



# The Catalyst



The Official Newsletter of JOIFF

June, 2008

## FROM THE EDITORS

**W**elcome to the second edition of The Catalyst for 2008. As always, there is a varied mix of articles in this edition including our regular features.

We would like to thank our advertisers and our sponsors for their support – without them we would not be able to function. We encourage our Readers to circulate The Catalyst amongst their colleagues and interested parties and we welcome any comments.

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 also posted on the JOIFF website.

## ABOUT JOIFF

**M**embership of JOIFF, the Organisation for Emergency Services 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 provides a forum for discussion amongst peers, accredited training specifically developed for the sectors in which JOIFF members operate and technical advice through the JOIFF Standard and the JOIFF Shared Learning network. JOIFF welcomes enquiries for Membership - contact the JOIFF Secretariat

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Address as secretariat.*

## NEW MEMBERS

During March, April and May 2008 the Executive of JOIFF were delighted to welcome the following new Members.

### Full Members

**Assetco – Emergency Resource Services, Middlesex, England**, represented by Jim Robson, Director of Training, Jeff Ord, Managing Director and Gareth White, Commercial Sales Director. Assetco – Emergency Response Services are engaged in the provision of Emergency Response services include fire consultancy, recruitment, training and provision of emergency crews and support personnel.

**BP Toledo Refinery, USA**, represented by Chris Herman, Emergency Response Specialist and Jon Parker, Fire Chief. Plant protection is provided by a volunteer response team with leadership from HSSE Staff.

**Croatian Professional Firefighters Association, Zagreb, Croatia**, represented by Goran Franković, President, Mladen Šeulac, Vice President and Dinko Jurjević, Safety Advisor. The Croatian Professional Firefighters

Association are representatives from stations throughout Croatia which provide a National Fire and Rescue emergency response to Industrial, Commercial, domestic and environmental risks.

**ConocoPhillips Refinery, Billings, Montana, U.S.A.**, represented by Greg Neill, Coordinator-Emergency Response. ConocoPhillips Refinery, Billings has an Emergency Response Team of volunteers who work for the Company under full time leadership.

**iBOT S.A. de C.V., Mexico**, represented by Felipe Hanhausen, President and Berta Varcacia, Vice President. iBOT provide technical support and firefighting capability to Williams Fire and Hazard Control for Latin America and the Caribbean,

**IVAX Pharmaceuticals Ireland, Waterford, Ireland**, represented by Paul Leacy, Health and Safety specialist. IVAX Pharmaceuticals have a part time Emergency Response Team operating 3 shifts covering 3 sites, who provide response to fires and chemical spills, confined space rescue, rescue from heights, first aid etc.

**Preem Petroleum AB, Lysekil, Sweden**, represented by Bo Karlsson, Process and Operational Safety Engineer,

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Tomas Beillon, Manager, Fire Department and Lars Hansson Engineer, Fire Department. The fire department in Preem Petroleum works on a shift basis with management and engineering support.

& Safety and have the only 40ft CSE simulator in the Kingdom from which they offer a number of courses including Confined Spaces, Rescue and Breathing Apparatus training.

**Firemain Engineering Ltd., Merseyside, England**, represented by Phil Bayliss, Managing Director, David Owen Business Development Manager and Sean McCool Internal Sales Engineer. Firemain Engineering design, supply and commission foam firefighting systems and equipment. Product lines include foam enhancement of sprinkler systems, low, medium and expansion foam deluge systems, jetty protection systems using manual and remote control monitors both ground and tower mounted, tank protection using base injection, top pouring and high volume foam monitors.

**Keyways Publishing, West Sussex, England**, represented by Andrew Lynch, editor FIRE magazine, Philip Mason, assistant editor and Victoria Evans, commercial manager. Keyways Publishing are publishers of FIRE magazine, UK Fire and Rescue Directory and Emergency Planning Directory, plus Police, Security and Health magazines and directories.

**QA Associates, Derbyshire England**, represented by Dennis Fretwell and Keith Webster, Directors. Detail of QA Associates is included in this edition of The Catalyst.

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

## Corporate Members

**EHA Soft Solutions Ltd., Cork, Ireland**, represented by Dr. Dan Gallagher, Managing Director, Mike Shackelford, Business Development Manager, North America and Dr. Brian Gallagher, Consultant Occupational Physician. EHA Soft Solutions provide comprehensive risk management software solutions for the health, safety and environmental industries and they integrate hardware solutions where possible.

**Energy Industries Training Centre, Jubail Industrial City, Kingdom of Saudi Arabia**, represented by Saad Ansari, Chief Executive Officer, Fahad N. Al-Anazi Business Development Manager and Jamaan A. Al-Ghamdi Technical Training Director. Jubail Industrial City is the largest petrochemicals complex in the world covering over 200 sq. km of world class production facilities with an estimated 100,000 people employed. Energy Industries currently operates from 3 locations in Jubail Industrial City, 2 of which are dedicated to classroom based training with one is for basic operations and safety training. Energy Industries provide theoretical and practical courses in Fire

## WHAT ARE NOTECHS? – PART ONE

*By Dave Dowling MEd BSc (Hons) CMgr MCFI MIFireE AIOSH RLSS*

**N**on-technical skills (NOTECHS) form part of the Crew Resource Management programme which was developed to improve the working relationships of flight crews. Crew (or Cockpit) Resource Management (CRM) training originated from a NASA workshop in 1979 which focused on improving air safety. The research identified that the primary cause of the majority of aviation accidents was human error, and that the main problems were failures of interpersonal communication, leadership, and decision making in the cockpit. A variety of CRM models have been successfully adapted to different types of industries and organisations, all based on the same basic concepts and principles. It has recently been adopted by the fire service to help improve situational awareness on the fireground.

### Situational Awareness

There are many definitions available to describe situational awareness and a variety of assessment tools including the situational judgment test (SJT) which forms part of the initial test of potential (ITOP) for the UK fire and rescue service assessment and development centre (ADC). Situational Awareness (SA) is the term used to de-

scribe the field of study that concerns the knowledge and understanding of the environment which is critical to those who need to make decisions in complex areas such as aviation, air traffic control, driving, power plant operations, and military command and control.

Situational awareness can consist of three elements, although there are different theories on the subject. Alertness, perception and judgment appear to be the main elements of situational awareness and are briefly explained below.

- *Alertness* is about being aware of the surroundings and recognising when critical cues or signals are received through the senses from different sources i.e. control panels, signals, changes in the environment, messages, etc.
- *Perception* can be described as recognising the impact of the cue, which will rely on the key decision maker receiving effective training, having previous experiences or the body's natural reaction to a situation.
- *Judgment* is the ability to prioritise the relevant signals and take timely and effective action to correct or prevent a situation occurring or escalating. This element



Clues can warn of an "error chain" in progress which may be the beginning of a series of events that can lead to an accident. Most accidents involving human error are reported to include at least four of the clues in the right hand column of table 1.

10 Tips for Good SA Management	10 Clues to Loss of SA
<ol style="list-style-type: none"> <li>1. Predetermine roles for high-workload phases of the tactics.</li> <li>2. Develop a plan and assign responsibilities for handling problems and distractions.</li> <li>3. Solicit input from all team members.</li> <li>4. Rotate attention - don't fixate.</li> <li>5. Monitor and evaluate current status relative to your plan.</li> <li>6. Project ahead and consider contingencies.</li> <li>7. Focus on the details and scan the big picture.</li> <li>8. Create visual and/or aural reminders of interrupted tasks.</li> <li>9. Watch for clues of degraded SA.</li> <li>10. Speak up when you see SA breaking down.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ambiguity of information from two or more sources that conflict.</li> <li>2. Fixation – focusing on any one thing to the exclusion of everything else.</li> <li>3. Confusion or uncertainty about a situation (often accompanied by anxiety or psychological discomfort).</li> <li>4. Failure to deliver the plan – everyone is focused on conflicting activities.</li> <li>5. Failure to look outside – everyone heads down.</li> <li>6. Failure to meet expected objectives.</li> <li>7. Failure to adhere to standard operating procedures.</li> <li>8. Failure to comply with limitations.</li> <li>9. Failure to resolve discrepancies – contradictory data or personal conflicts.</li> <li>10. Failure to communicate fully and effectively- vague or incomplete statements.</li> </ol>

Table 1: 10 tips and clues for Situational Awareness

CATEGORIES	ELEMENTS	EXAMPLE BEHAVIOURS	SCORE
Co-operation	Team building and working relationship	Establishes atmospheres for open communication and participation	
	Considers & supports others	Takes condition of other team members into account and helps them through demanding situations	
	Communication	Is able to communicate at different levels and influence others to achieve outcomes	
	Conflict management	Concentrates on what is right rather than who is right	
Leadership and Managerial Skills	Use of authority and assertiveness	Takes initiative to ensure participation and task completion	
	Maintain standards	Intervenes if task completion deviates from standards	
	Planning and co-ordinating	Clearly states intentions and goals in a logical order	
	Workload management	Recognises time pressures and considers the time required to complete tasks	
Situation Awareness	Alertness	Monitors and reports changes in system's states and the environment	
	Perception	Recognises triggers / cues and identifies possible immediate or future problems	
	Judgement	Takes action to prioritise and resolve problems	
Decision Making	Problem definition / analysis	Reviews causal factors with other team members and stakeholders	
	Option generation	States alternative courses of action. Asks other team members and stakeholders for options	
	Risk assessment / option choice	Considers and shares risks of alternative courses of action	
	Outcome review	Checks outcome against plan and adjusts accordingly	
0	1	2	
Limited evidence of aptitude and potential to operate effectively - may not be suitable for the role	Evidence of sound underpinning knowledge and initiative. Responds to supportive direction – further development required	Operates effectively and autonomously – is suitable for the role	

Table 2: Key decision maker – soft skills behavioural measure



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Picture courtesy of 'West Midlands Fire Service' - Photographer Ted Oskenden



The descriptions of the different elements of situational awareness can be used as part of a system for measuring performance or behaviour to assess whether a key decision maker is effective in their role.  
Behavioural measures

Behavioural marker systems are now being developed for performance measurement in a range of organisational settings, especially in high reliability industries such as nuclear power, rail and maritime transport, and medicine. Barbara Klampfer from the Zurich group and Rhona Flin from Aberdeen University decided that it would be beneficial to hold a joint workshop to share research experiences and to discuss the development and utilisation of behavioural marker systems.

It was decided that there is a need to produce a set of general guidelines for practitioners and researchers who apply or are considering employing behavioural marker systems in training, development, and performance monitoring. It was also concluded that clarification of these issues might be helpful for regulators specifying requirements for the use of such systems. A critical factor in the implementation of any assessment tool is the training of the users of the system.

Key decision makers require 'technical' or 'hard' skills which relate to the knowledge and skills of their area of expertise (which can be related to the physical delivery of different tactics) and 'soft' or 'non-technical' skills which are considered more generic and relate to the mental and interpersonal attributes to manage a complex situation effectively. Presented in table 2 is a set of behavioural measures which have been adapted from the Civil Aviation Authority CRM model. Effective management of a situation will ensure the selected tactics are accurately considered and implemented to bring an emergency or complex situation to a satisfactory conclusion.

Part two of this article will be published in the September 2008 edition of The Catalyst and will explore tactics, discuss moral dilemmas and present a crisis management framework which can be used to ensure holistic emergency response arrangements are in place.

*Editor's note:*

*Dave Dowling is Fire and Rescue Service Manager of JOIFF Member Urenco Capenhurst Ltd. which he joined after twenty four years service with the Local Authority Fire and Rescue Services. Dave has a Master of Education degree in Human Resource Development, a Bachelor of Science first class honours degree in Fire Safety and is a Chartered Manager with the Chartered Management Institute. Dave has written a book entitled 'Critical Situations: Reaction and Performance' which has been published by The Fire Service College. Contact Dave at [dmdsolutions@googlemail.com](mailto:dmdsolutions@googlemail.com)*



Secretary of JOIFF Kevin Westwood (right) presenting a JOIFF Certificate of Accreditation for Gazobezopasnost Astrakhan Well Control Unit to Serguei R. Khlebnikov, Deputy Director of Astrakhan Well Control & Response Unit, and Dmitry Chudnovskiy Training School



**THE INSTITUTE OF FIRE SAFETY MANAGERS**  
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TIME	SUBJECT	SPEAKER
0930 - 1000	Registration and Coffee	
1000 - 1010	Welcome and Introduction	John Williamson (Chairman IFSM)
1010 - 1050	'HTMs - Healthcare Update'	Paul Roberts, Department of Health
1055 - 1135	'The Use of Infra Red Thermography to Prevent Auto Ignition'	Tony Holliday
1140 - 1220	'A Guide to Insurance for Health and Safety Consultancies'	Robert Ward, Sennet Professional Indemnity
1230 - 1315	LUNCH	
1315 - 1400	'Corporate Manslaughter'	Andy Hopkin, Brown Jacobson Solicitors
1400 - 1450	'Directional Sound Evacuation Technology'	Mark Thomson KAC Alarm Company Ltd.
1450 - 1500	Closing remarks and Registration for CPD	J Williamson
1500 onwards	Tour of the MINI Plant ( <i>Please state at time of booking if you wish to go on the tour</i> )	

\* This event will attract 5 Hours CPD certificated through the IFSM for all those who have attended throughout the whole conference.

**CONFERENCE DELEGATE FEES: MEMBERS £50, MEMBERS OF JOIFF £50, NON-MEMBERS £75**

(Note: If non member delegates wish to join the IFSM then the £25 application fee will be waived on receipt of application form).

The conference fee includes all refreshments and buffet lunch. Please register early by sending your cheque, made payable to the 'Institute of Fire Safety Managers', quoting your membership number and/or affiliation, name of company etc. to:

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## NEW JOIFF MEMBER: QA ASSOCIATES.

QA Associates are a fire & community safety consultancy based in Derbyshire, England. The company was formed in 2005 to provide specialist services that require flexible, cost-effective and efficient workforce development services in the fire, community safety, and aviation sectors.

The principle Directors of QA Associates, Keith Webster and Dennis Fretwell have over 60 years combined experience in the fire and community safety sectors, and are specialists in the fields of quality assurance, audit, assessment and verification of competency-based systems.

Both Keith and Dennis represent awarding bodies as External Verifiers for National Occupational Standards in the Fire, Learning & Development and Management sectors and Externally Verify around twenty UK Airport Rescue and Fire Fighting Services against CAP 699.

In addition to providing specialist training and consultancy services, QA Associates are also an 'approved assessment centre' for a number of major awarding bodies which include:

Edexcel; City and Guilds; Business & Technology Education Council (BTEC); and The Chartered Institute of Environmental Health (CIEH).

QA Associates provides 'approved assessment centre' services to a number of organisations including Fire and Rescue Services who do not want to be an approved centre in their own right.

During the last two years together with Fulcrum Consultants we have jointly brought a range of NVQs within the scope of JOIFF members who would not otherwise had the opportunity.

## PROTECTION AGAINST EXPOSURE TO ELECTRIC ARC

*By Karin Klein Hesselink*

Industry is becoming ever more aware of unforeseen risks to its employees and this has resulted in a growing demand for work and safety clothing. Legislation in this field is also being developed.

The choice of the right safety clothing is determined by a risks analysis. The safety officer studies and draws up a list of the risks to which an employee may be exposed. These may include heat and flames, danger of explosion from a static charge, liquid chemical spatters, welding spatters and electric arcs. Most accidents involving electricity happen to people who work in electrical engineering. In the US accidents at work involving electricity are the fifth major cause of death.

### Injury

Electricity can harm the body in various ways. The most common injury is caused by electric arcs, which are the result of short circuits and incorrect switching operations. Because these are carried out manually, the distance from an electric arc is extremely short (approx. 30 cm).

Despite the short duration of the electric arc – several thousandths of a second – an enormous amount of radiation energy is released. The temperature in the arc may reach several thousand degrees Celsius. In addition to burns to hands and face, clothing may catch fire and cause major injuries. Due to the intense heat, pieces of copper and other products of combustion are released. Needless to say, good personal protection is a matter of life and death and clothing plays an important role in this.

### Standardization

As with many other industrial risks, the clothing must


meet European standards. Until recently Europe had no harmonized standard for protective clothing relating to electric arcs, only technical specifications, which might refer to the ASTM test from the US and Canada. Recently, however, IEC EN 61482-1-2 has been introduced as the current standard for Europe. Both the effect of the arc on the cloth and the energy flow rate of the cloth are measured. This standard has two classes. Class 1: 4 kilo-amp per 500 milliseconds (4 kA/500 ms) and Class 2: 7kA/500 ms). Various fabrics from TenCate Protective Fabrics meet class 1.

### Multi-layer system

Multi-layer systems have to be introduced for protection according class 2, against strong electric arcs, in order to reach a higher insulation value. TenCate Protective Fabrics has already tested various combinations of fabrics and can offer systems for class 2: 7 kA/500 ms. Further tests are currently being conducted to develop an optimal multi-layer system that provides protection in accordance with the class 2 electric arc standard. The aim is to keep the weight of this system as low as possible, so that the properties of the article of clothing that ensure wearer comfort are not lost.

*Editor's Note: Karin Klein Hesselink is end use Marketing Manager, Industrial Safety in JOIFF Member TenCate Protective Fabrics and specialises in advising end users on the choice of material that will best suit their requirements. Karin represents ETSA on a number of CEN Committees. Karin can be contacted at [k.kleinhesselink@tencate.com](mailto:k.kleinhesselink@tencate.com)*





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## CREDIBLE INCIDENT SCENARIOS FOR INTERNAL FLOATING ROOF TANKS

By Jeanne van Buren

The writer of this article anticipates starting a forum discussion on the JOIFF website based on the topic in this article. The discussion will last for only 3 months when a new topic will be raised in the next edition of The Catalyst.

This time I will cover credible accidents from a storage tank with an (GRE full contact) floating roof with an additional dome roof.

The necessity for controlled storage has increased with introduction of biofuels. Contamination with (condensation/rain) water of bio(m)ethanol, biopetrol or biodiesel will seriously affect the quality of the product. This resulted in more and more tanks being fitted with internal floating roofs together with dome roofs.

The floating roof can either be made of aluminium, steel or fibreglass. We already know from the information distributed among JOIFF members that fires in cone roof tanks with internal floating roofs can last for days and that it is virtually impossible to fight these fires. Incident scenarios for cone roof and dome roof tanks with internal floating roof tanks are very similar.

Engineering companies are reluctant to work even to discuss credible incident scenarios can occur for especially GRE full contact floating roof tanks. If you require more info on suppliers these sort of tanks just type in "GRE floating roof tanks" in Google and it will list the names of suppliers.

Among the claims made for these direct GRE contact roofs with a honeycomb structure are:

1. That the materials used in these floating roofs provide them with are fire resistant properties
2. That the construction of these roofs together with the seals make them gas tight
3. It is stated that these roofs are unsinkable, and
4. Corrosion resistant

As always it is important that each stakeholder knows the background information for these claims.

The fire resistance is applicable to two parts of the floating roof. The first one being the (primary and secondary) seals. Fire retardant is added to the material which make up these seals. The effects of fire retardant decreases due to deterioration over time, while the effect of some retardants may be compromised by the product stored in the tank. So the fire resistant properties of the seals should be presented within the proper context supported by information from tests carried out under controlled conditions.

The second part is the honeycomb GRE floating roof itself where fire retardant is also applied in the construction. So far I was unable to find information to prove that ageing of the fire retardant does not affect the fire resistance of the GRE floating roof. We are all becoming more and more aware of the risks of aging installations. So we can not ignore this aspect for fire retardants in GRE floating roofs. The only information I got was that sections of the honeycomb material were exposed to a pool fire of hydrocarbon and that the material was not affected during these tests. But such a test does not represent the actual conditions during operations where the honeycomb is saturated with flammable vapours. Such tests should be performed under controlled conditions based on a credible scenario which determines the exposure time and at a recognised testing facility before the label fire resistant can be put on these floating roofs.

What does the claim gas tight mean in this case of these roofs. Does it mean that no vapour is present between in the space between the floating roof and the dome roof. Even gas cylinders do not have the capacity to hold their content indefinitely. What controlled measurements with which product under what conditions were performed to substantiate this claim? Also the performance of the seals will deteriorate over time, so was ageing of the seals taken into consideration. And it also means that we do not have to bother with double seals any more as one seal seems to perform just as well as two seals.

Full contact floating roof tanks are known to be very sensitive to rapid movements of the liquid in the tank. Full contact roofs are therefore prone to tilting of the roof during filling, resulting in the roof getting stuck. As this is not always rapidly recognised it can result in a serious incident, where product will be spilled on the roof. Therefore it is important to know why exactly these full contact roofs, compared with the traditional floating roofs, are labelled unsinkable.

Corrosion resistant - if we leave ageing of the seals and GRE out of the scope of corrosion, it leaves us with the strip/spring in the construction of the seals which is in contact with the tank wall. These are made of a different metal (usually stainless steel) than the material of the tank wall. Stress corrosion will occur at the point where these strips come in contact with the tank wall. The carbon steel of the tank wall will be sacrificed. This is an issue, which should be taken into account during periodic inspections.

Floating roof tanks with dome roofs are a welcome solution to many problems operators are confronted with at their tank farms. But we – meaning all stakeholders –



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must also look at credible incident scenarios and review appropriate methods to control or mitigate these incident scenarios pose.

Based on the above I would like to start the following discussion among readers of the Catalyst and I especially invite engineering companies to join. Who knows the result may be a JOIFF guideline with incident scenarios for these types of storage tanks.

Fires in floating roofs tanks (no matter the material of the internal floater), with either a cone or dome roof are difficult to fight with mobile equipment. Therefore such tanks should always be fitted with fixed fire detection and fire fighting systems capable to combat for a full surface fire with enough foam supply for one hour.

Engineering companies, operators and the authorities should work together to jointly develop recognised credible incident scenarios for internal floating roof tanks together with the proper fire fighting strategy.

Claims from engineering companies should always be based on credible incident scenarios and supported by

tests under controlled conditions carried out at recognised testing facilities.

Engineers and operators should develop a dedicated inspection program with listed inspection intervals, for floating roof tanks with dome roofs. The inspection program should also cover the fire detection and fire fighting system.

I look forward to your constructive participation in this discussion.

*Editor's note :*

*Jeanne van Buren is a Safety specialist working with the Rotterdam-Rijnmond regional emergency response organisation in The Netherlands. She has a BA in Process Engineering, Chemical Engineering, Applied Chemistry and Environmental Engineering and an MSc in Environmental Quality Management as well as Risk Crisis and Disaster Management. She is currently carrying out a PhD research into integrated fire safety during the life cycle at SEVESO sites.*

*All JOIFF Members will receive details of how to register with the JOIFF Forum on the JOIFF website through the Shared Learning Mailing List. Contact the JOIFF Secretariat for further information.*

## ENVIRONMENTALLY ACCEPTABLE, TOTAL FLOODING FIRE PROTECTION

*By John Allen*

When selecting a fire suppression system, environmental impact is now one of the major considerations in the petrochemicals industry, often ranked with equal importance to the speed and efficiency with which the agent extinguishes a fire. This has led to a number of new systems coming onto the market since the banning of Halon 1301 under the Montreal Protocol on Substances that Deplete the Ozone Layer in 1987. However, many of these potential replacements have failed to live up to expectations in environmental terms, particularly since the 1997 Kyoto Protocol on climate change established the goal of reducing greenhouse gas emissions.

The criteria for a successful and sustainable solution means excluding any of the greenhouse gases identified by the Kyoto Protocol that represent man-made interference with the global climate system. The acceptable solution must have a negligible impact on the environment, insignificant global warming potential, zero ozone depleting potential and a low atmospheric lifetime. This is a daunting challenge that continues to elude many fire safety companies.

However, one solution has come to the fore in the past couple of years, which uses new technology that combines suppression effectiveness with environmental

acceptability and long-term sustainability. Called SAPPHIRE®, it is a high-performance fire extinguishing system from Tyco Fire Suppression & Building Products that uses 3M™ Novec™ 1230 Fire Protection Fluid, Stored in containers as a low vapour pressure fluid, when discharged it converts into a colourless and odourless gas. Typical total flooding applications use a low concentration of the fluid – between 4.2 percent and 5.9 percent by volume for land-based applications and typically 5.5 percent for marine applications – which is well below the agent's saturation or condensation level.

So, unlike many other fluid fire extinguishing agents, SAPPHIRE can be used with absolute confidence to suppress fires involving vital electronic, computing or communications equipment and is ideally suited for protecting petrochemical facilities both on-shore and off-shore such as control rooms, data storage facilities and communication centres. When discharged, the agent is dispersed through natural ventilation, leaving no residue to damage sensitive equipment. It is also non-conductive and non-corrosive.

SAPPHIRE has a negligible impact on the environment and an insignificant global warming potential that is lower than any of the halocarbon agents that are acceptable for use in occupied spaces. Installations have an installed

footprint similar to that of other chemically-based clean agent systems and, most significantly, the Novec 1230 fluid has the lowest design concentration and the highest safety margin of any viable Halon 1301 chemical alternative. While certain Hydrofluorocarbons – more frequently known as HFCs – and inert gases are used at design concentrations that are below the NOAEL or No Observed Adverse Effect Level, with safety margins from seven percent, no other Halon alternative comes anywhere close to the SAPPHIRE system's safety margin.



*Sapphire Discharge*

This is an important consideration in some instances, such as marine applications, where initially the design concentration can be higher than for land-based applications and because the volume of the space being protected can sometimes be difficult to calculate accurately, due to the complexity of the machinery and equipment in the enclosure. So, the system's designer will often err on the side of caution and include more agent than the volume requires. Additionally, the calculation is based on an average anticipated temperature in the protected space, while in reality the temperature may be higher, which could lead to a further "over concentration". This combination of factors may take the achieved concentration closer to, or above, other agent's NOAEL level, whereas the huge margin between the SAPPHIRE system's NOAEL level and design concentration provides a high degree of personal safety.

SAPPHIRE also has a remarkably low atmospheric lifetime of just five days, so does not have any appreciable impact on climate change. To put this into perspective, this five-day lifetime compares with an atmospheric life for Halon 1301 of 107 years. It has a global warming potential of just "one", which means that several thousand kilograms of the Novec 1230 fluid would have to be released to have the same impact on climate change as just one kilogramme of a typical alternative Hydrofluorocarbon.

The SAPPHIRE system has amassed a host of international approvals including LPCB [Loss Prevention Certification Board], FM [Factory Mutual] and UL [Underwriters Laboratories] listing. It is type approved by LRS [Lloyds Register of Shipping]; MCA [Marine & Coastguard Agency]; Germanischer Lloyd; DNV [Det Norske Veritas]; BV [Bureau Veritas]; ABS [American Bureau of Shipping]; and RINA [Registro Italiano Navale]. It is accepted by NSI [National Security Inspectorate]; BZI [Belgium Maritime Authority]; Icelandic Maritime Administration; and DMA [Danish Maritime Authority]; Marchant Marine; and is fully approved under the MED [Marine Equipment Directive]. It meets SOLAS [Safety of Life at Sea] requirements, having successfully completed MSC [Marine Safety Committee] 848 testing.



*Sapphire Cylinders*

Such has been the success of SAPPHIRE in offshore applications that it recently netted one of the maritime industry's top safety awards. It beat off tough international competition to win the Seatrade Awards 2007 Safety at Sea Award, sponsored by Lloyd's Register.

*Editor's Note: John Allen, EMEA Marketing Director at Tyco Fire Suppression & Building Products, is an engineer by training. He joined Tyco in 2006, having worked at senior marketing and general management level in a number of leading fire detection and alarm companies. Further information on John's article is available from Tyco Fire Suppression & Building Products by telephone on +44 (0) 1493 417600, by fax on +44 (0) 1493 417700, or via email at [tspmarketing.emea@tycoint.com](mailto:tspmarketing.emea@tycoint.com).*

# WORKING IN DANGER ZONES IS YOUR JOB. MAKING SURE YOU'RE PROTECTED IS OURS.

TenCate Protective Fabrics develops and produces fabrics for work- and safetywear. Our fabrics form the basis of protective clothing worn by firefighters, industrial workers, the military, and other professionals who work in hazardous conditions in danger zones around the world.

We work closely with our customers, end-users, fibre and chemical manufacturers and independent test institutes. As a result, TenCate Protective Fabrics is the one source the world looks to for leadership in knowledge of materials, consistent product quality, and a proven commitment to service excellence.



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**TENCATE**  
materials that make a difference



## PRESS RELEASE: PROTECTIVE CLOTHING SEMINAR ATTRACTS HUNDREDS



J O I F F

Between 8th and 14th March, around 600 delegates from all over Europe traveled to Ardoois, Belgium to attend a series of ER and industry-specific seminars hosted by DuPont Personal Protection (DPP) in association with Sioen. The programme, organised by Johan Sabbe, ER Product Manager at Sioen, was aimed at clothing purchasers, ER personnel and health and safety officers in organisations where certain applications demand the use of high performance clothing to protect against burn injury. Throughout the six-day programme, delegates gleaned an in-depth understanding of European Standards and were given a fascinating insight into market trends and the global development of protective clothing technologies.



Highlights of the seminar were: a comprehensive presentation on current European Standards for protective clothing, delivered by Sioen's Technical Director, Ivan Deceuninck; and captivating burn comparison tests on some 45 garments, carried out on the DuPont™ THERMO-MAN® facility.

### Sioen and DuPont: a powerful partnership in the NQP Programme

From the outset of the partnership between DPP and Sioen in 2005, DPP believed that Sioen's use of Nomex® in its technical and innovative initiatives would reach a higher level, and in July 2007 Sioen was invited to join DuPont as a partner in the NOMEX® Quality Programme (NQP).

This has helped to increase Sioen's presence and success in different market segments, of which an example is the recently won national tender to provide fire-protective clothing to the Belgian Fire Brigade. Bart Vervaecke, the CEO from Sioen's Apparel division, was pleased to accept the 2008 NQP certificate on behalf of the company on the last day of the seminar.

The NQP is unique partnership between DuPont and selected spinners, weavers, knitters and garment manufacturers that ensures that garments bearing NQP identification match end-users' requirements for inherent thermal protective apparel. The aim of the partnership is to anticipate and respond to market developments with greater speed and intuition, and essentially, give customers

a consistent assurance of quality, protection, comfort, durability and cost effectiveness. The shared vision of the partners is that through the NQP programme, the winners will be the men and women their products protect.

With 47 years of experience in the clothing sector, Sioen Industries is the world market leader in coated technical textiles, the European market leader in industrial protective clothing, a niche specialist in fine chemicals and one of the biggest global players in the processing of technical textiles into semi-manufactured goods and technical end products. Sioen Industries has 39 subsidiaries, 4,600 employees and a turnover of 380m euros (2007).

Sioen's Coating Division specialises in the integrated coating of technical textiles and controls the entire production process, from the extrusion of yarns (spinning), via the weaving of technical fabric and the production of pigment pastes and granulates through to coating with various materials. Its Apparel Division designs and produces high-quality protective clothing for both industrial and recreational applications.

The mutual benefits of NQP membership are many, as Véronique Bernat, EMEA Nomex® Thermal Industrial Marketing Manager from DPP explained. "Like all our NQP partners, Sioen has long-standing relationships with key end users across Europe. Through the NQP partnership DuPont can better understand industry requirements and continue to develop technology that enables the creation of optimum protective clothing solutions. DuPont brings to the NQP a global overview of technology and product development. As an NQP member, Sioen will have privileged access to DuPont™ Nomex® fibre and fabric innovation, technical expertise and state-of-the art product testing facilities. This includes our unique THERMO-MAN® and ARC-MAN® rigs that enable the quality and performance of finished garments to be precisely monitored. We are delighted to welcome Sioen on board the programme."

For more information on DuPont's range of protective clothing solutions and the NQP Partnership, please visit [www.dpp-europe.com](http://www.dpp-europe.com)

### About DuPont

DuPont is a science company. Founded in 1802, DuPont puts science to work by creating sustainable solutions essential to a better, safer, healthier life for people everywhere. Operating in more than 70 countries, DuPont offers a wide range of innovative products and services for markets including agriculture, nutrition, electronics, communications, safety and protection, home and construction, transportation and apparel.

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## PPE CORNER

Members of JOIFF are major users of Personal Protective Equipment (PPE) and since the publication of the JOIFF Handbook on PPE to protect against Heat and Flame in 2007 as part of the JOIFF Standard, JOIFF members have gained greater knowledge and understanding of the selection, use, care and maintenance of PPE. This has allowed them to identify great variations in the understanding of and compliance with relevant standards and good practice by manufacturers and suppliers of PPE. Current JOIFF Members are based both within and outside the European Union (EU) but without doubt, if properly understood and realistically and equitably implemented, the European Union Directives for Health and Safety and for PPE are Best Industry Practice and their requirements should be relevant Worldwide.

The main questions facing any purchaser of PPE is “Is the PPE that I am purchasing fit for purpose and will it continue to protect my employees from the hazards in their workplace for the lifetime of the items of PPE ?” EU Directive 89/686/EEC governs the manufacture and putting on the market of PPE and therefore should “provide comfort” to the purchaser that for items of PPE that are claimed to have been certified to the Directive and therefore carry a CE Mark, the answer to this question is “Yes”.

Key to the processes set out in the Directive is the issue of certification. Article 8 of the Directive divides PPE covered by the Directive into three distinct groups, PPE of Simple Design, PPE of Complex Design and another Category that covers PPE that does not fall within either of these Categories. PPE of Simple Design is called “Category I PPE” PPE that is neither of Simple nor Complex Design is called “Category II PPE” and PPE of Complex Design is called “Category III PPE”, which is

also referred to as PPE to protect against mortal danger.

To carry a CE Mark of conformity, Category I PPE is considered to conform to the requirements of the Directive by the manufacturer declaring that it does conform. Category II PPE is required to be subject to a special examination called an EC-type examination before it is declared as conforming and Category III PPE is required to be subject to an EC-type examination plus to one of two production control procedures described in the Directive, before it is declared as conforming and continues to conform. This special requirement for Category III PPE means that at least once a year, the production of the manufacturer and the PPE s/he manufacturers must be checked for conformity with its original certification.

Huge numbers of persons around the World use work wear to protect against heat and flame to protect them in their work place. Heat and flame can seriously injure and kill so such work wear is unquestionably PPE designed to protect against mortal danger which clearly puts it into Category III and which therefore requires that such PPE is subject to production control annually. Yet many manufacturers and some Notified Bodies (EU approved Test Houses) classify such work wear as Category II PPE and believe that this PPE does not require annual checking of production control.

The questions that we ask are why are two different approaches to this issue allowed ? Who polices the Process ? How are Users assured that the requirements of the Directive are interpreted in an equitable manner so that the same assurances of protection are universally provided by the same system of certification ?

## DIARY OF EVENTS — 2008

June 4th – 5th	<a href="#">Biofuels International Expo &amp; Conference</a> , Rotterdam, The Netherlands
July 2nd - 3rd 29th	<a href="#">Institution of Fire Engineers 85<sup>th</sup> AGM Conference &amp; Exhibition</a> , Blackpool, England. <a href="#">Institution of Fire Safety Managers Conference</a> , Oxford, England
Oct 7th - 10th 20th—21st	<a href="#">Fire Protection at Security Essen 2008</a> , Essen, Germany. <a href="#">Institution of Fire Engineers Environmental Protection Conference and Exhibition</a> , Bolton, England.
Nov 19th—20th	<a href="#">Emergency Services Show 2008</a> , Coventry, England.
Dec 20 <sup>th</sup> – 23 <sup>rd</sup>	<a href="#">MEFSEC 2008 Fire, Safety and Security Exhibition</a> , Cairo, Egypt.

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 is based on information given to the Editors and is published in good faith.*



## JOIFF TRAINING NOTES

JOIFF accredited training is within a Competency Based Training framework and involves not only course content, as also critical to the effective provision of training are the facilities of the training provider/training establishment and the capabilities of the instructing staff. JOIFF has developed systems of accreditation for training providers and minimum instructional requirements for Instructors. All students who successfully complete a JOIFF accredited course/programme are issued with a JOIFF Certificate of Competence which has its own unique number. Records of all successful students and the courses in which they qualify are retained. There is growing recognition worldwide of the JOIFF Certificate of Competence which is coming to be regarded as a passport to the level of employment and rank which an emergency responder's qualifications enables and entitles them to deserve.

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The following dates have been provided by the UK based JOIFF accredited training establishments. If the dates are not suitable for you or your own specific training requirements are not listed below, contact Fulcrum Consultants who will be happy to try to facilitate you.

### *Programme for 2008 - JOIFF accredited Training Establishments:*

<b>JOIFF accredited Course</b>	<b>Dates</b>	<b>Venue</b>
<i>Pipeline Emergency Response Officer (PERO)</i>	<i>8 – 9 September 2008</i>	<i>Tees Valley</i>
	<i>18-19 November 2008</i>	<i>Tees Valley</i>
<i>Site Incident Controller</i>	<i>17 September 2008</i>	<i>Tees Valley</i>
	<i>25 November 2008</i>	<i>Tees Valley</i>
<i>Night time firefighting Course</i>	<i>27<sup>th</sup> – 28<sup>th</sup> October 2008</i>	<i>Petrofac Training Montrose</i>
	<i>10<sup>th</sup> – 11<sup>th</sup> November 2008</i>	<i>Petrofac Training Montrose</i>
	<i>27<sup>th</sup> – 28<sup>th</sup> November 2008</i>	<i>Petrofac Training Montrose</i>
	<i>11<sup>th</sup> – 12<sup>th</sup> December 2008</i>	<i>Petrofac Training Montrose</i>

For further information about JOIFF accredited on-Site Competency Based Training Programmes, the range of Fire Service NVQs and any other aspect of JOIFF Training, please contact the JOIFF Secretariat, details below.

### JOIFF Secretariat:

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