and abroad.

Jack was a member of the LUL Steering Group working with Tubelines to establish standard tunnel inspection, assessment and maintenance procedures. He was on the CIRIA Steering on Tunnel: Inspection, Assessment and Maintenance, and previously on the CIRIA Pipe Jacking and Tunnelling Research Group RP712.

Jack was a member of the BTS Committee for many years and was Chairman of the Working Group which published the HAV's Best Practice Guide. Jack had also been a member of the UKSTT Council. He was Sub-Panel Convenor for tunnels on the Panel for Historical Engineering Works.

Jack will always be remembered for asking the first question at virtually all BTS meeting over the last few years and for his enthusiasm and humour in asking "awkward" questions. He will be missed by all his colleagues and friends in the industry.

John Thompson

John was working for Bilfinger Berger when he died, but had worked for many firms during his career in many countries in the world, including the Far East. His major project was the Channel Tunnel where he worked on many design issues including the crossover tunnel.

A more detailed obituary will be given in the August Newsletter. The editor would be very grateful for comments from John's colleagues. A copy of his cv and a photo would also be very welcome.

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.

20th September 2007 DLR Woolwich Extension

Daljit Dhanda – Amec with
Speakers from Lovat and
Halcrow

BTS COMMITTEE

The BTS Annual General Meeting was held on Thursday 17th May 2007. There were three vacancies on the Committee and three candidates were nominated for these positions.

The 3 new members of the Committee elected are:

Chris Dulake Faber Maunsell
Lawrence Halls TAM International Consultants Ltd
Nathan Wilmot Arup & Partners

Further details of the Committee and Sub-Committees will be given in the August Newsletter.

JAMES CLARK MEMORIAL MEDAL

The James Clark Memorial Medal was presented at the AGM to Tommy Talbott, Miller Construction (Morgan Est). Chris Hughes in his introduction said that Tommy is a Fellow of the Institution and a former Vice Chairman of the Society.

Tommy left the Royal Engineers in the late 1950's to join Sir James Miller and Partners as a site engineer. Over the next four decades, he rose through the ranks in this contracting organisation as it changed ownership to Miller Buckley, Miller Construction and latterly Morgan Est. Tommy retired as an executive director in the mid 1990's but has continued in a part-time capacity, offering advice and support to the Morgan tunnelling team.

In his lighthearted address Chris Hughes praised Tommy for his unstinting generosity in coaching and mentoring younger tunnel engineers, and his ability to inspire

teamwork during what can sometimes be very difficult and trying periods when undertaking tunnelling works.



Tommy receiving the Medal from Bill Grose

ADVANCE NOTICE OF ONE DAY CONFERENCE AND BTS TUNNELLING AWARDS – 18th October 2007

The Next BTS Tunnelling Conference will be a one-day conference to be held at the Institution on 18th October 2007. The Theme will be "The Future for Underground Space". The Keynote Opening Speech will be given by Nick Raynsford, MP. There will be talks on all the major projects programmed for construction in the next few years.

The Conference will be followed by the monthly October BTS meeting, with the subject of Crossrail and introduced by Doug Oakervee. The evening will be finished with a drinks reception.

Further information will be provided in the next Newsletter and on the website.

HARDING PRIZE COMPETITION

Every two years we hold the Harding Prize Competition which is held for our younger tunnel engineers. The Competition was open to all aged 33 or under on 31st

December 2006. Three papers were presented at the April meeting.

The titles were:

Shallow Cavern Stations – A major undertaking for New York's City's first subway in 60 years by Hannes Lager, Arup,

Datchet Tunnel Repairs by Ian Whitehead, Mott MacDonald, and

Recent Modelling of Challenging Tunnel Soil-Structure Interaction Problems in Asia by Nathan Wilmot, Arup.

Ian Whitehead was awarded the Harding Prize and attended the Annual Dinner, as a guest of the Chairman, to receive the prize.



Ian Whitehead receiving the Harding Prize £500 cheque from Bill Grose

ANNUAL DINNER

The Annual Dinner was attended by 470 tunnellers, partners and guests at the Brewery on 18th May 2007. Some said it was the "The Best ever".

There was a welcome back to the champagne reception, with many thanks to the sponsorship from Continental Conveyors which made this possible.

There was also a welcome return to larger food portions (and good good it was too) thanks to the new caterers.

On the top table Bill Grose's guests were Tim Brick, Dublin City Council, Ian Whitehead, the Harding Prize Winner, and the guest speaker David Kendall, who later had everyone alternately in rapt silence and stitches.

The absence of the good old fashioned bar, lost to progress, to lean on didn't seem to bother anyone.

The evening was rounded off in fine style by Rochin Flames, who wheeled out their 19 year old lead singer Shane Hampheir who delivered "rat pack" standards with great panache.

Thanks to Thomas Telford for collecting the money efficiently and to Lisa Hall.

Next year we return to the usual date of the second Friday in May, 9th May 2008. So put this in your diary. The speaker will be Barry Cryer.

INTERNATIONAL TUNNELLING ASSOCIATION

2007 General Assembly – Prague May 2007

The ITA held its 33rd meeting in Prague from 5th to 10th May, in conjunction with the World Tunnel Congress 2007 "Underground Space – The 4th Dimension of Metropolises" organised by the Czech Tunnelling Committee (CtuC) and the ITA. 1200 delegates participated at the Congress and the ITA meetings were attended by representatives, delegates, observers and working group members from 43 of the 52 Member Nations of the Association.

Every three years the ITA elect its new President, 4 Vice-Presidents and a number of Executive Council members, depending upon the number of vacancies on the Executive.

Martin Knights, nominated by the BTS, was elected the new President for the next three years. The four Vice-Presidents elected were P Grasso, Italy; E Grov, Norway; Y Leblais, France and I –M Lee, Korea. In addition there were six new members of the Executive Council from China, Denmark, Japan, Czech Republic, Germany and Russia.

The August Newsletter will have details of Martin's plans for his three years.

Name of the Association

The General Assembly decided to change the name of the Association to "**International Tunnelling and Underground Space Association**".

Communications

The annual issue of **Tribune** was published for the Conference.

The **ITA electronic News** ita@news is sent bimonthly to some 3,400 addresses, Member Nations and Affiliate Members. If you wish to receive the ITA News please e-mail secretariat@ita-aites.org

Tunnelling and Underground Space Technology (TUST) had six issues during 2006

The **Website** www.ita-aites.org received about 25,000 visits per month and the site is continually being developed.

Open Session

The ITA Open Session was on "New Financing Trends and Consequences on Tunnelling Contracts". The session presented a comprehensive overview of the Private Public Partnership (PPP) covering the whole chain of stakeholders; Institutional, Investor, Private Investor, Contractor, Engineering sector, Lawyer, Insurer and Owner. The session highlighted the long term involvement required from the stakeholders, the need of a strong management of the interfaces, a fair risk sharing and cover and, last but not least, a very strong investment in the design from the early bidding phase as it has to deliver successful answers for both construction and maintenance during long term operations. The session also highlighted the large business opportunities.

Training Course

A training course "Tunnelling in Urban Areas" was held prior to the conference on 3rd and 4th May which was attended by 125 participants.

Next Annual Meeting

2008 – Agra, India, 20th to 25th September
2009 – Budapest, Hungary, 23rd to 28th May
2010 – Vancouver, Canada, 5th to 10th May

Working Groups and Committees

Committee on Operational Safety of Underground Facilities (COSUF) This Committee, which was founded in Istanbul in 2005, had its official inauguration in Lausanne, Switzerland, in May 2006. COSUF held or participated in workshops in October 2006 in Poland and London, and in November 2006 in Egypt. It held its first ITA-COSUF workshop "New Aspects in Tunnel Safety" and the ITA-COSUF General Assembly during the Prague meeting. The number of corporate members has been raised to 50.

WG 2 – Research The meeting has 20 delegates from 13 countries. The recommendation on "Settlement induced by Tunnelling in Soft Ground" was published earlier in the year in TUST. Training material has been prepared which was used for the first time in the Training Course before the Prague conference.

Two other documents are being developed on the "Strategy of Site Investigations" and "Monitoring and Control of Underground Works". The draft recommendations were reviewed at the meetings are expected to be completed in the coming year. Several actions are underway in the area of "Risk Management"

with the ITA dedicated task force, the preparation of training material and the development of a new manual to serve as a reference for future ITA Risk Management related productions. This document will complement the 2004 "Guidelines for Tunnelling Practices" issued by the working group to cover all stages of the risk management approach, and include a review of case histories where risk management has been successfully used.

WG 3 – Contractual Practices in Underground Construction The Working Group has identified the urgent need for a contractual practices ITA position paper on the fundamental importance of taking due regard for subsurface conditions in all manner of modern contracts. This document will be the first in a series of ITA contractual pronouncements addressing the most serious issues in Underground construction and the appropriate responses contractually.

WG 5 – Health & Safety in Works The Working Group met twice with 9 delegates. Members were pleased to note that the "Safety in Tunnelling" booklet is now available in seven languages, the most recent translations being in Norwegian and Portuguese. The revision of the "Guidelines for good Occupational Health & Safety Practices in Tunnel Construction" was completed in Prague. Two new work items were begun. One will gather information on tunnelling in contaminated ground and the other will address requirements for flexible ventilation ducts in tunnels under construction.

WG 6 – Maintenance and Repair of Tunnels

The Working Group met two times with delegates from 14 Countries. The meetings finalised a draft "Guidelines for Fire Resistance for Metro Tunnels" The Group anticipate that the document will be ready for final review later in the year. The study report on the "Repair of Tunnel Linings", which is a compendium of repair methods for tunnel linings was posted on the website during the year.

WG 11 – Immersed & Floating Tunnels

The Working Group met twice with 17 and 19 delegates from 11 and 14 Countries. Information was exchanged on projects and developments around the world, and the group's activities over the next 12 months were organised. Data for a searchable database is to be uploaded initially as technical papers.

WG 12 – Shotcrete Use

The Working Group had 21 delegates from 13 countries. Decisions were made with respect to preparation of a Guidelines for Nozzleman Certification in cooperation with EFNARC; for the Fibre-reinforced shotcrete tests, early-age properties will be obtained; interaction with

other organisations which regularly release information related to shotcrete will be improved.

WG 14 – Mechanisation of Excavation

Information on standards and manuals in mechanised tunnelling are now listed on the website, together with a continuously updated database of challenging mechanised tunnelling projects, which shows the latest state of the art in TBM tunnelling; on risk management and insurance of TBM tunnelling, on training courses and on demonstration of benefits of mechanised tunnelling. The training courses will be held at universities selected through ITA in nominated nations and a sponsorship scheme will be put in place.

WG 15 – Underground Works and the Environment

The Working Group meetings were attended by 8 delegates from 7 countries. The meeting reviewed the final report on "Environmental and Sustainable Reasons for going Underground" which will be passed to the ITA Executive for review in the near future. There were 6 presentations from Member Nations representatives on environmental aspects of tunnelling.

There was a discussion on different topics related to underground use and the environment and also the future work of the Working Group. A list of different aspects on ground vibrations from underground facilities, aspects related to air, water and excavated materials will be prepared by the end of June this year. These will be communicated among the members by e-mail. The long term goal of the Group is to prepare guidelines and recommendations on environmental aspects related to underground works.

WG 16 – Quality

The activity of the Group has come to a conclusive phase off its activity during this session, with the preparation of a technical addendum to the already published general report. The main recommendation that arises from the work done is the need for a strict connection with Risk Management and all the aspects that allow for a control of all phases of a tunnel project, mainly those which are conditioned by great uncertainties.

WG 17 – Long Tunnels at Great Depth

The meeting was attended by 19 delegates from 12 countries. The meeting focused on 2 aspects – The presentation of relevant case histories of the new Alpine Base Tunnels and Himalyan hydraulic galleries. The Group's next report will be on "Long Hydraulic Tunnels at Great Depth".

WG 18 – Training

The Working Group had 9 delegates from 9 countries. The work carried out since the Seoul meeting was discussed and the existing Post Graduate Master Courses, endorsed by the ITA, were illustrated. Following a wide discussion, the Working Group agreed to support the idea of the proposed Committee on Education provided that the Committee and Working Group jointly develop a framework of cooperation. A strategy on how to provide with new material for the Training page on the website was agreed. There was discussion on future activities and members were asked to prepare outline proposals for the next meeting.

WG 19 – Conventional Tunnelling

The Working Group had 26 delegates from 16 countries. The General Report on Conventional Tunnelling is now ready for the Executive's approval for publication. Future topics will be on guidelines on monitoring in conventional tunnelling and on construction contracts.

WG 20 – Urban Problems, Underground Solutions

The Working Group had 18 delegates from 12 countries. There was good progress towards its objective of creating an overview of the typical challenges of urban city planning and the solutions which were offered by the underground space. The first report on Urban Problems, Underground Solutions, and Key Decision Factors was approved for further finalisation. Unique case histories will be appended to the report.

GOSSIP

Any interesting news about members to rodneycraig@compuserve.com

LOBBY GROUP

The next meeting of APGUS will be the presentation on 17th July by Thames Water's John Greenwood on the Thames Tideway Project.

We are planning a visit to Combe Down Stone Mines, near Bath, for October. This visit would be only for a small group of Parliamentarians.

We continue to support the Associate Parliamentary Engineering Group (APEG) by attending their meetings. The next meeting and AGM is on 19th June

Further information from Helen Natrass h.natrass@sir-robert-mcalpine.com
Tel 0207 8427500.

NITROGEN MONOXIDE WORKING GROUP

The Working Group has issued an Interim Advice Note which is on the website. Go to the website

www.britishtunnellings.org, click on Working Group, and then on safety and download the Advice Note.

Work is nearing completion on its main Best Practice Guidance document, which will be available later in the summer.

HEALTH & SAFETY

Designer Guidance on Minimum Diameter and Length of Drive – Reminder

There has been a long debate about the acceptable minimum diameter and maximum length for small tunnels. In mid 2006 the HSE and the PJA agreed a set of minimum diameters for tunnels or pipejacks against drive length and number of drives. This was later endorsed by the Society. The method of excavation was also factored in.

The resulting table was published as guidance for designers. Some flexibility has been built into the recommendations by allowing designers to seek advice from the H&S Coordinator (previously the Planning Supervisor) and obtain their agreement to deviate from the figures in the table. The table and its explanatory notes can be found at www.hse.gov.uk/construction/pdf/pjguidance.pdf

Doppler Monitoring

CAWG is being consulted on a research report prepared by a team of practitioners and researchers led by the Institute of Occupational Medicine which is looking into the use of Doppler as a real time monitoring tool for assessing the effectiveness of decompression regimes in tunnelling.

Traditionally that effectiveness has been assessed through a retrospective study of decompression illness incidence, the most recent of which has just been published in the November 2006 edition of Civil Engineering – the general part of the ICE Proceedings.

Retrospective studies have varied in scope from being contract specific or covering a period of up to three decades. The IOM research is a world first in the application of Doppler monitoring to compressed air tunnelling and it is hoped to hold an open meeting of GAWG sometime in 2007 to discuss the results.

Third Party Risks in Soft Ground Urban Tunnelling

A report has been published by HSE on third party risks in soft ground written by John Anderson and Guy Lance which discusses management systems for the control of urban tunnelling. The report can be downloaded from the HSE website www.hse.gov.uk/research/rrpdf/rr453.pdf

BS 6164

The BSI hope to have a draft revision of BS6164 ready for scrutiny by the BSI Committee shortly.

BTS CLOSED FACE WORKING GROUP

Copies of the Report are selling well. The Report which costs £65.00 is available from Thomas Telford, (Tel 44 (0) 1892 832299, Fax 44 (0)1892 837272, orders@thomastelford.com or via the internet www.thomastelford.com) from the ICE bookshop at Great George Street and other outlets.

HAVS BEST PRACTICE GUIDE

The HAVS document which has had a significant contribution from the HSE provides the industry with a Current Best Practice Guide to the management of HAVS and is essential reading for all and is available on the website. www.britishtunnelling.org, go into Working Groups and then safety.

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

4th EFEE World Conference, 9th – 11th September 2007, Vienna, Austria www.efee.eu

STUVA Conference, 27th – 29th November 2007, Cologne, Germany www.stuva.de