

**The International Tunnelling Association held its twenty seventh meeting in Milano from 10 to 13 June**, in conjunction with the World Tunnel Congress 2001 organized by the Italian and Swiss Tunnelling Societies (SIG and STS). The meetings were attended by representatives, delegates, observers and working group members from 39 of the 50 Member Nations of the Association.

### MEMBER NATIONS REPRESENTED

South Africa, Algeria, Germany, Australia, Austria, Belgium, Brazil, Canada, China, Korea, Denmark, Egypt, Spain, United States of America, Finland, France, Greece, Hungary, Island, Israel, Italy, Japan, Lesotho, Morocco, Mexico, Norway, Netherlands, Poland, Portugal, Romania, United Kingdom, Russia, Singapore, Slovenia, Slovak Republic, Sweden, Switzerland, Czech Republic, Turkey.

### MEMBER NATIONS NOT REPRESENTED

Saudi Arabia, Argentina, Bulgaria, Columbia, India, Iran, Malaysia, New Zeland, Thailand, Ukraine, Venezuela.

### NEW EXECUTIVE COUNCIL

A. Assis	Brazil	President	Until 2004
A.M. Muir Wood	United Kingdom	Honorary President	
A. Haack	Germany	Past President	Until 2004
A. Parker	USA	Vice President	Until 2004
K. Sorbraten	Norway	Vice President	Until 2004
J.P. Godard	France	Past Vice President	Until 2004
J. Hess	Czech Republic	Past Vice President	Until 2004
N. Bulychev	Russia		Until 2002
A. Nordmark	Sweden		Until 2004
J.M. Kelvey	South Africa		Until 2004
K. Ono	Japan		Until 2004
G. Ash	Australia		Until 2002
H. Oud	Netherlands		Until 2003
J. Zhao	Singapore		Until 2004
C. Berenguier	Secretary General		Until 2005

### MEMBERSHIP

The Association has registered the membership of 25 new Affiliate Members (6 Corporate Members and 19 Individual Members); the total results to 50 Member Nations and 290 Affiliate Members (93 Corporate Members and 197 Individual Members) taking into account radiations and resignations.

### STRATEGY OF THE ASSOCIATION

The general assembly decided to accept the Swiss proposal to host the Secretariat in the Swiss Federal Institute of Technology in Lausanne. The decision will be effective on July 2002.

## **COMMUNICATION**

### **Tribune:**

Last year 4 issues of TRIBUNE were published including focus on Italy, Singapore, Slovak Republic, Switzerland, Czech Republic. The average circulation has been around 2700 copies per issues.

### **Tunnelling and Underground Space Technology:**

In the fifteenth volume of TUST, 44 papers representing 23 countries were published. Two reports from ITA WG Research and Subsurface planning were published. In the next year TUST will publish several reports by working groups.

### **Web Site:**

The Association has had a web site since 1998. During the year 2000, the site received 600000 successful requests (135000 pages read) from 15000 people coming from 85 countries. The site is updated on an average of 10 times a year and new topics have been added, specifically concerning Tribune and the forum for Member Nations and Working Groups. The most visited pages are the ones of the glossary, the focuses and Tribune.

### **Glossary:**

A first version of the glossary has been implemented on the web. This is a provisional version and will be completed during the coming year.

## **ITA OPEN SESSION**

The topic chosen this Year was "Risk assessment for project of financing". This topic is a major concern for the underground works industry. Five speakers treated the subject from different points of view: "legal aspects", "roles of the public and the private sectors", "dealing with geological risks", "relations between economic feasibility" and "project financing". It has been followed by a round table and an extended discussion. The session gathered more than 300 participants.

## **ISTT-ITA JOINT WORKING GROUP**

The main point on the agenda of the meeting was the draft version of the flow chart "Risk Budget for Underground Works", prepared over the last year, which covers 5

major risk phases and 20 events from objective to operation of an underground installation. A covering and explanatory text will be prepared by the following joint meeting in Prague in September 2001.

## NEXT ANNUAL MEETINGS

- **Sydney (Australia) from 2 to 7 March 2002** during the ITA-AITES 2002 World Tunnel Congress "Down under" organized by Australia and Singapore.
- **Amsterdam (Netherlands) from 14 to 17 April 2003**, during the ITA-AITES 2003 "(Re)claiming the Underground Space".
- **Singapore in May 2004** on the invitation of the Singaporean National Group.

## WORKING GROUPS

### WG 2: "Research"

*Animateur: Y. Leblais (France); Vice Animateur: Y. Takano (Japan)*

Sixteen people from fourteen countries attended the meeting. Further to the publication at the end of 2000 of its guidelines for the Design of Shield Tunnel Lining, the Group just finalized its report on Seismic Design and Analysis of Underground Structure, to be submitted to the Executive Council and published before the end of this year. The working group is now coming back to the completion of its report on Settlements Induced by Tunnelling and to the Analysis of its global risk assessment during construction.

### WG 3: "Contractual practices in underground construction"

*New Animateur: W. Maartens (South Africa); New Vice Animateur: A. Dix (Australia)*

The meeting was attended by 20 members from 13 countries. Two draft documents will be finalized soon: first the comments on the use of the three new FIDIC contracts and secondly the evaluation of tenders for consulting engineers and contractors. Three new topics were approved by the group and draft document will be presented next year:

- Alternative financing options available to clients.
- Comments on the World Commission on Dams. The commission was about dams but many of the concepts can be generalized to all development projects.
- The need for better management of underground projects.

### WG 4: "Subsurface planning"

*Animateur: A. Nordmark (Sweden); Vice Animateur: E.Grov (Norway)*

The working group met two times with the participation of 22 people from 13 member nations. The group reported on the following activities: Underground Water, Conveyance and Storage facilities and Underground Works for Landslide Stabilization; both reports will be published this year. The second major work in the group concerns Access Ways to Underground Facilities; so far 27 case descriptions on the subject have been submitted; a development version will be presented in 2002. The contents of the joint cooperation between WG 4, 13 and 15 has been approved by the Executive Council, the objective being to cover the wider concept of subsurface utilization including reasons for going underground, planning, geomapping, and environmental and socio-economic issues.

### **WG 5: "Health & safety in works"**

*Animateur: D.Lamont (United Kingdom); Vice Animateur: W.Chromy (Germany)*

The Health and Safety Working Group agreed an ambitious programme of work for the coming two years. Seven members attended. The Working Group plans to present the Executive Council with updated editions of the existing ITA guidelines on tunnelling safety in 2003. It also hopes to establish a database on the ITA website of basic information on health and safety legislation in member countries.

### **WG 6: "Maintenance and repair of underground structures"**

*Animateur: J.Richards (South Africa); Vice Animateur: R.Machon (Germany)*

The working group is progressing well with its Study of the Resistance of Tunnel Structures to Fire. This study is being carried out in association with PIARC, whose Working Group N.6 is studying Fire and Smoke Control in road tunnels. The first draft report on the findings of the ITA study will be completed in time for the ITA Congress in Sydney in 2002. The report on the Study of Methods for Repair of Tunnel Linings has been completed. This is being submitted to the ITA Executive Council for approval for publication during 2001.

### **WG 11: "Immersed and floating tunnels"**

*Animateur: J.Saveur (Netherlands); Vice Animateur : C. Marshall (United Kingdom)*

The working group published a major "State of the Art Report" in 1993 which was updated and expanded in 1997. A further major revision of the report is now planned for publication at the 2003 ITA Congress in Amsterdam. The new edition will introduce new material on tunnel foundation, joints, design for seismic conditions,

fire, ventilation, inspection, maintenance and durability.

### **WG 12: "Shotcrete use"**

*Animateur: K.F.Garshol (Norway); Vice Animateur: K.Ono (Japan)*

The meeting had 21 participants from 14 different countries. Task 1 (State of the Art Report) has received contributions from 9 countries; final or draft report will be ready for the Sydney meeting. Task 3 (Shotcrete support mechanism) status was reported and the subject discussed at length. Good progress has been made; the proposal to include a new Task (4) on Watertight linings was accepted and Tomas Franzen (Sweden) was appointed Task coordinator. The reference list on projects with permanent shotcrete lining has attracted much interest and will be continued. New references are requested.

### **WG 13: "Direct and Indirect Advantages of Underground Structures"**

*Animateur: J. Reilly (USA); Vice Animateur: P.Kocsonya (Hungary)*

Working group is completing its final report on the topic "Underground or Above ground-Making the Choice for Urban Mass Transit System". The report is based on extensive data collected from 30 cities in 19 countries and 4 continents. This data supports some general conclusions, but it also shows some great variations from country to country and region to region.

### **WG 14: "Mechanized tunnelling"**

*Animateur: M. Kanai (Japan); Vice Animateur: F.Amberg (Switzerland)*

The report "Recommendations and Guidelines for TBMs" is available, thanks to the group member's contribution from Austria, France, Germany, Italy, Japan, Norway and Switzerland, as well as from the Tutor. The next report would appear on the ITA web-site by March 31 th of 2003, which would contain technical data and reports in a database organized from mechanical tunnelling classification and is accessible from key words. This data base will be easily accessible from ITA colleagues worldwide.

### **WG 15: "Environment"**

*Animateur: R. Craig (United Kingdom) ; New Vice Animateur: J.Rohde (Norway)*

The Underground Works and the Environmental Working Group met on two

occasions with eleven members attending from ten Member Nations. The summary of the first work of the Working Group has been revised and will be forwarded to the Executive in July. The Working Group has sent out questionnaires to collect data on projects which have been placed underground for environmental and/or sustainable development reasons, those that have effected the environment and projects which have been affected by major environmental considerations. The Working Group will prepare a draft report on the first of these topics for the Sydney meeting.

### **WG 16: "Quality"**

*New Animateur: C.Oggeri (Italy); Vice Animateur: G.Ova (Norway)*

The sessions were attended by group members from 6 countries. Since last year's conference in Durban, the members of the Working Group have been busy writing and compiling the Draft Report on Quality in Tunnelling which was distributed for comments in March this year. The response has been positive, but the Working Group members feel that some improvements should be undertaken - especially by taking the constructive comments from Sir Alan Muir Wood into consideration. The Working Group is now aiming at submitting a Final Report before the end of the year - thus being able to present the report at the conference in 2002.

### **WG 17: "Long tunnels at great depth"**

*Animateur: F. Descoeudres (Switzerland); Vice Animateur : P. Grasso (Italy)*

The third meeting of the group was attended by 17 participants from 10 countries. It was decided to focus on the specific aspects related to the great length and depth of this major type of tunnels, namely the design concept including the safety requirement, the site investigation and innovation techniques, risk-locked approach to support the decision-making process and \_ the influence of various factors on the costs. Interesting examples of long tunnels in Europe (in planning, constructions or operation phase) have been discussed and a specific questionnaire has been approved to collect informations from the participating countries and from the other member nations. A special working group meeting will be organized in Switzerland next November, in order to prepare a report to be published next year.

### **WG 18: "Education"**

*Animateur: D. Peila (Italy); Vice Animateur: J. Zhao (Singapore)*

The meeting of the group was by 10 participants from 8 countries. The Working Group has discussed about some existing activities of teaching at University level (Post Graduate course), of training Courses for Engineers and also a new exchange of information system. The WG has analysed the data (list of university courses) that were collected in 2000-2001. For the future the WG has decided to develop for

the next years the following topics:

- to collect syllabus of tunnelling courses throughout the world and put them on ITA web site for facilitating the diffusion of information.
- to collect some of the already existing examples of important tunnelling and underground works documentation (in an electronic format) for example videos, Power Point presentation etc.
- to prepare a guide for the didactic structure of case histories presentation (following the previous work)