The Catalyst

The Official Newsletter of JOIFF September, 2008

From the Editors

Welcome to the third 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 posted on the JOIFF website.

About JOIFF

Membership 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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New Members

During June, July and August 2008 the Executive of JOIFF were delighted to welcome the following new Members:

Full Members

BP Trinidad and Tobago LLC, Port of Spain, Trinidad, West Indies, represented by Allan Subero, Emergency Response and Crisis Manager, Tyrone Kalpee, HSSE Director – Strategic Performance Unit and Heath Romeo, Crisis Management and Emergency Response Advisor – Operations. The Tactical Response Team provides emergency response services for both onshore and offshore and are trained in Control of Work given their responsibility in loss prevention services during jobs with the potential for major accidents. They conduct inspection and service of emergency response equipment et al and training for company's personnel, first responder, basic fire, Hazmat, Fire Safety, equipment maintenance, SCBA, Incident Management, ERT members training.

DNM International b.v., Stellendam, The Netherlands, represented by Bas Disberg, Managing Director. DNM represent Williams, Elkhart AVK and Ansul and also provide a 24 hour call-out service for major incidents such as tank fires.

Corus Strip Products UK, Port Talbot, Wales, represented by Alan Dalgleish, Works Protection Manager. Corus are manufacturers of steel coil and slabs and they have an emergency response capability across their 2 sites, one of which is a COMAH Tier One Site.

Dounreay Fire, Ambulance and Rescue Service, Caithness, Scotland, represented by Kenny Porteus, Chief Fire Officer, James Conaghan, Deputy Chief Fire Officer and Robert Doull, Watch Manager. Their full-time emergency response team provides fire, ambulance and rescue services for the site which covers 2 nuclear facilities.

International Fire & Safety Training, I-Fast, Monster, The Netherlands, represented by H.P. de Roos, Training

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.

Manager, R.S.J. de Roos, SHEQ and S.J.C.M. de Jonge, Trainer/ Consultant. Detail on I-Fast is included in a separate article in this edition of The Catalyst.

Petans Limited , Norwich, England, represented by John Simpson, Fire and Helicopter Training Supervisor and Michael Wilder, General Manager. Petans are accredited by OPITO in numerous emergency response training standards for the offshore industry – and to standards of MCA and others. They hold ISO 9000[2000], ISO 14001 and ISO 18001 certification and has been awarded the regional award for Green Business practice by the national Chamber of Commerce for their approach to solar heating for their training tank. Petans have recently commissioned very large bio remediation unit to clean all fire training ground water run-off to potable standards with no waste disposal to drains or soakaways, and without the use of chemicals.

Petrom – Petrobrazi Refinery, Prahova, Romania, represented by Anca Tudor, HSEQ Manager and Vera Ucakar, Technical Services Manager. Detail about Petrom is included in the Press Release from SembCorp published in this edition of The Catalyst.

Corporate Members

Corporacion Firemans SAC, Lima, Peru, represented by Saul Montenegro Tello, General Manager, Diego Montenegro Tello, Operations Manager and Lucia Bravo Guizasala, Administration Manager. Firemans SAC is a Company devoted to the supply and installation of equipment and firefighting systems with certified quality. They have extensive experience in the domestic market for the maintenance and technical assistance of different designs of fire equipment and systems. Providing training programs is a fundamental principle in the development of their professional activities. Firemans SAC's mission is prevention and protection against fire. Their vision is to be a leader, identified as a reliable and responsible organisation that provides quality pursuant to the technical standards of safety and good practice. And their policy on social responsibility is to remain a major player in the social environment, contributing as far as possible to improving the living conditions of what relates to our activities.

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

What are NOTECHS? – Part Two

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

Editors note: Part 1 of Dave's article is published in the June 2008 edition of The Catalyst.

Non-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.

Tactics

Although there appears to be very little information available which explains tactics in the context of emergency arrangements it is clear that strategy relates to the long-term and tactics relate to the short-term. 'Tactics' can be defined as the process of securing objectives through the technique of deploying and directing personnel and resources in effective manoeuvres. A 'tactic' can also be described as a calculated manoeuvre designed to gain advantage. The military use 'offensive' and 'defensive' tactics in the theatre of battle and this terminology reflects the language used in the UK fire and rescue service when confirming the status of a situation following a dynamic risk assessment (DRA). The table below presents a few suggested examples of offensive and defensive tactics.

Offensive	Defensive
Fire fighting	Evacuation
Search and rescue	Withdrawal
Containment / stabilisation	Shelter
Decontamination	Stand-by
Pollution control	Boundary cooling
Medical treatment / triage	Warning / communication

Offensive and defensive tactics

Set tasks come from a menu of pre-taught skills and techniques which when combined form different tactics that can be implemented to bring an emergency situation under control. Tasks may be described as the 'operational' level of a command structure and are usually performed by personnel who are familiar with the people or the asset they are deployed to protect.

Moral Dilemma

Staff tasked with resolving emergency situations may find themselves facing moral dilemmas for a number of reasons and this issue is normally prevalent for industrial fire and intervention teams and local authority emergency service personnel that live and respond in the same community. There have been many events reported in the media where members of the public and the emergency services have felt under pressure to risk their lives for others and taken unnecessary risks in a dangerous situation. There have also been a number of events where members of the emergency services have been criticised for not reacting to a situation by putting themselves at risk. When an individual is faced with a situation where a colleague or friend is at risk, they can feel compelled to risk everything to rescue or protect that person. Situations like this can be very difficult to control and a team member can become a casualty which can have a detrimental impact on a plan of action.

The table below highlights potential causes of moral dilemmas and proposed control measures.

Causes of moral dilemmas	Potential control measures
Casualty known to the incident commander and Team	Effective leadership
Pressure to take unnecessary risks	Only take calculated risks
Expectations of Organisation	Monitor the team and individuals
Control of plant personnel and staff	Introductions and briefings
Control of Intervention Team	Effective communication(s)

Moral dilemmas and control measures

Operating effectively in situations which present a moral dilemma can also be improved by the keys features and elements for success presented in the well known RPD model. Effective development in realistic settings and assessment of competence is essential to prepare people for a key decision making role.

Crisis Management Framework

A holistic approach toward crisis management will ensure key decision makers are adequately prepared for their emergency role and the appropriate arrangements are in place to support their management of a complex situation. The framework, on the following page, brings together four defined areas for the preparation and management of emergency response which can be used as a check list by auditors and emergency planners in the preparation of effective arrangements. Each area is supported by approved codes of practice and recognised publications which correspond with various professional environments. Although a regulation or piece of legislation may be specific to an industry or organisation, it is clear that many of the techniques and principles applied to managing complex situations are being recognised as generic across a number of professional disciplines.

Developing common and consistent principles and techniques for dealing with emergency and complex situations will assist the interoperability and integration of key decision makers and personnel from different organisations in the effective management of emergency situations.

Recommended reading:

Crew Resource Management (CRM) Training CAP 737.
www.caa.co.uk

Safety at the sharp end: a guide to non-technical skills.
www.ashgate.com

Situational awareness.
http://en.wikipedia.org/wiki/Situational_awareness

Enhancing performance in high risk environments: recommendations for use of behavioural markers.
http://homepage.psy.utexas.edu/homepage/group/HelmreichLAB/Publications/pubfiles/Pub262.pdf

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

DMD Solutions April 2008

Crisis management framework

David Dowling (From "What are Notechs? Part 2")

STRUCTURE Operating principles	Command & Control	Bronze (operational), silver (Tactical) & Gold (Strategic) Clear lines of reporting Span of control Command / control points Sectorisation Cordons / Zones	TECHNICAL Implementation	Plans & procedures	Control, response, intervention, sustainability, life, environment, asset, reputation, political, societal, finance, recovery, business continuity, communication & notification
	Safe person concept	Hierarchy of control, Dynamic Risk Assessment & tactical modes		Pre-planning	Risk assessment, Haz-op, task analysis, ALARP, passive & reactive control
	Communications	Accuracy, Brevity & Comprehension (ABC)		Teams	Make-up, availability & response arrangements
	Tactics	Tasks, offensive, defensive, plan & reassess		Requirements	Legislation, regulation, compliance & ethical
	Briefing and Debriefing	Collate information, record, display & share, IIMAC, time-out, hot & cold / structured		Equipment	Availability, location, function, operation, techniques, instructions & tasks
INDIVIDUAL Key decision makers - Soft Skills (NOTECHS)	Leadership	Style, standards, planning, organising, cooperation, liaison & communication	DEVELOPMENT Organisation & individual	Recruitment	Expertise, skills, knowledge, aptitude, health, maintenance, availability & retention
	Situational Awareness	Alertness, perception & judgement		Learning	Progressive - technical, simulation & exposure
	Decision Making	Problem solving, normative, intuitive, naturalistic & Recognition Primed Decisions		Competence	Assessment, behavioural measures, standards, mentoring & coaching
	Team management	Maintenance, support & coaching		Exercises	Workshop, table-top, control point & live
	Stress	Physical, mental, moral dilemmas & coping strategies		Evaluation	Structured debrief, outcomes, investigations, review including peer reviews

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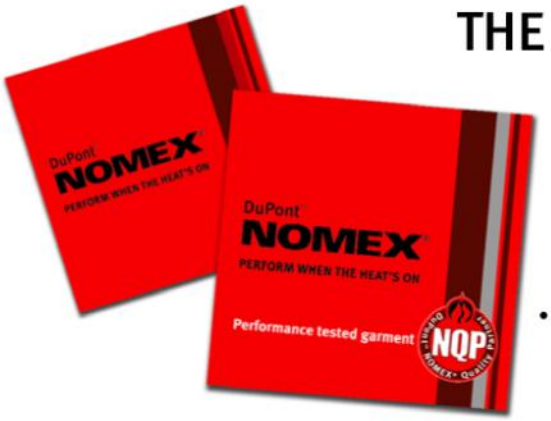

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Picture courtesy of 'West Midlands Fire Service' - Photographer Ted Ockenden

PRESS RELEASE: ROMANIA'S PETROBRAZI REFINERY'S PREPARED FOR THE WORST.

By Paul Frankland, Assistant Vice President Sembcorp UK's Protection Group.

Petrom is the largest company in Romania and the largest integrated oil and gas producer in southeast Europe. The company has recently embracing world-class fire safety and emergency preparedness. With its headquarters in Bucharest, Petrom is involved in exploration, production, refining and distribution, gas, power and chemicals and also operates in several neighbouring countries, including Moldova, Bulgaria, Serbia and Montenegro. The company is 51 percent owned by Austrian company, OMV, one of central Europe's leading oil and gas groups. Currently its annual oil and gas production is equivalent to over 70 million barrels of oil. Together with its affiliates, Petrom also operates 550 filling stations in Romania and 257 in Moldova, Bulgaria and Serbia.

Since Romania became part of the EU in January 2007, the country has striven to adopt the highest international standards, particularly in high-hazard environments such as oil and chemical production and processing plants. Participating in these national efforts, Petrom's management decided to review its emergency response capabilities. At that time, these were handled in-house and according to standards that were felt to fall short of the EU industry norm.

Sembcorp's presentation to the European Process Safety Council at a conference in Leipzig in 2006 formed the basis of the present collaboration with Petrom. Subsequently the Protection Group of Sembcorp UK secured a long-term emergency preparedness consultancy deal early in 2007. Under this agreement, work has been focussed on the Petrobrazi refinery – Petrom's largest refinery located in Ploiesti, approximately 60km north of the capital, Bucharest.

Sembcorp's initial task was to carry out an expert assessment of Petrom's current state of preparedness and determine if its needs were being met and, if not, whether this would best be achieved by enhancing the existing in-house emergency response capability, or outsourcing emergency response to a specialist service provider. With this in mind, one of the first tasks performed by Sembcorp's visiting consultancy team was the preparation of a detailed "gap analysis" for Petrom's management.

The aim of the gap analysis was to identify the services required to meet the company's performance expectations. This involved highlighting areas where currently the in-house facility was not effective in delivering the expected level of service due to insufficient training, equipment or the performance of the personnel. Of course, to produce a meaningful gap analysis, it was necessary to take a number of factors into account. These included: the specific risks associated with the site; the support environment in which the site operates; the current state of readiness; a best-practice model; and the client's expectations.

The specific risks associated with the site and the hazards to which it is potentially exposed could be ascertained only by a careful examination and evaluation of the facility, its processes and procedures. Assessing the support that could be relied upon from the local

municipal emergency services also needed carefully researching. Both steps were precursors to Sembcorp's ability to gauge the current state of readiness.

Petrom's aim was to achieve the standards of preparedness found at the best petrochemical sites in Europe. As touch-stone models, Sembcorp used the 800-hectare Wilton International petrochemical park in Middlesbrough and the 40-hectare SABIC, Petroplus and BASF site at Seal Sands in the UK, where ultra-low sulphur diesel and bio-diesel, kerosene, gasoil, and petrochemical feed stocks are produced.

Based on this gap analysis and in light of Sembcorp's advice, Petrom took the decision to outsource its emergency response requirement. This decision was influenced by the company's successful outsourcing of other services at the site. Sembcorp was appointed to establish the procedures and protocols, devise and implement a service monitoring system, and provide both Petrom and the chosen service provider with continuing advice and guidance.

First, the Protection Group team created specifications for the new service provision. It developed a detailed core service definition document that defined agreed critical service levels and KPIs [Key Performance Indicators]. Typically, critical service levels include emergency services support, response times, and support in the event of environmental incidents. At the same time, a site-specific equipment investment programme was formulated, as was the vitally important transition plan. The KPIs were established to drive the critical service levels and ensure that the new service provider consistently delivers an efficient and cost-effective service to Petrom.

With this set of documents, Sembcorp conducted an exhaustive search for a new outsourced service provider for Petrom. The facilities and capabilities of a number of potential service providers across Europe were assessed – again using the Wilton International and Seal Sands sites as the industry benchmark – and two suitable organisations were shortlisted. Working closely with Petrom's management, the fine detail of the five-year service provision contract was agreed and negotiations were concluded with Falck, a Danish company that specialises in emergency response, healthcare services and contingency planning. Falck signed a five-year contract with Petrom, and the transition of services to Falck is expected to start in September 2008.

Under the terms of the contract, Falck will provide an on-site firefighting service comprising full-time industrial firefighters. This team is made up of the 120 existing firefighters at the Petrobrazi refinery, who are trained by Falck in cooperation with Sembcorp to achieve standards established and monitored by Petrom's management. Falck is also providing emergency ambulance personnel, developing a new emergency control centre, and delivering fire and safety training to the Petrobrazi site's permanent personnel and subcontractors.

Under the contract, Falck and Petrom will make a significant investment in new fire fighting trucks, fire equipment and personal protective gear to specifications determined in consultation with Sembcorp. The new service provider will also be responsible for the maintenance of the firefighting vehicles and equipment. Many of these investment and capital expenditure negotiations are monitored by Sembcorp. This monitoring policy looks set to continue into the future, as Petrom readily acknowledges that Sembcorp's technical expertise and involvement in this part of the project has resulted in significant cost reductions, justifying the cost of the consultancy service.

With the appointment of Falck as the new provider of emergency response services, Sembcorp's role has now switched from one of defining the emergency preparedness measures to one of monitoring and quarterly auditing their effectiveness against the established KPIs and evaluating Falck's competence, performance, quality and value-for-money. Sembcorp will also fulfil the role of expert arbitrator should any disputes arise between Falck and the client.

International Fire and Safety Training (I-Fast)

I-Fast is young company founded in 2007 and managed by a team of professionals with many years of experience as project-leaders and fire/ safety experts in the chemical- petrochemical industry.

I-Fast provides safety training and courses for industrial, shipping and offshore clients on operational, tactical and strategic level. The essence of all education and training is to innovate and improve the efficiency in incident and crisis control.

I-Fast provides consultancy services to support companies to develop and/or optimize their emergency organizations and offers solutions to fire and safety related issues as pre-fire plans and procedures for incident response.

The principle of the activities of I-Fast is to bring employees, organizations and governments on the highest level of incident preparation, so they are capable to control an incident effectively but most important safely.

Editors note: I-Fast, The Netherlands is a new member of JOIFF and we always welcome the opportunity to provide information on our New Members. This detail has been provided by I-Fast.

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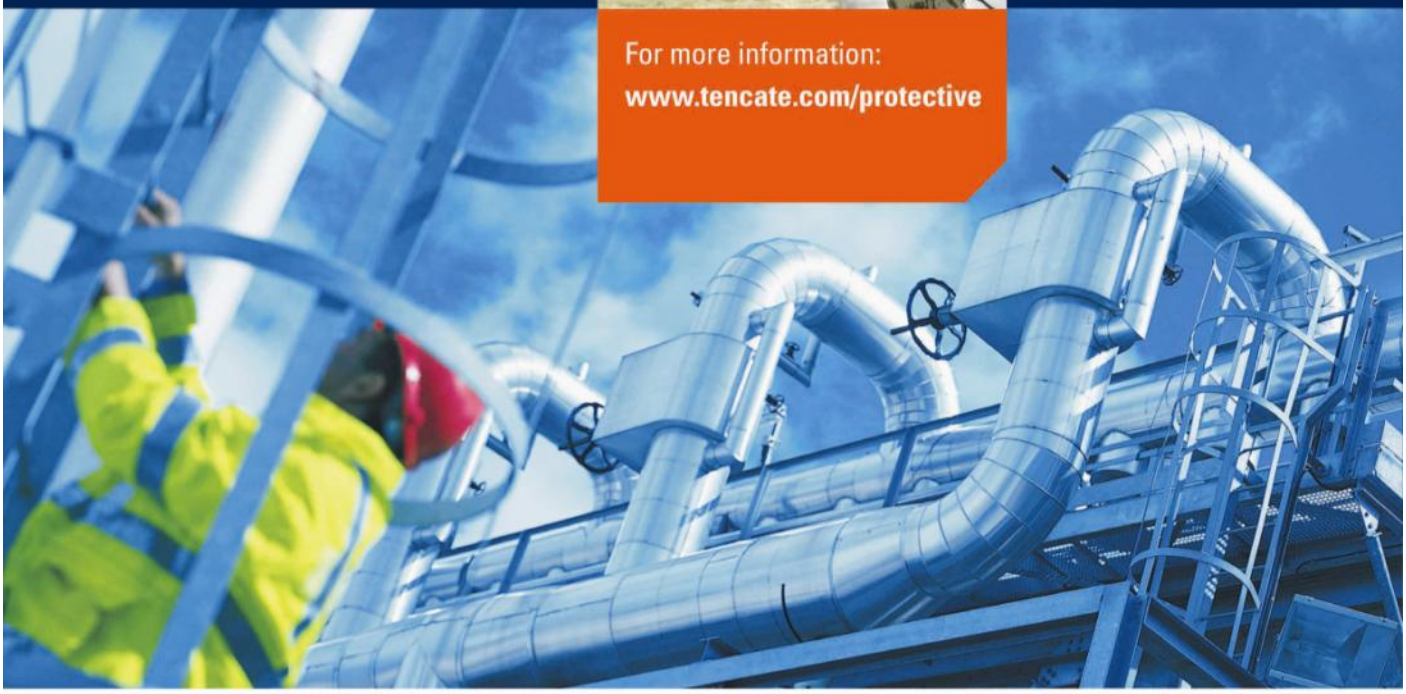

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UK SEMINAR UPDATE

Are your employers at risk of burn injury from an electrical arc or flash fire?

Every year, between one and three thousand electrical accidents happen at work. Some of these accidents lead to agonizing burn injuries and even death. The risk of an electric arc is not just reserved for utility or civil engineering workers where contact is accidentally made with power cables or overhead lines but also from accidental contact with energized parts within switchgear operations in organizations that generate their own electricity - such as the petrochemical industry, hospitals, paper mills and breweries.

The onus of providing adequate Personal Protective Equipment including protective clothing is firmly on the employer. The introduction of an IEC standard for garments along with updated test methods for types of arcs together with the introduction of a revised European Standard to protect against heat and flame could affect any organization whose employees are at risk of burn injury from electric arc or flash fire.

In UK seminars on 8th and 9th October in Bolton at the Reebok, Elaina Harvey, UK Nomex® Account Manager, will discuss what the changes in legislation will mean for end-users and protective garment manufacturers. In addition, along with video footage of electric arc and flash fire testing, she will discuss the hazards in electric arc, risk assessment, the importance of why employees need to be protected by FR clothing and the selection of PPE.

Register for one of Elaina's seminars through the Health & Safety 08 website http://www.healthandsafetyevents.co.uk Elaina is also organizing a flash fire and electrical arc seminar in Geneva on 29 – 30 October where you have the chance to see DuPontTM Thermo-Man® and DuPont TM Arc-Man® testing facilities for flash fire and electrical arc.

You can contact Elaina directly at elaina.harvey@gbr.dupont.com or +44 7881 836588

MEMBERS SECTION

Rick Lanigan GIFireE, MBIM, MISM.
Chief Fire Officer British Nuclear Fuels (Sellafield)
Chairman of JOIFF

Message from JOIFF Chairman Rick Lanigan

I would like to thank all members of JOIFF who were able to give their valuable time and assisted in the manning of our stand at the Fire and Rescue Exhibition in Liverpool from 27th to 29th August 2008. Our stand was kept fairly busy and we received a number of enquiries of which quite a few were good leads for future membership.

Apart from the organisations that attended our stand, it was also beneficial for JOIFF to be seen by other exhibitors and organisations attending these events .This coupled with a number of JOIFF members who are able to explain in practical terms the benefits of JOIFF membership, has enhanced our organisation and will continue to do so, and conveys the message that we are a Professional Organisation, that is continuing to expand and has a voice at high levels within the area Professional Emergency Management.

Notice of the JOIFF 2008 Annual General Meeting

Members of JOIFF are advised that the 2008 Annual General Meeting of JOIFF Ltd. will take place to coincide with the Emergency Services Show to take place in Coventry England on Wednesday 19th and Thursday 20th November 2008. Details of time and venue when the AGM will be held, will be advised in due course.

THE SCENARIO CHOICES FOR VERY LARGE POOL FIRES: DETERMNATION OF HEAT FLUX

By Jeanne van Buren

The radiation heat contours of computational fluid dynamics (CFD), used to model fires, are used by various stakeholders for different purposes. All the CFD's are based on the Navier-Stokes equations for fluid flow phenomena. Generally accepted models use RANS (Reynolds Averaged Navier Stokes) and LES (Large Eddy Simulation). So many combinations of variables are possible that it is impossible to put them in the software. Therefore all these models are at best a good guess of the actual situation. As long as we have no other options this is what we have to work with. But using the proper model together with the right data derived from a well thought through scenario is however conditional.

Before we start putting data in these computer models we should establish what sort of pool fire we are dealing with. We should distinct between a pool fire and a spill fire. Spill fires are not bunded or diked. There are three sorts of spill fires.

An instantaneous spill fire which burns away quickly (10-15 minutes). A spill fire with a supply of fuel where the burn rate of the fuel is in equilibrium with the supply of the fuel. Ergo, the seize of the spill will stay the same.

A spill fire with a large fuel flow. The fire surface will increase unless the fuel can freely flow to some sort of containment.
With spill fires it has to be considered that they eventually will burn back to the source of the spill, which may pose additional problems.

Now back to the pool fires. The dept of this bunded or diked fire is the first issue we have to consider. There is a distinct difference between shallow and deep pool fires. Shallow pool fires are quite fierce and behave like bunded spill fires . The flame will move along the surface. A lot of heat from the fire will go into heating the liquid, supporting a fast burn rate. Larger surfaces can result in more soot production – depending on the product involved towards the centre of the pool as air entrainment will become more difficult. Outcomes of generally accepted fire models used to determine the radiation heat contours of these shallow bunded pool fires, should be taken serious for any (pre) planning purposes including emergency response.

In general, the formation of soot in hydrocarbon pool fires, shallow or deep, is more likely if the product has a C : H ratio of > 3 : 10 and/or no oxygen molecules in the molecule.
Now let us look at deep large pool fires. When is a pool fire a large deep pool ?

From the modelling point of view, a deep large pool fire consists when the diameter of the fire is > 3 meter. Also the pool layer must be deep enough for the fire to burn over 1 hour. Above a diameter of 3 meter the deep pool fire can have different characteristics than smaller fires, de pending on the product involved.
Emergency responders however use the term large pool fire when the net surface of the fire is well over 1000 m2 and will last longer than 1 hour. This is to do with the equipment, foam and staff needed to tackle this fire and the total amount of water required to fight the fire and cool structures affected by the radiant heat.

Before we start modelling we like to know if direct ignition is anticipated or we are dealing with an instantaneous (static) pool with fuel vapour built-up, before ignition. If the fuel is volatile, an unconfined vapour cloud is likely to form, which, after (explosive) ignition moves back towards the spilt fuel, resulting in a pool fire. Not only are the effects of both scenarios different, the number and sort of lines of defence violated are different too. The latter has many similarities with the Buncefield scenario. Only the low atmospheric winter inversion layer contributed to the extent and severity of the effects at Buncefield. Winter inversion layers are normally not considered when modelling such incidents or any other incident.

So make sure everyone not only gets the outcome of the modelling exercise, but also the scenario and the assumptions on which the scenario was based.

When dealing with very large pool fires, the shape, the height and even the material of the bund may have an effect. If the edge of the bund is higher than fluid level it may locally intensify the burning, but if the bund material is able to transport the heat, it may slow down the burn rate. Crosswind together with the shape of the bund wall may also influence the heat radiation. Modelling software does not take this into account.

If the fluid is a mixture like crude, the composition of the fuel will change when the fire endures. This too is not taken into account when modelling the fire.

At some moment in time a very large pool fire – if not extinguished by that time will - become fully developed. Soot built-up will decrease the radiant heat emission, unless we are dealing with a fairly clean burning fuel like alcohol. For heat flux modelling purposes the fire should now be split up in two layers. One layer represents the fire, while the second layer represents the layer with soot above the fire. There are not many models that use this two layer approach for fully developed very large pool fires.

All the characteristics of any large pool fire will change in time due to the effect the soot formation has, the heating up of the liquid in the pool due to the convective heat of the fire, the weathering of the product on fire, etc. As an emergency responder you not only have to be prepared for these

changes, you also must anticipate working with the benefits of these changes.

As mentioned earlier, the outcome of a pool fire modelling exercise, usually present the worst case effects of an incident scenario, which should be used for (pre)planning purposes.

But we should also be willing to look further and show sympathy for the incident commander. Besides the preplanning and training he likes tangible data from the actual incident he is confronted with. In the Netherlands each structure exposed to a heat flux of ≥ 10 kW/m2, must be cooled with water. In practice organising the amount of water required to do this during a very large pool fire may pose a challenge. And what about all the run off (polluted) water and the damage it may cause either on land or to the aquatic life.
It would be very helpful if the commander and his team could actually measure the real heat flux at intervals during the fire – for safety of his personnel and to support of efficient use of his resources.

The Stefan–Boltzmann law, may be able to help us out here, it states that that the total energy radiated per unit surface area of a black body in unit time (known variously as the black-body irradiance, energy flux density, radiant flux, or the emissive power), j*, is directly proportional to the fourth power of the black body's thermodynamic temperature T (also called absolute temperature):

$$j^{\star} = \sigma T^4$$

Does this mean that if the emergency responders are able to read the temperature of an object affected by the radiation of a fire, with for instance a portable heat reading camera, they can use this information to determine if a construction has to be cooled. Perhaps we have to be innovative and paint small (10 x 10 cm) black surfaces (based on the incident scenario) on the constructions to enable this measurement. Maybe all storage tanks will in future have a horizontal black lines (10 cm width) half way up the cylinder wall. Surely this is something to explore. Or should we all stick together and start funding the development of non-contact portable heat flux sensor. It would preventing fires spread so much easier.
By the way, the widely used ear thermometers, is based on the same principal. It measures your temperature by detecting the amount of radiant heat (infrared energy) emitted by your eardrum.

I would like to invite readers, especially companies, who are willing to invest in the development of reliable methods and (non contact) equipment for establishing the heat flux (up to 35 kW/m2) to a structure during a fire.

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.

INSTITUE OF FIRE SAFETY MANAGERS

REPORT ON THE INSTITUTE'S ANNUAL CONFERENCE

by Secretary General Bob Docherty

The IFSM annual conference this year was held on Tuesday 26th July 2006 at the prestigious T Building of the MINI Plant in Oxford. The conference attracted over 50 delegates and the programme was opened by the President of the IFSM Gary Whitworth who welcomed everyone to the event and then handed over to the Chairman, John Williamson, who outlined the programme for the day and gave a special welcome to the invited guests.

As usual with the Institute's conferences, the programme of speakers was wide and varied and "first off the mark" was Paul Roberts from the Department of Health who gave an update on the Firecode suite of documents and also a fascinating presentation and insight into the Royal Marsden Hospital fire in London earlier this year. Following on from Paul was Barry Pomford from Gexcon-UK Ltd. who presented a paper on DSEAR (Dangerous Substances and Explosive Atmospheres Regulations) informing conference delegates of not only the statutory details of these Regulations but also the wide issues that they cover.

The next speaker to round off the morning session was Rob Ward from Sennet Professional Indemnity who gave a presentation on a guide to insurance for health and safety consultancies. Rob informed the conference of the wisdom of having the correct insurance when operating out "in the field" as a consultant and the perils that await consultants who may not be aware of the issues that may face them when taking up insurance and any claims that might be made against them. Rob's question session was a lively one and the Chairman had to step in so that conference would not be late for lunch!

Conference resumed the afternoon session with Andy Hopkins from Brown Jacobson Solicitors who gave a presentation on the history of corporate manslaughter leading up to the current Corporate Manslaughter and Corporate Homicide Act 2007 and covered the scope of the new Act and the practical implications arising from it. Mark Thomson from KAC Alarm Company Ltd. was the final speaker for the day with a presentation on directional sound evacuation technology including a practical demonstration of this new technology.

This part of the day was concluded by the Chairman before delegates gathered to be kitted out in corporate visitors coats and communications equipment for a tour of the MINI Plant itself. Prior to delegates setting off on the tour, the Chairman thanked all delegates for participating and especially all of the speakers who had given their time freely to make the day an overwhelming success.

The T-Building at the MINI Plant is the conference centre for the plant. The building has lots of MINIs old and new and delegates took the chance to look around the cars that were on display. I did notice one or two of the older delegates looking on a Mini from the 60's with a yearning and gleam in their eye!

The Chairman's final remarks were to thank Phil Lynch from the BMW Group and all those from the MINI Plant who had been involved in making the day such a success and also the hospitality for the day. It was much appreciated by all.

2008 IFSM Conference delegates around one of the MINIs that was in the Italian Job movie

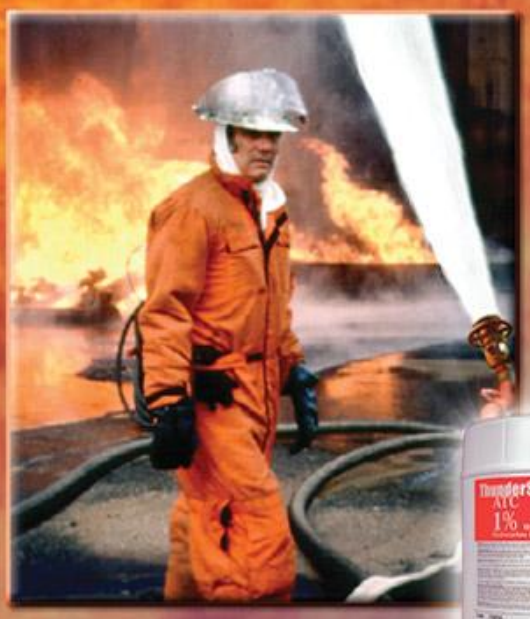
Diary of Events — 2008

Sept 30th – 2nd Oct		Fire Engineering 2008, Cologne, Germany.
Oct	7th - 10th	Fire Protection at Security Essen 2008, Essen, Germany.
	15th – 16th	IAFPA European Conference 2008 "Towards a Safer Airport Environment". Warsaw, Poland.
	20th	IFSM AGM for 2008, Nottinghamshire Fire and Rescue Service HQ Conference Suite, England.
	20th—21st	Institution of Fire Engineers Environmental Protection Conference and Exhibition, Bolton, England.
Nov	19th—20th	Emergency Services Show 2008, Coventry, England.
Dec	20th – 23rd	MEFSEC 2008 Fire, Safety and Security Exhibition, 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.

TWO PIONEERS. ONE FOAM.



Dwight lives in the South, Mitch to the North. Dwight circles the globe battling fires that engulf fuel storage tanks and oil fields. Mitch travels too, but mainly to visit laboratories and test facilities. Dwight Williams owns and operates Williams Fire & Hazard Control. Mitch Hubert is the senior chemist at the Ansul Fire Technology Center.

So what do these two have in common?

One day, Dwight asked Mitch to invent a foam that was better than any on the market. Plus, Dwight was to test it personally. So Mitch rolled up his sleeves and developed a product he knew would satisfy Dwight's high expectations. Dwight then tested it under conditions far exceeding normal approval agency requirements. Today, Mitch's foam is the most potent weapon in Dwight's firefighting arsenal.

Choose the foam that Mitch and Dwight built...

THUNDERSTORM™ 1x3
Firefighting Foam Concentrate.

Williams FIRE & HAZARD CONTROL

TYCO FIRE SUPPRESSION & BUILDING PRODUCTS
UNIT 6 WESTPOINT ENTERPRISE PARK
CLARENCE AVENUE TRAFFORD PARK
MANCHESTER M17 1QS
TEL: +44 (0)161 875 0459
WWW.ANSUL.COM

ANSUL Innovative Fire Solutions

tyco Fire Suppression & Building Products

PRESS RELEASE: THUNDERSTORM® MAKES ITS MARK IN THE PETROCHEM INDUSTRY

By John Allen

tyco Fire Suppression & Building Products

THUNDERSTORM® is a new generation of alcohol-resistant AFFF foam concentrate that is proving to be a firm favourite in the international petrochemicals industry.

THUNDERSTORM® ATC [Alcohol Type Concentrate] 1 x 3 is the result of a joint development between ANSUL® and Williams Fire and Hazard Control Inc, probably the world's most highly respected specialist in the fire protection of flammable gases and liquids. Using new and proprietary technology, it is specifically designed to fight fires in oil refineries, where there is never any scope for compromise or second best. THUNDERSTORM is formulated to ensure the fastest, most reliable and safest extinguishing of a fire. Indeed, the intimate involvement of Williams Fire and Hazard Control in the development of THUNDERSTORM is surely an indisputable testimony to its premium performance.

THUNDERSTORM IN ACTION

Dwight Williams' teams battle the fiercest fuel storage tank and oilfield blazes around the globe, so is insistent on equipping his experts – many of whom are family members and long-time friends – with only the best products that the world's leading foam technologists can develop. Having tested THUNDERSTORM under conditions far exceeding normal agency standard approvals, it has recently been described as "the most potent weapon in Dwight's firefighting arsenal".

THUNDERSTORM is a complete safety solution for the petrochemicals industry, as it includes both the foam itself and unrivalled technical support and assistance. Its new technology means that it has dramatically reduced viscosity when compared with other 1 x 3 listed polar-solvent type AFFF concentrates on the market. It enhances the foam's performance, and THUNDERSTORM can be easily proportioned at the correct dilution using most conventional proportioning equipment such as: Hydro-Foam™ nozzles; balanced pressure and in-line balanced pressure pump proportioning equipment; balanced pressure bladder tank proportioners; around-the-pump and through-the-pump proportioners; fixed or portable (in-line venturi proportioners; and handline nozzles with fixed induction / pickup tubes.

The minimum usable temperature for the non-freeze-protected THUNDERSTORM ATC concentrates in this equipment is 35°F [2°C], but this can be reduced to minus 20°F [minus 29°C] with the Thunderstorm freeze-protected range of concentrates. The maximum usable temperature is 120°F [49°C].

It can be used as a three percent solution at 0.13 minimum application density on fires involving polar solvents, such as acetone, methanol and methyl ethyl ketone, and a one percent ratio at 0.10 minimum application density on fires involving hydrocarbons such as high-octane petrol, aviation fuel and naphtha. These are the two most common types of flammable liquid fires that can occur in an oil refinery, and these low ratios simplify foam storage and dispersement around the site, and greatly increase the "staying power" of both fixed and mobile firefighting foam systems. The excellent wetting characteristics of THUNDERSTORM also make it useful in combating Class A fires involving freely burning materials such as wood, paper, textiles and other carbonaceous materials.

Other characteristics of the foam include the speed at which it spreads across the surface of a tank fire and seals against the hot metal surfaces on the inside of the tank. Additionally, high volume streams of THUNDERSTORM can be discharged from foam guns - located several hundreds of metres away from the tank – without causing turbulence when it hits the surface. The foam also has

good fuel shedding capabilities to extinguish the fire without knocking a hole in the foam blanket.

THUNDERSTORM extinguishes a fire in three ways. First, with a fire involving a conventional hydrocarbon fuel, an aqueous film is created; in a polar solvent fire, a polymeric membrane is formed. This film or membrane creates a barrier to help prevent the release of fuel vapour. Second, regardless of the type of fuel, a foam blanket is formed that excludes oxygen and from which drains the liquids that form the film or the polymeric membrane. Third, the water content of the foam produces a cooling effect.

THUNDERSTORM can be used with fresh, salt or hard water, and is formulated from special fluorochemical and hydrocarbon surfactants, high molecular weight polymers and solvents, and can be transported and stored as a concentrate. This ensures ease of use and considerable savings in weight and volume. It contains no PFOS [Perfluorooctanesulfonic acid] or PFOA [Perfluorooctanoic acid] and is biodegradable. Typically, aspirating discharge devices produce expansion ratios of between 5:1 and 10:1, while non-aspirating devices such as hand-line water fog / stream nozzles or standard sprinkler heads are between 2:1 and 6:1. Medium expansion discharge devices produce ratios of between 20:1 and 60:1, depending on the type of device and the operating conditions.

THUNDERSTORM is formulated to provide superior performance in all fire tests, particularly those relating to high -octane gasoline. The fire performance of THUNDERSTORM is measured primarily against the latest revision of UL [Underwriters Laboratories] Standard 162 (Standard for Safety for Foam Equipment and Liquid Concentrates) and Williams Fire and Hazard Control fire tests. The UL testing focuses on fuels such as heptane and isopropyl alcohol, while the Williams Fire and Hazard Control test centres attention on premium unleaded gasoline. However, to provide even greater fire protection, THUNDERSTORM may be used with Williams PKW™ "Purple-K" dry chemical extinguishing agent, irrespective of the order of application.

When stored in the polyethylene totes, drums or pails in which it is supplied, or in equipment recommended by the manufacturer and within the specified temperature limits, the shelf life of THUNDERSTORM ATC 1X3 concentrate is around 20 to 25 years.

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 the detail in 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

President Gary Whitworth at the MINI Plant during the IFSM Conference, 2008

J O I F F

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 2008/2009 - JOIFF accredited Training Establishments:

JOIFF accredited Course	Dates	Venue
Pipeline Emergency Response Officer (PERO)	8 – 9 September 2008	Tees Valley
	18-19 November 2008	Tees Valley
	23 – 24 March 2009	Tees Valley
	12 – 13 May 2009	Tees Valley
	28 – 29 October 2009	Tees Valley
Site Incident Controller	17th September 2008	Tees Valley
	25th November 2008	Tees Valley
	6th May 2009	Tees Valley
	15th September 2009	Tees Valley
	18th November 2009	Tees Valley
Night-time firefighting Course	27th – 28th October 2008	Petrofac Training Montrose
	10th – 11th November 2008	Petrofac Training Montrose
	27th – 28th November 2008	Petrofac Training Montrose
	11th – 12th December 2008	Petrofac Training Montrose

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.

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