



January 2016

The Catalyst

JOIFF



Some Industrial incidents that took place during the final quarter of 2015

JOIFF Shared Learning

Shared Learning is one of the 3 key pillars of JOIFF. Details of the industrial incidents listed on this page which are only a small number of the actual incidents reported during the past 3 months have been circulated through the JOIFF Shared Learning network to the nominees of all JOIFF member organisations.

Message from the JOIFF Chairman



Dear JOIFF members and guests,

2016 will be a very busy, exciting and productive year for JOIFF and its members. In association with International Safety Training College, Malta, a JOIFF accredited training organization, we will be holding the first JOIFF international conference in Malta this year in cooperation with several of our other member organizations. This is in response

Continued overleaf...



considers rebuilding facility damaged by pipeline fire, explosion 🚒 Nigeria - Thousands evacuated as pipeline erupts close to army barrack 🚒 Mexico - Eight Injured in Pemex Tula Refinery Fire 🚒 Azerbaijan - 32 Azeri workers reported killed in Caspian Oil Platform Fire 🚒 Azerbaijan - Offshore Platform Collapses 🚒 US - Early warning allows workers to escape serious injury after gas processing plant explosion 🚒 Mexico - Pemex, One dead, seven injured after illegal pipeline tap 🚒 China - Explosion at Guangzhou oil refinery 🚒 Nigeria - 100+ estimated deaths from gas depot explosion 🚒 Norway - One Dead, Two Injured After Wave Hits North Sea Drilling Rig COSL Innovator 🚒 Azerbaijan - Authorities Continue to Battle Guneshli Rig Fire 🚒 🚒



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🚒 US - Slug Catcher Mtce, Explosion Leaves 3 Workers Dead & 2 Seriously Injured 🚒 Singapore - One dead, seven injured after explosions at Jurong factory 🚒 US - Lewis Energy



🚒 Azerbaijan - 32 Azeri workers reported killed in Caspian Oil Platform Fire 🚒 Azerbaijan - Offshore Platform Collapses 🚒 US - Early warning allows workers to escape serious injury after gas



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to the constant requests we receive from both members and non-members for help in developing holistic response capabilities, and for guidance, justification and rationale for their organizational decision making processes. Our vision is to put together a conference that provides deep technical expertise combined with clear, holistic strategic organizational management to the industrial response industry through the lens of Fire and Explosion Hazard Management Plans/Policy (FEHMP). If you do not know what that is, that is justification enough to attend. If you do know, you will understand how critical this approach is. We expect this conference to provide very practical information, validation, and professional development opportunities for attendees, as well as excellent networking opportunities. And as always, JOIFF as a non-profit organization, is seeking to meet its members' needs. Look for more details in the VERY near future.

As you all know, the risk profile for High Hazard Industry is in constant change. New facilities are beginning to operate in some of the most challenging environments in the world. The scope and scale of facilities is growing larger all the time. Existing organizations are undergoing operational modifications, organizational revisions and re-structuring efforts, cost challenges, and changing expectations, all on a global scale. A few things haven't changed however; we continue to have fire and explosion incidents with catastrophic, or potentially catastrophic results, and the industrial response professionals that JOIFF represent continue to stand firm in their commitment to insure we are able to respond effectively to those incidents.

This requires constant vigilance, if we lose focus, we lose our edge. 2015 was an excellent year for JOIFF in its efforts to provide clear and objective information and expertise, and influence strategic and tactical thinking regarding industrial response on behalf of our members and industry. 2016 will be an even more productive year for JOIFF as we continue to participate in many committees and development programs, drive competence through training, and raise our level and quality and substance.

Thank you for making 2015 an excellent year for JOIFF. We look forward to partnering with you to make 2016 even better.

With Highest Regards,

Randal S. Fletcher (Randy)

JOIFF Chairman
BP Global Response Advisor - *Intelligence, Security,
and Crisis Management*
E mail: randy.fletcher@bp.com

About JOIFF

Membership of JOIFF, the International Organisation for Industrial Hazard Management is open to any Organisation which is a high hazard industry and/or has nominated personnel as emergency responders/hazard management team members who provide cover to industrial/commercial organisations. Organisations which do not fully comply with these requirements are welcome to apply for Corporate Membership of JOIFF.

JOIFF's purpose is to prevent and/or mitigate hazardous incidents in Industry through its 3 pillars:

- Shared Learning – improving risk awareness amongst our members
- Technical Advisory Group – raising quality of safety standards in the working environment of High Hazard Industry and
- Accredited Training – enhancing operational preparedness in emergency response and crisis management.

JOIFF welcomes enquiries for Membership - contact the JOIFF Secretariat.

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Address as secretariat.*

About The Catalyst

The Catalyst is the official newsletter of JOIFF, the International Organisation for Industrial Hazard Management and is published quarterly - in January, April, July and October each year. Our policy is to bring you high quality articles on relevant technical issues and current and new developments and other happenings in the area of Emergency Services Management. In addition to The Catalyst, information relevant to Emergency Services Management is posted on the JOIFF website.

Readers are encouraged to circulate The Catalyst amongst their colleagues and interested parties. The Editors welcome any comments, you can email comments to fulcrum.consult@iol.ie

Disclaimer: The views and opinions expressed in The Catalyst are not necessarily the views of JOIFF or of its Secretariat, Fulcrum Consultants, neither of which are in any way responsible or legally liable for any statements, reports or technical anomalies made by authors in The Catalyst.

Are you prepared for the impact of Natural Events ?

Natural events such as storms, flooding and destructive Wildfires are regularly experienced in many parts of the World. Are you prepared for the effects of such events if your town/home is hit ? Do you store items such as flashlights, non-perishable foods and water ? Responding to such emergencies starts with you and your family. Local, and government assistance is not likely to be available for some time so it is important that families are prepared to provide for themselves at least for a short time after a devastating Natural event hits them.



New Members

During October, November and December 2015, the JOIFF Board of Directors were pleased to welcome the following new Members:

Full Member:

BAE Systems, Warton, Lancashire, England represented by Ian Webb, Senior Airfield Fire Officer, Steve Glennon, Watch Manager and Tony Nickson, Watch Manager. BAE Systems Military Air and Information's major testing facility and commercial offices are based in BAE Systems, Warton and this is the headquarters of and home to the central assembly facility for the Eurofighter Typhoon. A full time emergency response team protects the facility.

Marathon Galveston Bay Refinery, Texas City, U.S.A represented by Mark Garvin, Fire Chief, Wayne Morse, Emergency Response Training Coordinator and Gerald Prouty, Assistant Fire Chief. Marathon Galveston Bay Refinery is a 451,000 barrels per day refinery located on the U.S. Gulf Coast. The refinery is a provider of a variety of fuels, chemical feed stocks and other refined petroleum products. The emergency response team comprises full and part time members.

Merseyside Fire & Rescue Service Training & Development Academy, Croxteth, Liverpool, England represented by Suzanne Waite, Commercial Training Manager, Ged Sheridan, Training & Development

Manager and Paul MacGugan, Commercial Training Instructor. Merseyside FRS Training & Development Academy delivers industrial firefighting and various related emergency response topics to emergency response/fire teams in Industry.

SpillConsult Ltd., Southampton, England represented by Stuart Gair, Director, Rob Self, Managing Director and Peter Crook, Trainer/Consultant. SpillConsult delivers a range of services, mainly to the oil and gas Industry, in relation to emergency response and incident management. They deliver courses and exercises focussing on the command co-ordination and management of emergency incidents of all sizes and to all levels of command/management and have provided this service to various oil companies at multiple venues globally

Victrex Manufacturing, Thornton-Cleveleys, Lancashire, England represented by Robert Pipe, Training Manager, Damien Johnson, Engineering Manager and Ron Perry, SHE Manager. Victrex is an innovative world leader in high performance aromatic polyketone solution. A full time emergency response team provides 24 hour coverage to the plant.

We look forward to the involvement of our new and existing Members in the continuing development of JOIFF.

BENCHMARKING: A VERSATILE TOOL FOR REVIEWING RISK MANAGEMENT PRACTICES

By Jeanne van Buren

Benchmarking was originally designed for comparing processes and performance metrics to industry good practices from other companies. In practice benchmarking often addresses financially driven metrics. The same tool can also be used to review management of risks using the seven elements of the Safety Management System (SMS) as listed in the Seveso Directive listed below:

1. Organisation and personnel
2. Hazard identification and evaluation
3. Operational control
4. Management of change
5. Planning for emergencies
6. Monitoring performance
7. Audit and review

Benchmarking is also a very effective tool to perform the "audit and review" requirements of element 7 of the SMS.

It should be emphasised that the benchmarking activity is not a one size fits all activity and the goal is not limited to finding gaps. The risk management benchmarking also looks specifically for good performance as they can be

used as an example for sections of risk management setup that require improvements. Therefore the good scores should be reported with the same detail as other findings. For the purpose of this article three examples are given to illustrate the almost unlimited options to execute risk management benchmarking.

Example 1

Operators may like to review their SMS for controlling incidents with hazardous materials and mitigating the effects against general good practices. If this is the case, all seven SMS elements must be addressed in the benchmarking process to obtain the required information. The numbers of topics per SMS-element depends on the scope of the risks addressed in the benchmarking activity. It is therefore advised to define a specific cluster of similar risks in order to get a manageable amount of data.

In this example the cluster is restricted to major incidents with hazardous materials. It is ill advised to address minor and major incidents is the same benchmarking activity as it can affect the findings.



Even if the benchmarking is limited to major incident, 15 or more topics can be relevant for reviewing each of the seven elements for one specific risk. Consequently a large amount of data is generated which will make the follow-up of findings difficult to manage. This can be due to sheer amount of information and/or the time it will take to follow-up on the findings that require further actions. Therefore the Pareto principle, also known as the 80–20 rule, which states that, that for many events, roughly 80% of the effects come from 20% of the causes, is used when designing the broad scope benchmarking addressed in this example. After a first scan of the risks it is possible to setup the benchmarking exercise for the 20% of the activities relevant for 80% of the specific risks which can cause the major incidents in this benchmarking exercise.

Example 2

Other operators may like to perform an intercompany benchmarking activity to identify gaps in their Emergency Response Preparedness (ERP). Depending on the way the operator has organised the ERP this benchmarking activity may be limited to the SMS elements

- organisation and personnel;
- hazard identification and evaluation and
- planning for emergencies.

Each of these elements requires to be scored individually. Because there are only three elements involved, the 80-20 “rule” can now be abandoned. Instead each topic per element is allocated a designated weighing factor for the contribution it has on the element. This can be setup in an Excel-sheet and does not require specific software. The process starts with a review of the reference(s) used by each site for the ERP setup. The company’s references are also reviewed against good ERP practices. These findings are also incorporated in the benchmarking report.

Example 3

Benchmarking can be used for less obvious purposes like assessing cross company communication during an incident for global operating companies. The organisation may be interested to learn if other sites and higher

management is promptly informed about an incident at one of the sites using the designated channels of communication. The effectiveness of the communication procedures are tested at the same time. It is good to learn if the backup system works when the CEO is on long haul flight. Secondly, other sites may be able to provide assistance in a variety of ways. Clients may for instance like to know the effect of the incident to their business continuity. The affected site may be busy with the incident and therefore unable to continue communication with their clients. This activity can be carried at other locations of the same organisation.

A table-top major incident exercise can be designed to review how internal communications are organised and executed. The references for this activity are the company’s procedures. The table-top exercise should be realistic and offer options to identify improvements for the actual risks and incident response. Taking out one of the most dominant members of staff during a major incident can provide a good insight in the resourcefulness and flexibility of the crisis management team. This exercise setup is a cost effective way to review communication and gaining additional information about other SMS issues at the same time.

The success of the activity is confirmed when involved stakeholders ask if they can do a similar exercise again in the future.

An additional benefit of benchmarking is that the results can be used to substantiate investments for required improvements.

Editor’s note: Doctor Jeanne van Buren is a senior consultant with Marsh Risk Consulting, based in Rotterdam and consults on specific risks related to the power, energy and (petro-)chemical industry sectors. This includes identifying potential hazards, evaluating these hazards and quantifying the associated risks and counselling on risk mitigation and control measures. She also provides training courses in Dutch and English.

For more information contact Jeanne van Buren at Jeanne.vanburen@marsh.com tel. +31 10 4060 404



View from the dining room at the Corinthia Hotel, Malta, location for the OIFF International Fire & Explosion Hazard Management Conference. See next page for details.



JOIFF/ ISTC International Fire & Explosion Hazard Management Conference Corinthia Hotel, Malta, November 3rd – 4th 2016



JOIFF is proud to announce the launch of the inaugural JOIFF International Fire & Explosion Hazard Management Conference in association with International Safety Training College (ISTC) Malta, which will take place in Malta at the 5* star Corinthia Hotel on November 3rd & 4th 2016.

The theme of the conference “Fire & Explosion Hazard Management (FEHM) - Are you prepared?” has been devised to provide a wide ranging opportunity for participants to interact with renowned speakers on the varied subjects of the Conference which will include:

- FEHM: -Facility Hazard Assessment · Hazard Management Plans – Risk Reduction Options · Technical Resources Response Philosophies
- FEHM in High Hazard Industry – incidents and scenarios applicable to Municipal, Aviation, Petrochemical, Pharmaceutical, Marine, Storage Tanks, Nuclear, etc. Current and future issues with regard to the use Foam
- Emergency Response, Mutual Aid · Developing a National System of Mutual Aid · Public Private Partnerships etc.
- Major Incidents – Current issues Incident reports etc.
- Training – Qualifications, Competence and Accreditation. · How do you put an organisational package together ?
- Occupational Health and Safety for Emergency Responders. Operational safety and health - in the station - on the incident ground - after the incident - in vehicles · PPE and issues relating to PPE
- New technology - developments in FEHM: ·15 minute sessions by suppliers
- The critical partnership between Industry and Suppliers.

The Venue

The conference will be held at the Corinthia Hotel, St Georges Bay, Malta. This is a beautiful Spa Hotel with excellent conference facilities and everything you would expect from a 5* Spa Hotel. [Click here for their website.](#)

The location of Malta in the very heart of the Mediterranean was selected primarily because of the central location between Europe and North Africa and the Middle East and the ease of travel to Malta for the International Delegates this coupled with the support of the ISTC Malta makes this a perfect location.

Numbers are limited to 200 attendees (Delegates, Sponsors and Speakers) and will be offered and accepted on a “first come first served basis” This also applies to the available Hotel rooms that have been arranged at preferential conference rates. So don't risk missing this event and register early!

You will find further information on the venue, speakers, how to register and secure your place at this prestigious event by visiting <http://www.2016-joiff-fehm-conference.com> or alternatively should you have any further questions or require more information please contact the Event Management team on + 44 (0) 1305 85 82 82

There are also limited Sponsorship, Commercial Presentation, Product Demonstration and Exhibition opportunities. If you are interested in promoting your products to this unique audience then contact Event Director Paul Budgen on + 44 (0) 203 286 2289



Crisis Management & Emergency Response Seminar

JOIFF Member organisation Arc Fire Training Services Ltd., UK, sent us this report.



During 2015 Arc Fire Training Services Ltd. held 2 successful JOIFF accredited seminars on "Crisis Management & Emergency Response" in Dubai, U.A.E. Arc Fire Managing Director Eric Dempsey, used the wide range knowledge and experience he has gained during the 35 plus years that he has been engaged in Crisis/ Hazard Management and Emergency Response to develop the curriculum for this Seminar. The Seminars were run in conjunction with Meirc-Plus Speciality Training, an independent multinational firm with close to 60 years experience in providing training and consulting in the Middle Est region.

The subject matter of the Seminars included the role of a Crisis Management Team which is to analyse the situation and formulate crisis management plan to save the organisation's reputation and standing in the industry. The subjects focussed on detecting the early signs of crisis, identifying the problem areas, working with the organisation's employees to prepare them, encourage them and motivate them to get through the crisis and with a view to looking at what happens to the organisation after the crisis.

In major crises, all levels of an organisation need to be involved in the Crisis Management Team, including the Chief Executive Officer and his/her team, the Board of Directors, Heads of departments, Media Advisors, Human Resource Representatives and all employees. The Team need to work on the various problems and shortcomings which led to crisis at the workplace, gaining an understanding of where things went wrong and how current processes can be improved and made better for the smooth functioning of the organisation. Issues need to be prioritised as those which must be resolved immediately and those that can be dealt with later and they should be ranked as per their effect on the employees as well as on the organisation.

Organisations which have nominated emergency responders often regard these persons as their crisis management team. Whilst it is important to give priority to maintaining the competence of emergency response personnel within the organisation's emergency response plan as their priorities in an incident will be save life, mitigate damage to property and the environment and reduce loss, in major crises, there are other issues that

must be dealt with such as business continuity, legal and engineering issues, inter-agency liaisons, dealing with the media, casualty management and dealing with the families of casualties, welfare and many more.

Skills in analytical and dynamic risk assessment are essential skill when dealing with crises as the subsequent downstream effect of decisions taken or not taken at this level can paralyse an entire system.



Eric Dempsey Managing Director Arc Fire Training Services Ltd.

The Seminars followed a full syllabus of crisis management and emergency response planning implementation and training, crisis media management, case studies etc. and included daily syndicate exercises based on the needs of the particular audience attending.

Delegates at the Seminars were from the a wide variety of Industrial, Petro-Chemical Commercial and UAE Tourism activities and the content of the Seminar was structured to meet the needs of the sectors represented.

For further information contact Eric Dempsey G.I.Fire.E, Arc Fire Training Services Ltd. Tel: +44 7931 566 295, email: arcfiretraining@ntlworld.com

The Catalyst

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About the JOIFF Diploma

The JOIFF Diploma is a competency programme for full time and part time personnel who respond to emergencies. It covers necessary key skills, learnt and demonstrated by the student in practical training and exercises that allows them to deal competently with site emergencies.

The JOIFF Technician programme is to allow the emergency responder to enhance their knowledge and skills having already demonstrated their competence in Key Skills.

Both programmes are drawn from National and International Standards and are computer based. Each student is issued with an individual electronic portfolio which sets out a structured training path and in which each student's training and progress is tracked. An

important aspect of the programmes are that they are primarily carried out on the site within the area where the student is based using the facilities and equipment that is available to them.

The programme is assessed locally and remotely verified.

All students who successfully complete the JOIFF Diploma and JOIFF Technician programmes receive JOIFF accredited certificates. Those successfully completing the JOIFF Diploma programme can use the post nominals Dip.JOIFF and those successfully completing the JOIFF Technician programme can use the post nominals Tech.JOIFF after their names.

The recipients of the JOIFF diploma are mentioned in the Catalyst in the JOIFF Roll of Honour.

The JOIFF Roll of Honour

During October to December 2015, the following persons were awarded the JOIFF Diploma:

From BP Exploration Operating Company Ltd.
Sullom Voe, Shetland, Scotland



Neil Hay Dip.JOIFF

Neil has worked at SVT since 2013 as an ER Technician, married to Maree he enjoys walking, shooter and crofting in his spare time



Jeff Wood Dip.JOIFF

Jeff Wood has worked as an Emergency Response Technician in the BP Sullom Voe Oil Terminal in the Shetland Isles for 27 years. Jeff is married to Diane and they have 3 boys. Jeff is a keen cyclist and often cycles 10 miles to work when weather permits.

The JOIFF Roll of Honour

From Queensland Fire and Emergency Services (QFRS)
Tactical Training Unit (TTU) Specialist Training Command, Australia



Inspector Graeme Hall Dip.JOIFF

Graeme is manager, of the TTU, Specialist Training Command, QFRS. He has been a firefighter for 26 years and is a qualified senior instructor in Rapid Damage Assessment, Urban Search and Rescue, Confined Space and Trench Rescue, AIIMS IMS, AIIMS IMS Planning Officer, Live Fire CFBT and Petro Chem and Fire Safety Advisor.



Paul Kater Dip.JOIFF

Paul is currently a Station Officer and Staff Development Officer with the TTU, Specialist Training Command, QFRS. He has a Diploma of Fire and Rescue Operations and Diploma of Public Safety (Firefighting Management), Qualified Trainer/ Assessor, as well as being a qualified Carpenter and registered Builder.

Also successfully qualified in the JOIFF Diploma are **Shane Hanschen Dip.JOIFF** and **Sven Dega Dip.JOIFF**, both of whom are Instructors with the TTU, Specialist Training Command, QFRS.

Receiving JOIFF Technician Award from JOIFF Chairman Randy Fletcher



Mark Samuels Tech.JOIFF



Daryl Bean Tech.JOIFF



JOIFF Roll of Honour, continued

Introducing Mark Samuels, Tech.JOIFF

In November 2015, Mark Samuels, Essex County Fire and Rescue Service (ECFRS) having successfully completed the JOIFF Technician Programme was awarded the Post Nominal Tech.JOIFF during the 2015 JOIFF AGM. During his 26 years with ECFRS, Mark has progressed to his current role as the Divisional Officer (Special Operations) which requires him to be the outward face of the organisation to the other Emergency Services and the military. He has acquired many specialist skills along the way, such as Fire Investigation, Hazardous Materials and Environmental protection, Marine and Port Operations, Fire Prevention and Inter-agency Liaison. In addition to these he has also specialised in petrochemical firefighting.

In undertaking this specialism Mark has formed and chairs a county-wide mutual aid. This ensures conformity of resources and equipment between COMAH (Seveso) petrochemical risk sites. The current Essex Mutual Aid enables two specially designed monitors and a 22,500 LPM mobile fire pump to be mobilised to a stricken petrochemical site on notification. It also enables, in addition to the firefighting foam concentrate already held on a site, a further 100,000 litres to be mobilised to that site from other sites within the county within 90 minutes.

Mark has attended many large petrochemical incidents including Buncefield, where he was an essential member of the firefighting strategy team. He also attended the Petroplus Refinery Coryton, Essex isomerisation fire as the Incident Commander as well as the Tilbury Power Station Fire as the Foam Officer.

As a result of these incidents and identifying gaps in the firefighting capability, Mark designed and oversaw the build of bespoke Bulk Foam Modules for ECFRS. These modules allow a range of proportioning methods to enable foam solution flows from 100 litres per minute up to 36,000 litres per minute.

Mark is a passionate supporter of JOIFF and has presented papers at many JOIFF meetings including meetings in the UK, Ireland and South Africa. Mark also represented the UK Chief Fire Officers Association (CFOA) at the Buncefield Standards Task Group (WG6), the Energy Institute IP19 2011 update and CAP-EPLG Buncefield recommendations 23/24, where he is currently progressing a National Mutual Aid Framework.

When Mark was informed that he had been successful in completing the JOIFF Technician, he said "I really enjoyed studying for the Technician programme, whilst it covers a number of the Fire and Rescue Service day to day activities, it expanded deep into the refinery processes which vastly broadened my understanding and knowledge in this area".

Introducing Daryl Bean, Tech.JOIFF

Daryl has worked as an Instructor at the International Fire Training Centre, Darlington, UK since January 2001 and was promoted to Offshore/Industrial Coordinator-Curriculum Manager in April 2013. He develops, delivers and manages the delivery of competence based training to various industries in the onshore, petrochemical, offshore, maritime, aviation, nuclear and fire prevention environments.

Daryl entered the Fire Service with the United States Department of Defence (DoD) serving as a fire-fighter with the US Navy in 1981. During this period he attained progressive Fire-fighter and Fire Officer qualifications as well as qualifying as an Mobile Intensive Care Unit Paramedic. He completed his association with the US DoD at the United States Naval Air Station, Bermuda in 1995 and served as Shift Officer at the Bermuda International Airport, and subsequently Senior Airport Fire Officer.

On completing the JOIFF Technician Programme Daryl said "The JOIFF Technician Programme proved to be quite valuable in verifying and improving knowledge and competence for the industrial fire officer. The design of the modules ensures detailed study which will create new learning as well the ability to directly apply it to one's place of work. This is a great strength of the programme as the industrial fire officer worldwide can be assured of gaining competence which can be transitioned directly into improved service. For the career-minded officer the programme is motivational and genuinely worthwhile. From a training perspective completing the programme will increase the ability to deliver more realistic simulations, of greater depth in information and tasking to further test the delegates, highlight the specific needs which can be incorporated into theoretical and practical training and improve the communication between trainers and trainees in regards to the "language" of industrial fire protection."

The Catalyst and the Directors of JOIFF
extend congratulations to all those mentioned here.



LNG Incident Response

JOIFF Member organisation Falck BV – Falck Fire Academy, Netherlands sent us this report.

A number of European ports recently worked together to map existing knowledge on emergency and incident responses and develop new guidelines regarding LNG incident response along the Rhine Corridor. The results of this LNG emergency and incident response study have been collated and published to benefit other ports¹. The final report is a big step forward in LNG safety in Europe.

Some of the recommendations that have resulted from the report include the following:

- Make an inventory of LNG hotspots per region, based on the necessary contours.
- Prepare detailed local emergency plans, taking into account the local infrastructure.
- Share skills and knowledge with public and private parties.
- Come prepared with appropriate portable methane gas and oxygen measuring equipment and sufficient foam and dry powder supplies.

The document is a source of information about the current safety techniques available to minimise the impact of LNG incidents. It informs emergency response organisations how to prepare themselves to manage credible LNG incidents on inland navigation along the Rhine-Main-Danube corridor. The report describes four such incidents in more detail. Emergency response plans for these incidents - with specific emergency response strategy - are also included.

LNG Masterplan

The study is co-financed by the EU's TEN-T Programme and is part of the 'LNG Masterplan for Rhine-Main-Danube' project. The LNG Masterplan aims to create a platform for the cooperation of authorities and industry stakeholders with the purpose of facilitating the creation of a harmonised European regulatory framework for LNG as a fuel and cargo in inland navigation, and promoting the introduction of LNG as a fuel and cargo for inland shipping.

LNG is considered to be an important opportunity for the inland waterway transport sector, however it is not a remedy for every structural and economic problem. All efforts of the LNG Masterplan are based on a realistic and integrated European approach. One of the visions of the plan is that the inland ports on the Rhine-Main-Danube axis will become key distribution centres for LNG. Inland terminals will function as satellites to the interior, enabling LNG to reach other pioneer markets, such as the public (transport) sector and the heavy duty transport industry (buses, waste collection trucks, city logistics), as well as the energy industry.

A study to increase awareness

The aim of the study was to explore and gather existing knowledge regarding the transportation of LNG and the use of LNG-powered vessels on the waterways, as well as to determine possible LNG leak scenarios that an incident response team could face. The target group is emergency response organisations in the inland waterway transport sector, such as the fire brigade, police, ambulance and harbour /river authorities. The information gained as a result of the study helps these organisations to deal with situations that have escalated outside the capability of initial responders, such as the ship's crew and operators. The report is used to increase awareness in handling such incidents, make recommendations concerning the resources required for a response, and provide guidelines for the training required for incident response.



Controlled LNG incident response training at the LNG-specialised Falck Fire Academy location.

Executing the study

A consortium between Falck Fire Academy and the Rotterdam Unified Fire Department was chosen in mid-2014 to execute the study, due to their specific knowledge of LNG technology and incident preparedness in inland navigation. The assignment was set by the Rhine Port Group, which consists of the Port of Rotterdam Authority, the Port of Antwerp, the Port of Mannheim, the Port of Strasbourg and the Port of Switzerland.

Falck Fire Academy provides safety training and consultancy for both high risk and low risk industrial companies. Each year, over 12.000 members of industrial or public fire brigades are trained by Falck Fire Academy at training centres in the Netherlands. The company also has an emergency response team, which assists with incidents on board ships.

From study to report

The report document consists of two main parts. The first part presents an overview of existing knowledge of LNG



incident response, training and education along the Rhine corridor, including:

- Overview of existing knowledge and existing guidelines for incident response in small scale LNG along the Rhine corridor for inland navigation.
- Overview of existing emission and escalation scenarios for LNG as a fuel and LNG as a cargo in small scale LNG along the Rhine corridor for inland navigation.
- Emergency and incident response scenarios in small scale LNG along the Rhine corridor for inland navigation. Scenarios include all incidents that could occur with a LNG-fuelled vessel and a vessel that has LNG as cargo.
- Incidents and emergencies are presented in a matrix, displaying the types of LNG-fuelled vessels and vessels sailing with LNG as cargo.
- Identification of gaps in the response equipment necessary for emergency response in small scale LNG along the Rhine corridor for inland navigation.

The second part of the document consists of the following:

- Incident preparedness guidelines for small scale LNG in inland navigation.
- Guidelines for education and training on incident response applied to small scale LNG in inland navigation. Where training is necessary, these guidelines describe the required training elements for each target group.

Conclusion

The study has shown that much knowledge and experience is already available within the EU concerning high levels of safety when transporting dangerous goods on inland waterways. It has also shown that local emergency services and port authorities are professional organisations working hard to prevent any kind of incident with dangerous goods on European waterways.

Nevertheless, the recent introduction of the international carriage of LNG on European inland waterways has introduced a new phenomenon for emergency services and port authorities. It should be remembered that LNG is a cryogenic gas, stored in its liquid phase at a temperature of -162°C, reducing the volume by about 600 times compared to the size of its original gas volume. The initial evaporation rate of released LNG on water is high: approximately 15 m³/m²/min. Released LNG behaves as a gas that is heavier than air, bringing with it the risk of asphyxiation.

Due to its nature, LNG requires specific handling procedures as well as a different approach to emergency and incident response.

What's next?

Falck Fire Academy recently started with development of new industry best practice covering LNG safety distances by participating in Working Group of The Society for Gas and Marine Fuel (SGMF).

SGMF is a London based new non-governmental organisation established to promote safety and industry best practice in the use of gas as a marine fuel. Within the past two years SGMF has gained more than 100 members from all over the world.

Falck Fire Academy will take seat as Specialist Incident management. Other working group members include ABS Consult, BP Shipping, DNV GL, Shell et al. Final publication is scheduled for late 2016.

Reference

'LNG Masterplan for Rhine-Main-Danube - D 2.4.4 Emergency and incident response study', April 2015'
http://www.lngmasterplan.eu/images/gallery/Deliverables/D_244_Emergency_and_incident_response_study_v1.0_FINAL_2015-4-15.pdf

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MSA Portable Gas Detection - Sensor Drift

Portable gas detectors are designed to detect the presence of various combustible, flammable and toxic gases, and oxygen (O₂) levels within an area. When dangerous concentrations of gases or vapours are detected, portable gas detectors transmit audible and visual warning signals to warn workers that a leak is occurring, giving them the opportunity to safely exit the area. Unfortunately, detectors are sometimes subject to a gradual degradation of the sensor's output which can make readings unreliable—better known as “drift.”

Sensor drift

All electrochemical sensors will eventually lose sensitivity

over time with exposure to work conditions. Calibration is used to compensate for the loss of sensitivity and adjust the readings to the new sensitivity output level.

Drift is the amount that sensor output changes over time. All sensors experience drift. Once the sensitivity becomes too low, it becomes more difficult to assess exact differences in gas concentrations. Sensors typically have a fixed sensitivity limit assigned by the detector; once that limit is reached, they will not pass calibration.

Many environmental conditions can affect sensor readings and can often look like sensitivity drift, including gas



interference and cross-sensitivity. For example, in O₂ sensors, sensitivity can be affected by transient changes in pressure. The sensors will equalize themselves but if the change in pressure is sufficiently large, it can cause a change in the display reading. O₂ sensors can also be affected by changes in inert background gas other than the nitrogen (N₂) that they are calibrated in. Smaller molecules like helium and larger molecules like argon can change the flow rate of O₂ molecules into the sensors.



Sensor Calibration

Other sensors, like carbon monoxide (CO), can experience cross-sensitivity which is a reaction to gases other than the target gas. For example, volatile organic compounds (VOCs) and alcohols can affect CO readings. Most CO sensors, therefore, have internal and/or external filters to reduce the exposure of the sensor to VOCs. Enough exposure will saturate this filter. It is not uncommon for a saturated filter to desorb over time into the sensor and look like sensor drift. In addition, most CO sensors are cross sensitive to Hydrogen (H₂) which is small enough to go through most filters. MSA's H₂ Resistant CO sensor has ten times the resistance to H₂ (<5% sensitivity) compared to other sensors on the market.

MSA XCell Sensors have an expected life of more than four years which translates to fewer sensor replacements

during the instrument's life and lower costs. MSA's gas detection instruments are designed to notify users as sensors reach end-of-life which ensures reliability of the instruments. In addition, MSA's advanced application-specific integrated circuit (ASIC) technology gives the XCell Sensors superior accuracy and provides higher performance than other sensors on the market.

The Importance of Calibration and Bump Testing

It is vital to worker safety that portable gas detectors are maintained and calibrated properly. All sensors can eventually expire due to loss of sensitivity, slowed response time or both. Because of this, performance of a daily bump test is best practice because it is the only method by which the entire system: instrument, sensors, flow path, power source, alarms, and all electronics can be checked to ensure that it is functioning properly. That's why most manufacturer instructions recommend a daily bump test each day, prior to operation of gas detectors.

What is a Bump Test?

Bump tests are meant to verify that the sensors and the alarms function properly and that the sensors respond within acceptable margins. Gases or vapors must be able to reach the sensor. Bump tests confirm that gas flow paths to the sensor on the detector are clear and the sensor(s) are functioning from a qualitative standpoint. Bump testing will alert users if a gas inlet has become blocked, even if the blockage is not visible. The bump test, however, is not meant to adjust the device's accuracy.

What is Calibration?

A calibration check is what is used to test and verify the accuracy of the instrument. A calibration check is performed by exposing the monitor to a certified concentration of gas for a particular time to verify that it provides an accurate reading. Calibration is an adjustment of the sensor(s) output to match the known traceable calibration gas concentration. Full calibration ensures maximum accuracy of the instrument. Environmental conditions such as over-exposures, introduction of poisons, heavy impacts, or other extreme environmental changes can cause sensors to become less accurate.

Calibration allows the instrument to manage these changes in sensitivity.





8th INTERNATIONAL CONFERENCE FOR FIRE BRIGADES IN THE HIGH HAZARD INDUSTRY



More than 200 delegates from 17 Countries attended the 8th International Conference for Fire Brigades in the High Hazard Industry which took place in Budapest on 10th - 11th November 2015, organised by JOIFF Member, FER Tűzoltóság és Szolgáltató Kft., FER Fire Department, MOL, Százhalombatta, Hungary. The delegates represented a wide range of sectors dealing with emergency response - disaster management, professional and industrial fire brigades, armed forces, safety managers, manufacturers and suppliers of fire protection equipment and extinguishing agents etc.

foams for storage tank application, advancing technology in foam manufacturing etc.



One of the demonstrations



Dr László Bérczi presented the opening address,

The 2-day Conference was chaired on Day 1 by Attila Csala, Head of Sustainable Development & Health, Safety and Environment (SD &HSE) MOL Plc. and on Day 2 by Donna Darzentas, Senior Vice President MOL Group SD & HSE.

Dr. László Bérczi, Brigadier General, National Inspector General Fire Service gave the opening presentation which dealt with the structure of Hungarian fire protection organisations.

A wide variety of subjects relevant to High Hazard Industry were covered during the Conference including a report of an incident involving an LPG Emergency Transloading unit presented by Árpád Mórocz, FER Fire Brigade Ltd., fighting post-earthquake tank fires, vapour/ fire suppression for LNG spill containment, integrated IT Technology for HazMat Incidents decision support, current global legislation regarding PFC's and impact on industrial fire fighting, and a number of subjects related to firefighting foam - issues and concerns on the use of new

An important part of the International Conference for Fire Brigades in the High Hazard Industry is the demonstrations, and on this occasion the presentations included extinguishment of a gas well fire with the deployment of Vehicle Mounted Jet Engines and Hytrans Fire System equipment.

A major feature of the International Conference for Fire Brigades in High Hazard Industry organised by FER Fire Department is the welcome and hospitality extended by the hosts to all delegates and at this 8th Conference this welcome and hospitality was repeated and included dinner and sightseeing on the River Danube.

This bi-annual Conference is a very important event for Industrial emergency response. The 9th International Conference is due to take place in 2017.



FIRE HYDRANTS

A fire hydrant is a measure of active fire protection and a source of water that is provided in most urban, suburban and rural areas to provide a water service to enable firefighters to tap into the municipal water supply to assist in extinguishing a fire.

The concept of “fire plugs” dates to at least the 17th century. This was a time when firefighters responding to a call would dig down to the wooden water mains and hastily bore a hole to secure water to fight fires. The water would fill the hole, creating a temporary well, and be transported from the well to the fire by bucket brigades or, later, by hand-pumped fire engines. The holes were then plugged with stoppers, normally redwood, which over time came to be known as “fire plugs”. The location of the plug would often be recorded or marked so that it could be reused in future fires. This is the source of the colloquial term “fire plug” still used for fire hydrants today.

After the Great Fire of London in 1666, the city installed

water mains with holes drilled at intervals, equipped with risers, allowing an access point to the wooden fire plugs from street level.



The invention of a post- or pillar-type fire hydrant is generally credited to Frederick Graff, Sr., chief engineer of the Philadelphia Water Works around the year 1801. It had a combination hose/faucet outlet and was of “wet barrel” design with the valve in the top. It is said that Graff held the first patent for a fire hydrant, but this cannot be verified, because,

ironically, the patent office in Washington D.C. USA, caught fire in 1836 destroying many patent records from that period in the process.

Taken from <http://kickassfacts.com>

Diary of Events 2016

January

17th – 19th **Intersec**, Dubai, UAE

March

1st – 3rd **SECUREX** West Africa, Lagos, ,Nigeria

June

21st – 23rd **Firex International**, London, England

November

2nd— 8th **JOIFF Inaugural Fire and Explosion Hazard Management Conference**, Malta

8th– 10th **SECUREXPO**, East Africa, Lagos, Nigeria

Please contact the JOIFF Secretariat with details of any event that you think that JOIFF Members might be interested in attending.

Note: The Catalyst is not responsible for the accuracy of dates and / or venues announced.
This diary is based on information given to the Editors and is published in good faith.



JOIFF TRAINING NOTES

"TRAIN AS IF YOUR LIFE DEPENDS ON IT, BECAUSE SOMEDAY, IT MIGHT!"

JOIFF accredited training is within a Competency Based Training framework and involves course content, instruction and the facilities of the training provider/training establishment. All students who successfully complete a JOIFF accredited course/programme are issued with a JOIFF Certificate of Competence which has its own unique number.

"If you think that you can do it, that is confidence. If you can do it well on an on-going basis, that is competence!"

JOIFF Accredited Course	Dates	Venue / Organiser
Site Specific Courses Fire & Safety Foundation 4 x 1 Day Modules Incident Controller 2 or 4 Days SCBA Initial & Refresher Confined Space Entry Confined Space Train the Trainer (with SCBA for High Risk)	As required	On your own site. Subject to Risk Assessment & Facilities For further information contact arcfiretraining@ntlworld.com
Site Incident Controller Training (2 Days)	16 th – 17 th February 17 th – 18 th May	Eddystone Consulting opportunities@eddistone.com Tel: +44 1433 659 800
Site Main Controller (3 Days)	9 th – 11 th February 10 th – 12 th May	
Foam School (5 Days)	4 th - 8 th April	School takes place in France. H2K T. +31 174 41 48 72 info@h2k.nl www.h2k.nl
Fire Team Leader (5 days)	7 th – 11 th March	Fire Service College Ltd. Moreton-in-Marsh, UK sales@fireservicecollege.ac.uk
Fire Team Member (5 days)	14 th – 18 th March	

The following dates have been provided by JOIFF accredited training providers. If you wish to find out any information or make a booking, please contact the training provider direct, contact email addresses provided.

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