

# NEWSLETTER

May 2013



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**ATTACHED TO THIS EDITION:** *Second circular of the 7<sup>th</sup> EFEE world conference on explosives and blasting. Moscow 15-17 September 2013.*

We in EFEE hope you will enjoy the present EFEE-Newsletter. The next edition will be published prior to the conference in September 2013. Please feel free to contact the EFEE secretariat in case:

- You have a story you want to bring in the newsletter.
- You have a future event for the next EFEE-newsletter upcoming events list.
- You want to advertise in a future newsletter.

Or any other matter.

*Johan Finsteen Gjødvad, Chairman of the Newsletter Committee and Vice president of EFEE*

## Dear EFEE members, the president's voice

A long winter has finally passed and I hope you have been able to enjoy the first days of springtime. Almost at the same time as the new season starts and nature awakens, new directives in the explosives sector will come into effect.

As per the EU directives 2008/43 and 2012/4 (Track and Trace of Explosives), all explosives manufacturers and importers are bound to uniquely label all items in this sector from 5th April 2013 onwards. This labelling contains information about the manufacturer and/or importer, place of manufacture, the product itself and a unique number making it possible to retrace every single item. I am sure that those of you handling explosives (blasting contractors) will be able to see this information when receiving the next deliveries. All shippers, dealers and handlers will have to capture and file this information for 10 years from 5th April 2015 onwards. At this stage it is pointed out again that implementing the respective hardware and software system requires sufficient time and should therefore be timed accordingly.

Another event very important to EFEE members is the 7th World Conference on Explosives and Blasting from 15th to 17th September 2013 in Moscow which is also moving closer. The conference lectures were selected by the technical committee thus making available the final conference programme for all those interested. For further information please also visit

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St Julians, STJ1122, MALTA

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[www.efee2013.com](http://www.efee2013.com). Numerous lectures were handed in enabling us to put together a diversified and interesting agenda which sure will meet your interests.

Furthermore, two workshops will take place before the conference, namely “New rules for Track and Trace of Explosives according to EU Directive 2008/43” and “Demolition by the use of explosives” on 15th September 2013. We are also looking forward to greeting numerous companies from the explosives sector exhibiting their products and developments in the trade exhibition in Moscow. For registration please visit [www.efee2013.com/registration/](http://www.efee2013.com/registration/).

Preceding this year's spring conference (Council meeting and General Assembly) in Zandvoort, there was a workshop training on blasting technology directed by Karl Kure, Norway. It aims at determining the main contents of a common European blasting training. These main contents will be a prerequisite for establishing a comparable blasting training throughout all of Europe in the future, making it possible to acknowledge the training certificate and its contents in each country.

Nevertheless, the legal regulations taken into account sure still will have to be trained as country-specific elements.

I wish you all the best and am looking forward to greet you at the conference in Moscow.

*Jörg Rennert, President of EFEE*

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## The Gentle Art of Explosives Use

- the use of explosives held by the 'man-in-the-street'

Current perceptions regarding the use of explosives held by the 'man-in-the-street' and sadly, many people in a position of influence when it comes to choosing demolition methods- are that Explosives cannot safely be employed in close proximity to structures, or power infrastructure.

Generally, I can unequivocally refute this. I have for over ten years carried out a large range of ultra-close proximity blasts using explosives. The key, is simple, it becomes a question of graduated scale yet still applying certain minima, yet throwing out other currently accepted beliefs.

By this, I mean that our generally accepted "Critical Diameter" data for a given explosive, which in my case this is always Nitro-glycerine based cartridge explosive is normally stated as being around 17mm. If the user slices down the cartridge length and then on an appropriate board roles the material into strands, usually of some 10 to 20 gram weight depending on the chosen target, I have never failed to 'detonate' that charge, because I always use either a normal electric or non-electric detonator to initiate .

Basic rules of normal blasting methods, though scaled down, must still be adhered to, i.e.; The Maximum Instantaneous Charge, The Detonation Sequence, Careful hole drilling and orientation, Meticulous care when inserting the detonator into the explosive column, and assiduous mini-blast mat protection where applicable.

Usually, the micro-holes of around 12mm < 15mm diameter have a burden and spacing of between 200mm to a maximum of 300mm depending on the rock type. In most British limestones, and Guernsey Granites I choose a figure of 250mm as ideal. Hole lengths can be as long as 500mm, as long as the charge weight is adjusted accordingly.

Ideally if using electric detonators, starting with a "Zero" Instantaneous, 100m/s delays are fine, if using Non-electric, my success has always been in using Tunnelling rounds such as the "Nonel" System GT/T, but then only up to the Number 14 detonator as after that the number sequence delay becomes too great.

It has to be borne in mind that the same rock mechanics and movements found in large scale Quarry or surface rock demolition, do apply in their shrunken down form in micro-blasting. Over-use of the same detonator sequence WILL destroy a blasting pattern or cause a mini fly rock situation, apart from raising the M.I.C to an unacceptable level.

I have blasted -with permission of the utility supplier I stress- within 300mm of a 450mm diameter ductile iron gas main, upon which a seismograph showed a "ppv" of less than 2.7mm/s.

Two years ago, I was contracted to remove some 100+ tons of rock above the Offices at Cheddar Caves in Somerset. The problem was some 30 m above the offices on a vertical Limestone cliff face. The buildings were of flat roofed concrete construction and lying immediately below the rock

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cliffs were highly vulnerable. The caves are based in the centre of a high capacity tourist area, and surrounded by many tea-rooms and small gift shops.

By drilling 12mm stab holes, and charging with specially down sized strips of N.G Based explosive, all holes were initiated using Nonel tunnel series detonators, connected with bunch connectors and the face covered with 'scaffolding fabric' which in turn was covered with material similar to 'football goal mouth material'. The bunch connectors, each containing the maximum of twenty detonator tubes, were protected by masking them inside of specially adapted 500mm long sections of underground plastic pipes, which were secured by tape to the incoming detonator leads.

My M.I.C comments earlier, were adjusted as I deemed safe to use up to ten of each delay, and some 120 separate holes on different levels were drilled for me by a specialist climbing team

The roofs of vulnerable properties were protected by straw bales, which in turn were overlaid with wooden railway sleeps, above which a second 'soft landing pad' of straw bales were laid. Any exposed glass was protected by 25mm wooden ply-board.

When the blast was initiated NO fly rock occurred, and the largest piece of rock was easily collected by hand, and weighed little more than 5kgs or so. The biggest problem became wind blown straw when several bales were broken by the falling rock mass.

Recently, an excavation in Dolomitic Conglomerate rock to a depth of 3m was made adjacent to a glass house less than 600mm from the excavation.

The purpose of this short article is to encourage the Licensed Explosives user to be adventurous, and use our blasting materials with flair, with caution and with expertise for the benefit of clients around us.

*Nigel Taylor M.I.Exp.E, A.M.I.Q, EFEE Delegate United Kingdom*

## **Electronic Blasting at Embretsfoss, Norway**

- a Hydroelectric redevelopment project

Orica Norway was contracted by AF Gruppen to provide expertise and support with the preconstruction blasting for the redevelopment of the 100 year old Embretsfoss hydroelectric power plant. The redevelopment site is located on the Drammen River near a town called Åmot, about 2 hours North West of Oslo.

Hydro plant owners and operators, EB Kraftsproduksjon AS, intend to increase energy production from 218 GWh/yr to 338GWh/yr with this upgrade. The weir itself provides a vertical differential of about sixteen meters; therefore a Kaplan Turbine will be installed (A turbine that looks similar to a ship propeller but installed laying flat)

Before the construction could begin a series of blasts were needed to provide footings for the new infrastructure and also to demolish the old concrete weir. A significant portion of the blasting was

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conducted underwater and within close proximity to existing infrastructure, private homes and an important train line which is an important part the national rail network.

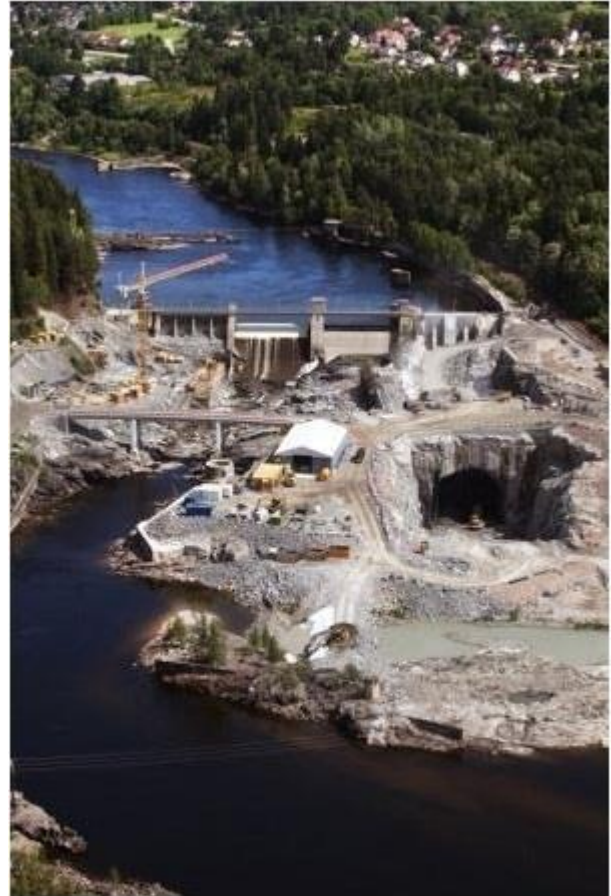
### **Blast details and results**

The most complex of these blasts (shown in figure 2) was the demolition of the old weir (subsequently submerged to about 5m prior to blasting), the concrete support pylon and also an adjacent section of in-situ rock. In total 320 holes were charged with approximately 4000 kg of Dynamite.

In a further complication, the in-situ rock was situated below the newly flooded waterline; therefore about 3m of fill was placed on top to allow for drill access, unfortunately this meant the drills had to penetrate the fill to reach the solid rock.

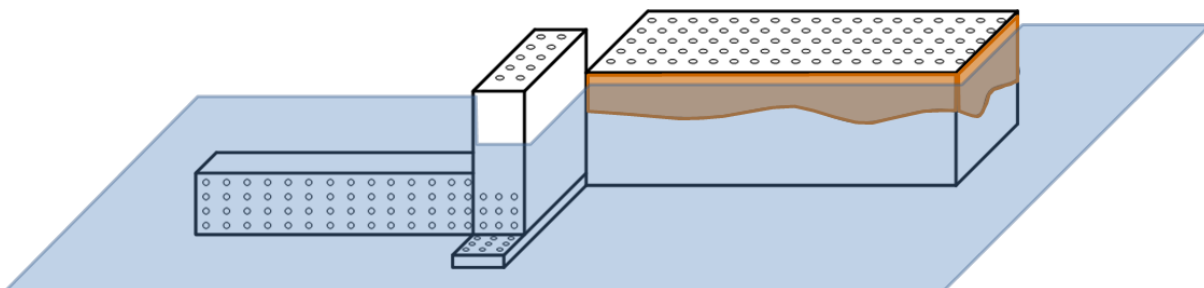
To stabilize the three meters of fill down to the rock, steel collar pipe was inserted directly after drilling. Priming, loading and stemming was then completed with the steel collar pipe in place. This scenario had to be repeated for all 120 holes in the fill.

Unitronic 600 electronic detonators were chosen due to their reliability and ease of operation.



*(Figure 1 - Construction of the weir and the associated infrastructure)*

The system works by using a hand scanner and scanning the unique I.D. barcode found on each detonator where the desired delay is then assigned to each detonator ID. The detonator is clipped to a harness cable that runs the length of the shot, connecting all the holes.



*(Figure 2 – Diagram showing the old weir, pylon and in-situ fill covered blast, a significant portion of the blast was underwater. Not to scale, drill holes included for descriptive purposes. The blast started on the left at the weir and propagated right through the pylon and finished in the in-situ rock. Total delay time about 2000 ms)*

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After scanning is completed the data is downloaded to a testing box allowing communication with all the detonators to ensure that they are responsive and operational. Due to the ecological importance of the Drammen River regarding wild salmon spawning, it was also critical to be sure that placed explosives were fired to completion, electronics provide this feedback prior to blasting.



Another very important feature of these electronic detonators is the inherent accuracy ( $\pm 0.3\text{ms}$ ) providing the ability to guarantee single hole detonation, critical to minimising the effects of vibrations and preventing flyrock. Taking this into consideration the timing plan used a minimum of 10 ms between holes and an average of 40 ms between rows. This allowed enough time for complete hole detonation prior to adjacent hole initiation and as such there was no flyrock generated and a maximum vibration level recorded of 1,3 mm/s (limit 32 mm/s).

All the blasts conducted with the Unitronic electronic detonator system were a success. Line managers from AF Gruppen were very happy with both the ease of use and also the blast results, noting that “it was like digging sugar”.

*Vegard Olsen, EFEE Delegate Norway*

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## In Memoriam

Remý Müller



EFEE has been informed that on January 18 2013, our former Treasurer Remý Müller passed away.

We all enjoyed Remy's company immensely. He was great character and always fun to have around. It was lovely to see his happy, smiling face in the hotel when we arrived at the EFEE meetings, where ever we were in Europe.

He is well remembered for all the work he did for EFEE and was one of those instrumental in EFEE's development into the professional organisation it is today.

Remy was a very generous host and will be sorely missed by many people in the explosives world throughout Europe.

## EFEE Environmental Committee

- Presenting its work on the 7<sup>th</sup> EFEE conference in Moscow, September 2013

The member nation associations in EFEE have contributed to a paper that is approved for the EFEE international conference in Moscow in September 2013. Enhanced mobility of labour and exchange of information and knowledge between the member nations is an important goal of the Federation. Today, the European nations use different vibration standards with regards to vibration measuring methods, determination of threshold values and thereby calculating maximum energy contents for blasting and other construction work. Some countries have their own national standards that they use, whilst others do not have their own, and refer to applicable standards. There is no International Standard on the matter.

A short term incentive plan for the Environmental Committee is to get an overview of the vibration standards used in the European countries, and the fundamental similarities and differences between them. The paper will be a tool and reference document for companies and contractors that want to carry out work in foreign countries, together with builders, engineers and researchers. It will give an understanding of the different methods, situations, laws and regulations between the European countries.

The compilation of the different vibration standards will also be available in the EFEE member's pages.

*Vegard Olsen, EFEE Delegate Norway and chairman of the EFEE environmental committee*

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## Explosive warehouse capable of traceability

- how one producer deals with the new legislations.

The European legislation system for the identification and traceability of explosives for civil uses finally came into force on April 5<sup>th</sup> of 2013 for producers and exporters. As it is described in directive 2008/43/EC and 2012/4/EC, the two next years (until April 5<sup>th</sup> of 2015), the rest of explosives supply chain should adopt the system of traceability.

Systems shall be set in accordance with national legislation correlated with European directives. One of the consequences of this is that after this date it will not be possible to sell/distribute any non-marked explosives on the market or in other words, old inventory of explosives cannot be used without additional marking.

All aspects of the traceability implementation will have deep influence on explosives supply chain. In the future not only the amount of explosives will be important for evidence but as also the identification of every cartridge or detonator needs to be connected to the name of their temporary owner.

One of the goals of the directives, is that it should be possible to track and trace single piece of explosive on its way from producer through distributors to the final customer who use it for blasting and possibly find the place where explosives could “leak” from the regulated supply chain.

### Overview of Main Responsibilities.

- Manufacturer or importer of explosives or assemble detonators shall mark explosives and provide each small separate packaging unit with a unique identification.
- The explosives sector should put in place a system for collecting data in relation to explosives including their unique identification throughout the supply chain and life cycle.
- The data collected including the unique identifications is kept/stored and maintained for a period of 10 years after the delivery or whenever known after the end of the life cycle of the explosive.
- Record of all identifications of the explosives should be kept, together with all pertinent information including the type of explosive, the company or person to the custody of whom it was given.
- Recordings of the location of each explosive while the explosive is in their possession or custody until it is either transferred to another undertaking or used, should be kept.

On national level there will be/is set up a system of penalties for violation of the responsibilities arising from directives.

Obviously from the efficiency point of view it will be necessary to control data collecting and record keeping by electronic means. In the illustration below a scheme is displayed for main data transfer from the Producer to the distributors. Generally, some kind of data transfer needs to be done among all parts of explosives in the supply chain.

Austin European network of blasting service as a part of explosives supply chain will solve the new situation in 2015 as well as any other subject. For making the traceability implementation easier, Austin is preparing special software (SW) to fulfil the legal requirements.

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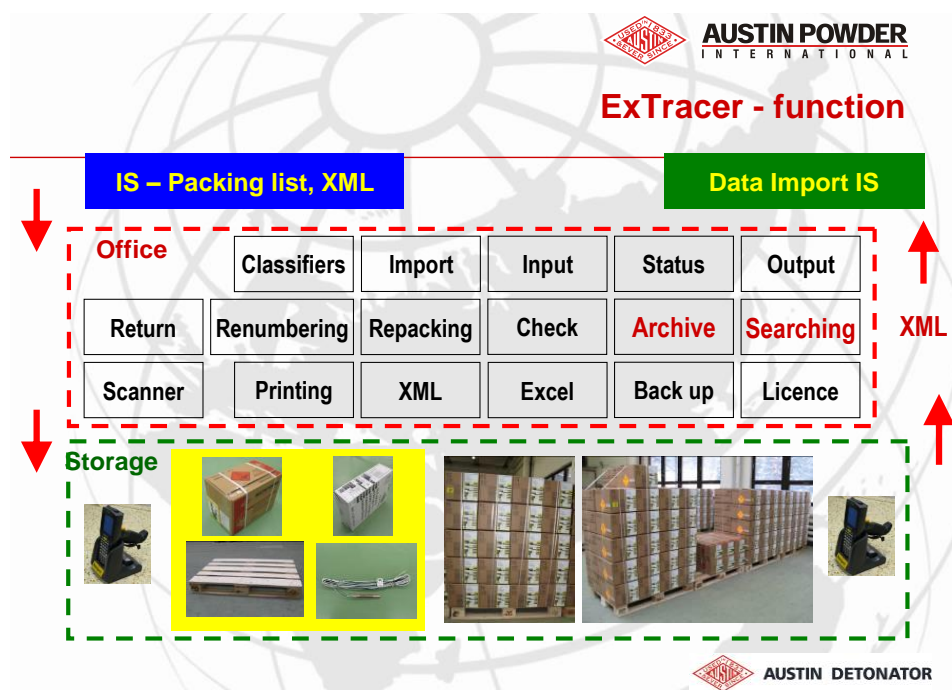
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The SW is working on principle and in accordance with recommendation of FEEM (Federation of European Explosives Manufacturers) described in Guidance Note on European Explosive Code Structure. Part of the solution is also a “mobile” part – data terminal (scanner) with the data terminal SW.

The SW is programmed with respect to the fact that explosive storages are mainly remote, less available possibilities of connection and restriction of device usage which mean it will be able to work both ways, both on- and off-line.

The SW ExTracer used in Austin blasting service companies will consist of “classic” warehouse functions but will be further enriched with a function which helps the user to answer the legal requirements of traceability (marked in red).



All the subjects in the explosives supply chain will be solved for the new requirements including possible differences of national legislations when explosives are transferred internationally. It is also possible that some of the producers will not follow the recommended standards, which will make it more complicated as everybody who serves as supplier to the others needs to provide traceability data as well as explosives (see Main Responsibilities Overview).

In the next two years everybody who deal with explosives needs to find the way how to cope with this legislation, imposed on the whole explosives industry.

*Ivana Jakubková, Austin Detonator*

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## EFEE Shotfire Certification Workshop in, Zandvoort NL.

- report from the workshop.

In a hotel just beside the sandy beaches of Zandvoort ann Zee in the Netherlands, on 24th and 25th of April 2013, thirty one persons from fourteen EFEE member nations met. A workshop was arranged to discuss the continuation work of the ESSEEM project (European Shotfirer Standard Education for Enhanced Mobility).



Nations present: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Netherlands, Norway, Poland, Portugal, Sweden and United Kingdom.

An unpaid working group consisting of competent persons from Norway and Sweden was presenting the work they have been doing the last year. The material from the ESSEEM project has been reviewed and reorganized to get it more suitable for coursing of shotfirers and blast designers.

Six work packages, that will constitute the major part of the certificate course, were presented:

- Geology
- Drilling Machinery
- Explosives
- Initiation systems
- Blasting theory
- Blasting close to nearby structures

From the working group's point of view, the workshop was a success. Well considered questions and remarks were raised, and good discussions around the different topics took place. The major feedbacks from all chapters were:

- Enhance safety focus
- Emphasis on a Code of good practice
- Implement a work package on drill & blast tunnelling

The working group will summarize the feedback and finalize the training course material within August 2013. The presentation material will be finished, however more work needs to be carried out before a full course can be arranged. Exercises and final exams must be made, finding and educating lecturers must take place, organizing the training as well as translation of the material to native languages is necessary. Resources for the forthcoming work are committed by the EFEE Council and the General Meeting to prepare an application for a Leonardo da Vinci project. Viive Tuuna, Estonia, will be the new project leader for the proceeding work on an EFEE Shotfire Certificate training course.

*Vegard Olsen, EFEE delegate from Norway*

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## Presentation of the LdV project leader for EFEE

- Viive Tuuna, Estonia. Executive director in Voglers Eesti OÜ

Vice-Chairman of the council in the Association of Estonian Mining companies. Member of the board in Estonian Mining Association

### Professional qualifications

Studied for higher education in Tallinn School of Economics, Qualified with a diploma for handling and supplying explosive materials and mining operations by Estonian Technical Surveillance Authority, Qualified with a diploma for construction management of mineral construction material open pits and blasting management by Institute of Geology and National Qualification Committee.



Qualified with a diploma for EU Legislation as it Affects Mining and Blasting Law - safety, seismic affects and usage of explosives in military basis, by Tallinn University of Economics  
Certified for organizing the handling of explosive substances.

### Personal Achievements

Member of the board in Estonian Mining Association in 2006-2009  
Chairman of the board in the Estonian Mining Association in 2008-2009  
Establishing the Association of Estonian Mining Companies since 2008  
Vice-Chairman of the council in the Association of Estonian Mining companies since 2008  
Executive director in Voglers Eesti OÜ since 2010  
Member of the board in Estonian Mining Association since 2012

### Additionally

Member of the committee for the reworking and modification of the Estonian regulations for explosives and pyrotechnics in the Technical Surveillance Authority. Speaks Estonian, Swedish, English, Russian, German and Finnish languages. Interested in folklore.

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## New EFEE members

*EFEE likes to welcome the following Members who recently have joined EFEE.*

### *Company Members*

**EGIDE Environnement Sarl, Le Horps, France**

[www.egide-environnement.com](http://www.egide-environnement.com)

EGIDE Environnement is a blasting consultants company founded by former engineers from the technical service of a French explosives manufacturer. EGIDE Environnement operates mainly in France and European countries or in North Africa but sometimes much farther. Our engineers study explosive malfunction (desensitization and misfires) in relation with the type of explosives, the actual measured blast parameters and the rockmass situation. They also perform studies and assessment of vibrations and overpressure of blasts in mines, quarries or civil engineering operations and particularly in very sensitive environments as in the case of blasting operations close to operating nuclear plants.

EGIDE Environnement developed procedures and software to assess flyrocks risks and define the corresponding safety areas. Our engineers design underground or surface blasts to fit the technical and costs objectives, to respect the environment constraints and to achieved a proper detonation of explosives.

EGIDE Environnement organizes high level trainings for blasters covering all domains of blasting techniques. Finally, EGIDE Environnement distributes in France high quality equipments we choose for our own studies (seismographs, 3GSM 3D equipment).

**Tipper Tie Inc., Apex, NC, USA**

[www.tippertie.com](http://www.tippertie.com)

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### *Individual Members*

**Steve Brace**, Steve Brace Consultants Limited , UK

**John M. Faulkner**, Precision Demolition Company Limited, UK

**Robyn C.M. Rushforth**, Precision Demolition Company Limited, UK

**Jean-Philippe Curdy**, Potters, Ballotini Ltd., UK

**Dmitry Z. Abbasov**, HYDROKHUSUSITIKINTI, Azerbaijan

**Pekka Martikainen**, PKKY, Finland

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## Upcoming events

<b>2013</b>	May 31- Jun 7	World Tunnel Congress 2013, <a href="http://www.wtc2013.ch">www.wtc2013.ch</a>	Geneva Switzerland
	Aug. 11-15	23 <sup>rd</sup> World Mining Conference & Expo, <a href="http://www.wmc-expo2013.org">www.wmc-expo2013.org</a>	Montreal Canada
	Sept.15-17	The 7 <sup>th</sup> EFEE World Conference on Explosives and Blasting <a href="http://www.EFEE.eu/">http://www.EFEE.eu/</a>	Moscow, RUSSIA
<b>2014</b>	Feb. 9-12	ISEE's 40th Annual Conference on Explosives & Blasting Technique <a href="http://www.ISEE.org">www.ISEE.org</a>	Denver, Colorado, USA
	March 4-8	CONEXPO-CONAGG <a href="http://www.conexpoconagg.com">www.conexpoconagg.com</a>	Las Vegas, Nevada, USA
	May 9-15	World Tunnel Congress 2014, <a href="http://www.wtc2014.com.br">www.wtc2014.com.br</a>	Iguassu Falls, Brazil

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