

THE CATALYST

Q3 2019



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FIREFIGHTING EXTINGUISHING TECHNOLOGY AND HARDWARE EDITION

JOIFF AFRICA SUMMIT REPORT, ARE SOCIETY'S EXPECTATIONS BEING
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ABOUT JOIFF

Full Members of JOIFF are organisations which are high hazard industries and/or have nominated personnel as emergency responders/hazard management team members who provide cover to such organisations. Commercial Members of JOIFF are organisations that provide goods and services to organisations in the High Hazard Industry.

JOIFF's purpose is to prevent and/or mitigate hazardous incidents in Industry through its 4 pillars:

Shared Learning – improving risk awareness amongst our members

Accredited Training – enhancing operational preparedness in emergency response and crisis management.

Technical Advisory Group – raising the quality of safety standards in the working environment of High Hazard Industry

Professional affiliation - networking and access to professionals who have similar challenges in their work; prestige of being a member of a globally recognised organisation of emergency response.

JOIFF welcomes enquiries for Membership - please contact the JOIFF Secretariat for more information.

JOIFF CLG is registered in Ireland. Registration number 362542. Address as secretariat. JOIFF is the registered Business Name of JOIFF CLG

ABOUT THE CATALYST

The Catalyst is the official emagazine of JOIFF, the International Organisation for Industrial Emergency Response and Fire Hazard Management. Our policy is to bring you articles on relevant technical issues, current and new developments and other happenings in the area of Fire and Explosion Hazard Management Planning (FEHMP). The Catalyst is published quarterly - in January, April, July and October each year. Readers are encouraged to circulate The Catalyst amongst their colleagues and interested parties. The Editors welcome any comments – please send to joiff@fulcrum-consultants.com

In addition to The Catalyst, information relevant to FEHMP is posted on the JOIFF website.

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.



If you have a request for an article or advertising to be included in the Catalyst, please contact the JOIFF Secretariat, details below.

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NEWS FROM JOIFF ACREDITED TRAINING PROVIDERS

H2K

JOIFF accredited Training Provider H2K, The Netherlands recently successfully completed a re-accreditation audit.



Left to right: Peter De Roos, Managing Director H2K, Gerry Johnson, JOIFF Director of Standards of Training and Competence, Paul van Helden Chief Executive Officer H2K, Ralph Van Den Elshout, Manager Operations, H2K.

INSTITUTE OF FIRE SAFETY AND DISASTER MANAGEMENT STUDIES

JOIFF accredited Training Provider Institute of Fire Safety and Disaster Management Studies, India, recently successfully completed a re-accreditation audit.



Left to right: Front Row: Mr. P.P. Vaghela, Deputy Director IFSDMS, Mr. J.B. Shetty, Technical Director, IFSDMS, Mr. B.C. Tayade, General Manager Technical, IFSDMS. Back Row: IFSDMS Instructors

The Institute of Fire Safety & Disaster Management Studies (IFSDMS) is located near Vadodara, Gujarat, India. It is a professional institution specialising in the emergency preparedness and response needs of industry, government and corporate business for over 20 years. The 76 acre residential Campus has on-campus spacious lodging and boarding facilities and a specialised training ground consisting of full scale flammable liquid and gas based industrial props for simulation of large scale fire scenarios, technical and confined spaces training.



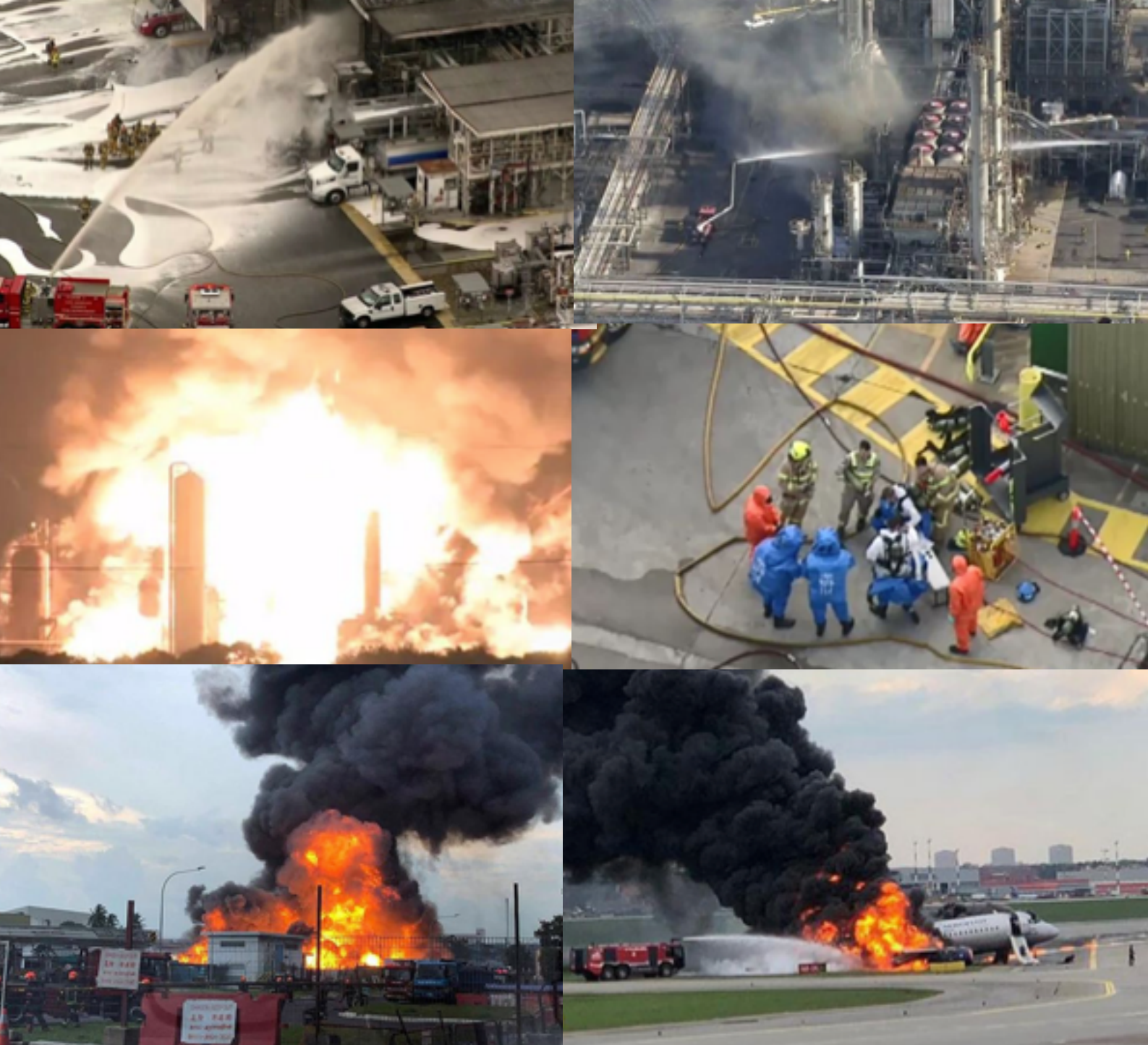


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SOME OF THE INDUSTRIAL INCIDENTS THAT TOOK PLACE DURING THE SECOND QUARTER OF 2019

JOIFF shares valuable information with its members aimed to improve the level of knowledge of Emergency Responders and to work to ensure that members benefit from the misfortunes of some to educate against the same mistakes being repeated. Industry needs to ask is it doing enough to educate Industry so that incidents such as these will either not be allowed happen again, or if they do they can be effectively dealt with.

Australia

7 Hospitalised, HF Spill

China

CO2 Fire System Kills 10 Injures 19

Indonesia

Oil Spill Now Larger Than Paris, 5 Dead

Malaysia

Fire Tamed at Petronas Refinery

Nigeria

10 Dead in Oyigbo Gas Pipeline Incident

Russia

Moscow Plane Fire 41 Feared Dead

Singapore

LPG Fire Kills One on Jurong

USA

2 dead, 2 missing in silicone chem plant explosion

Refinery Hit by Second Fire in Two Months

Jet Fuel Incident Injures 4

Massive PES Refinery Explosion & Fire

Note from the Editor.

Most reports of incidents that occur, some of which are listed here, are familiar. After all major incidents, recommendations are made but how many of the recommendations are implemented. How many are forgotten over time until another similar incident occurs?





NEW MEMBERS

During April, May and June 2019, the JOIFF Board of Directors were pleased to welcome the following new Members:

MEMBER ORGANISATIONS

BP Chembel NV, Geel, Belgium, represented by Peter Raeymaekers, Emergency Response & Security Specialist. BP Chembel NV is chemical site that manufactures paraxylene (PX) and purified terephthalic (PTA), also benzene and fuel additives.

Bronto Skylift, Tampere, Finland, represented by Roberto Quintero, Sales, Marketing and Product Management Director, Henri Willman, Product Manager, Jussi Alenius and Pauli Blomberg, Sales Managers. Bronto Skylift was founded some fifty years ago and manufactures, sells and services aerial platforms for rescue and firefighting. Bronto Skylift has an extensive, worldwide service network to support its customers.

CTD Pulvérisation, Guéreins, France, represented by François Cheverry, Export Manager and François Goutard, Fire fighting business unit manager. CTD Pulverisation manufactures electronic positive pressure foam dosing systems designed for firetrucks and fixed installations. CTD supply systems for O&G applications, either fixed or on skids or trailers. They may use external energy (batteries from the trucks) or be autonomous with their own power supply.

Falck Netherlands, Breda, The Netherlands, represented by Berthil van den Poll, Commercial Manager, Dirk van de Moosdijk, Location Manager, Robbert Pronk, Business Development Manager and Tom van Nispen, Managing Director. Falck Netherlands operates fire brigades in the Netherlands for high-risk industrial sites.

Hellenic Petroleum, Aspropyrgos, Greece, represented by George Kiamos, Head of Fire Safety Dept Aspropyrgos Refinery Industrial Complex, Konstantinos Kidonis, Coordinator of Fire Safety Dept, Aspropyrgos Refinery Industrial Complex and Antonis Pappas, Head of Health & Safety Dept, Aspropyrgos Refinery Industrial Complex. Hellenic Petroleum, Aspropyrgos produces oil and gas products.

NPC Safety and Environmental Service Co. Ltd., Rayong, Thailand represented by Natthun Laongthong, Emergency Management Division Manager, Chusin Nokden, Operations Director, Diaw and Steve Fraser, International coordinator. NPC Safety and Environmental Service Co. Ltd. is a subsidiary of PTT Global Chemical Public Company providing safety, quality, environment, occupational health, fire training and emergency response training services. NPC S & E also distributes safety equipment and provides inspection and maintenance of protection and fire extinguishing systems and equipment.

STAR Refinery, Izmir, Turkey, represented by Farrukh Aliyev, Plant Protection Engineer, Ergun Pehlivanogullari, Plant Protection Lead Engineer, Emrah Varol, Plant Protection Manager and Mehmet Yuksel, Plant Protection Engineer. STAR Refinery focuses on strategic products to meet the needs of the National economy and industry – diesel, naphtha, petroleum products such as jet fuel and LPG. There are different units in the refinery that produce and treat different hydrocarbons and Plant Protection Management is responsible for ensuring the readiness and access of the fire fighting systems. STAR Refinery's emergency response team is responsible for intervention in the event of fire and gas release.

INDIVIDUAL MEMBERS

Phil Southworth, Cheshire, United Kingdom. Phil has an extensive background in aviation emergency response and amongst other qualifications, he is Graduate Institution of Fire Engineers, Member Institute Leadership & Management and Member of the Faculty of Pre Hospital Care.

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



RENEWABLE ENERGY – SOME HAZARDS OF WIND FARMS

Renewable energy is energy that is collected from renewable resources such as sunlight, wind, rain, tides and waves. The wind energy sector is currently one of the fastest growing sectors of renewable energy as wind is a clean fuel source and wind energy doesn't pollute.

Wind turbines operate to convert the kinetic energy in wind into mechanical power which can be used for specific tasks such as pumping water or driving a shaft that can convert the mechanical power into electricity. The huge rotor blades on the front of a wind turbine have a special curved shape, wind blowing past the blades spins them around and the blades turn a shaft inside the turbine which drives the electrical generator which generates the electricity. A wind farm is a group of wind turbines in the same location primarily used to produce electricity. Wind farms are based on both land and sea. This Industry is growing rapidly and the general state of wind turbine safety is of great and growing concern as many workers are exposed to hazards that could result in injuries, long-term damages and even fatalities.

Hazards of wind farming include:

Falls: Wind turbines vary in height but can be over 30 metres. tall. As most wind farms are exposed to high winds and all kinds of weather conditions, working at a height is made more dangerous. Workers should be protected from falls by using guardrail systems, safety net systems and personal fall arrest systems.

Confined Spaces: The majority of wind farm workers work inside the wind turbine which is a confined space and so they may suffer from claustrophobia or panic attacks which is intensified by the low oxygen levels in a turbine. Clear and simple exit routes should be provided.

Noise exposure: Wind turbines are usually located where there are frequent bouts of high winds which will make it hard to hear. Slips, trips and falls: Wet conditions, in particular on offshore wind turbines, can be extremely hazardous, especially when working at height.

Emergency Response: Owners/operators of wind farms are duty bound to plan for emergencies and rescue. Wind Farms are usually in remote areas which makes it difficult for emergency support to reach

the location of an incident quickly so it is desirable that operators are trained for competence in first aid, fighting fires with portable fire extinguishers etc. and this training is refreshed regularly. Respiratory protective equipment and training in its use may also be required for fires involving cables, plastics etc. Training should also be considered for rescuing from falls, confined spaces and at height. Resources should be readily available to evacuate injured personnel. Hazards outside the actual operation of the turbines may need to be identified and considered e.g. lightning strikes, Wildland fires, extreme hot and/or cold weather conditions. Emergency response on offshore wind farms may require further competences such as advanced medical training,



NEWS FROM JOIFF ACCREDITED TRAINING PROVIDERS SASOL SECUNDA EMERGENCY MANAGEMENT TRAINING ACADEMY

JOIFF accredited Training Provider SASOL Secunda Emergency Management Training Academy recently successfully completed a re-accreditation audit.



Left to right: Gerry Johnson JOIFF Director, Andre Labuschagne, Senior Manager Emergency Management, Secunda Chemicals Operations, Randal Fletcher, JOIFF Chairman, Boikanyo C Motlogelwa, Manager, EM Training Academy, Secunda Chemicals Operations, Pine Pienaar, JOIFF Director.



JOIFF FOAM TECHNICAL SUMMIT 2020

Radisson Edwardian Hotel, Heathrow Airport

Date: February 10th 2020 **Location:** London, United Kingdom

JOIFF is pleased to announce the JOIFF Foam Technical Summit 2020.

There is a clear need for an impartial, independent and authoritative Technical Summit to discuss the current issues relating to Fire Fighting Foam. JOIFF, as a truly Independent organisation which has no commercial interest in Foam, but which has a major interest in informing and educating its members, are ideally placed to host a full spectrum, truly independent Technical Foam Summit.

All sides of the current discussions and issues will be represented and the Summit will be conducted by an independent moderator who is a subject specialist.

More details of the JOIFF Foam Technical Summit will be provided over the coming months.

For further information contact events@edicogroup.net





FIRE FIGHTING SYSTEMS (FFS)

Fire Fighting Systems (FFS) is the leading designer, maker and supplier of complete systems of external firefighting.

Fire Fighting Systems (FFS) provide complete packages comprising all services and equipment exclusive piping required for all installations onboard tugs, offshore vessels, fireboats and work boats in accordance with all class requirements. Building on their world renown reputation for highest quality and innovative fire solutions Fire Fighting Systems (FFS) also provide complete systems of onshore firefighting on tank farms, refineries, industrial plants etc.

With a team of highly skilled engineers located in Norway and in Singapore. And our production and logistics centre is located in Åmål, Sweden Fire Fighting Systems (FFS) are able to provide the highest level of professionalism and customer service.

Fire Fighting Systems (FFS) are focused on up to date design and engineering in order to provide the most competitive and best performing systems in the market. Our



container testing



MPU3

target is to be the best alternative for the customer's bottom line in the long perspective.

Our product range comprises pumps with drivers, gearboxes, fire water monitors, foam mixers, deluge systems, remote control systems and all related equipment for a complete package. For land based systems we have developed a range of trailer mounted monitors and pump packages. Special foam mixing solutions and lift pump included.

To experience the land based systems



Fire Fighting Systems (FFS) can offer you are invited to to join the FFS big flow demo at our premises on September 11th and 12th 2019 in Åmål, Sweden.

The event will include a guided tour of our factory with demo of test station as well as presentation of all our products and systems and capabilities at Vänern lake.

The big flow systems demo will include our 83.000 lpm/22.000 GPM monitor. Other FFS made equipment like pumps with drivers, monitor mounted trailers, foam mixers and various other monitors and nozzles will be demonstrated with full capacity. Our control system department will show potential options for remote operation.

We will also take care of food, beverages and hotel as we expect you to stay overnight to take full advantage of the visit.

If you wish to join us & accept this invitation, we ask you kindly to notify us by email to ffslb@fifisystems.com.

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PRESS RELEASE: FIRE SERVICE COLLEGE COLLABORATES WITH JOIFF MEMBER ORGANISATION TO DELIVER FIREFIGHTING TRAINING IN NIGERIA

A team from JOIFF member organisation The Fire Service College, United Kingdom, has recently completed two weeks of training delivery in Nigeria to Federal Fire Service training personnel. The training has been carried out as part of a collaboration between the Fire Service College and JOIFF member organisation Falck Prime Atlantic, Nigeria, a subsidiary of Prime Atlantic Limited.

Kevin Keeler, Head of International Training Development, Fire Service College said: "We are delighted to be working with Falck Prime Atlantic to deliver a range of firefighting training to the Federal Fire Service. This will provide the basis for further collaboration in the delivery of high-quality training in Nigeria to both the public and private sector. The Fire Service College has a longstanding relationship with Nigeria and this collaboration is an important new development."

Folake Soyannwo, Director, Falck Prime Atlantic said: "This is yet another milestone we are very pleased with. Fire-related emergencies have increased all over Nigeria, with devastating consequences resulting in significant loss of lives and property. Supporting the response capabilities of our emergency responders through training and consultancy in-country, in collaboration with the Fire Service College, which brings with it many years of experience in the area of fire fighter development, confirms our commitment to our promise of training locally to global standards."

Falck Prime Atlantic: Falck Prime Atlantic Limited (FPAL), a subsidiary of Prime Atlantic Limited, is a joint venture between Prime Atlantic Global Safety Limited and RelyOn Nutec. (Prime Atlantic Global Safety is a company incorporated by Prime Atlantic Limited for the purpose of delivering health and safety solutions and services to the Nigerian oil and gas industry). Falck Prime Atlantic offers services in the areas of Safety, Survival, Firefighting, Emergency Response training, and Consultancy Services to various industries including the oil and gas, manufacturing, construction, and more. Training is delivered at its training centre, the first of its kind in Nigeria and the West African region. The centre is built on 18 acres in Ipara, Remo, north of Ogun State, Nigeria. The centre certifies managers, engineers, and technicians to provide various industries with a qualified workforce.

Fire Service College: The Fire Service College specialises in equipping today's firefighters and other emergency responders with the best possible skills and training to learn the latest techniques and procedures. With over 40 years' experience with the national and international fire response industry we can ensure that teams can be safely trained to national and international standards.



PRESS RELEASE: CTD PULVERISATION IS THE LEADING EUROPEAN MANUFACTURER OF TAILOR-MADE FOAM DOSING SOLUTIONS.

Our systems integrate themselves perfectly on all types of fire trucks as well as on special hazard applications and with all the wetting agents and foam concentrates known in the market. We pride ourselves on the accuracy of the result given, the absolute no pressure loss (especially for fixed installations) during the foam injection and the technical expertise of our engineers that will find the exact solutions to the specific needs of the end user.

We are creating, for example, for a customer in Asia, a specific foam dosing system that will be able to deliver 1,800 lpm of foam concentrate to be injected in 30,000 lpm of water. A hard task that is handled by the different teams within CTD, R&D, production and testing & commissioning.

From very big to very small, we are also able to inject with great accuracy 0.2% of wetting agent into as little as 50 lpm of water. Our ranges of Triton, Caméléon, Gecko, Iguane and Salamandre are well known to all the major players in the fire fighting field!

We have technical partners who have been trained by our experts in Europe, East Asia and Australasia and would be delighted to discuss with your teams, either directly or via our



partners, to understand the exact needs of your clients and create specific solutions for their foam dosing requests.

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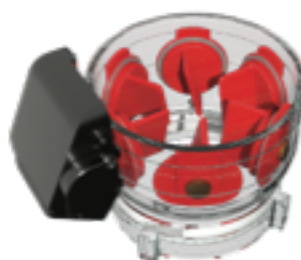
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Vortex 6, 3-D illustration for additional detail

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VORTEX® 2.5

Manual or ER

Match with stacked tips for a straight stream and dispersed pattern or choose from dozens of other Master Stream nozzle options.

ALWIT GMBH

ALWIT GmbH, which has been founded by Alfred Wittig in 1954, specializes in the manufacture of PPE against flames and heat. It was the first company in Germany to offer PPE made of DuPont™ Nomex® as early as 1968. In the 1980s, all British Petroleum branches in Germany changed their PPE to Nomex®, which has been supplied by ALWIT.

Therefore it comes as no surprise that ALWIT is still a partner in the DuPont™ Nomex® Partner Program.

Also when DuPont™ Kevlar® was introduced in Europe in 1978, it was again ALWIT that established Kevlar® as an adequate replacement for asbestos and made it marketable.

So it is not surprising that a particularly light aluminized PPE based on Kevlar® with the highest level of protection against radiant heat is still successfully used today for firefighting in special situations (proximity suits) and in metallurgical plants against radiation and liquid metals.

Although ALWIT only offers products that have been tested and approved to European Standards, there are cases where no standard exists and PPE has to be developed on the basis of a risk assessment. This is the case with a suit that protects against 500°C hot steam at a pressure of 150 bar. Another development is an aluminized coat with additional air cooling to keep the body temperature down while exposed to radiant heat.

ALWIT is currently working with the University of Chemnitz on a research project to use inert gas to cool firefighters during the rescue of people from burning buildings.



aluminized coat with additional air cooling



suit that protects against 500°C hot steam at a pressure of 150 bar



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HEALTH AND WELLBEING

RESPONDING IN SUMMER CONDITIONS

Summer has hit the Northern hemisphere in a big way with very high temperatures and continuous sunshine. The temperatures in many places are so high that it is not comfortable to be out and about – even in “summer gear”.

Emergency Responders don't have the option of staying indoors or of “dressing down” when the alarm sounds – they must turn out in intervention PPE to every incident whether it is a small fire that can be dealt with quickly or a Wildland Fire that might take days or weeks to deal with under extraordinarily hot and dangerous conditions.

Intervention PPE is designed to protect the wearer inside the protective ensemble from heat exposures penetrating from the outside in, it also prevents body heat inside the protective ensemble from building up and being released to the outside. This results in increasing the core body temperature of the emergency responder, on many occasions to dangerous levels. Average normal core body temperature is 37°C (98.6°F). Normally with a 1°C rise in core body temperature to 38°C (100.4°F) seeing and hearing begin to be impaired; with a 2°C rise in core body temperature to 39°C (102.2°F) the human body begins to lose efficiency and brings the onset of medical problems; a 3°C rise in core body temperature to 40°C (104°F) brings risk of collapse. With a 3.5°C rise in core body temperature to 40.5°C (105°F), many will suffer impaired thinking and their speech won't make sense. It is very important to take action in these conditions to ensure

that the body can be cooled. The ability of the body to cool is dependent upon a number of factors and those in charge of emergency response teams in very hot environmental conditions need to be very conscious of this extra dangerous risk under which their teams need to work.

Training directed at acclimatising before the actual event is always valuable. Acclimatisation makes the body more sweat-and-salt efficient, better able to cool the body and better able to function in the environment. Firefighting operations have been likened to running an eight-minute mile against a one per cent incline and emergency responders must maintain a good physical condition and they should be rested, fuelled and acclimatised when the alarms ring. Be aware that high heat and humidity limits the evaporation of sweat and watch out for those prone to “exertional heatstroke”. Encourage frequent drinking - 1.5 litres per hour or 12 litres per day maximum are guidelines used when working under extreme conditions. Energy drinks don't count although suitable sports drinks can be used - check with the Medical Director. Excessive fluid loss can result in impaired cognitive and physical performance, headaches, dizziness, apathy etc. and drinking too much water can dilute blood sodium levels to the point that cell function becomes impaired and this can cause coma or death.

Take precautions, be prepared and work safely !!





REPORT: THE JOIFF AFRICA FIRE AND EXPLOSION HAZARD MANAGEMENT SUMMIT



JOIFF



The JOIFF Africa Fire and Explosion Hazard Management Summit took place in Gracelands Hotel Casino & Country Club, Secunda South Africa on the 24th and 25th of June 2019. The theme was “Diverse Challenges facing Emergency Responders in Africa”, and it was hosted by **Pine Pienaar**, retired Senior Manager Emergency Services of Sasol Secunda, South Africa.

A large number of National, Regional and International delegates speakers and sponsors attended the event to listen and network with colleagues, experts and specialists on fire and explosion hazard management.

JOIFF Chairman Randal Fletcher opened the Conference on Monday 24th June and introduced the Keynote Speaker for the first day, **Commissioner Eric Yap of Singapore Civil Defence Force (SCDF)**. Commissioner Yap’s paper was entitled “Transforming Fire and Rescue Response Through Innovation”. He began his talk by expressing his pride when in 2008, SCDF’s Operation Lionheart, which previously had responded to many overseas rescue operations, were the first team in the Asia Pacific Region and 7th in the World to obtain Heavy Urban Search and Rescue (USAR) Classification issued by INSARAG United Nations. SCDF was reclassified in 2013 following a major exercise which tests the capabilities of carrying out complex search and rescue missions. He gave examples of the exercises big and small, and some of the fire and other incidents and actual rescue operations that SCDF have been engaged in over a number of years.

He then outlined the structure of SCDF and operational statistics, the challenges presented by manpower constraints and how SCDF is embracing a widespread range of current and new technology to transform systems and equipment and the speed and efficiency of response to enhance service delivery and the safety of their personnel. Commissioner Yap’s presentation covered the progress being made in transforming emergency response and public expectations in Singapore by building a “Nation of Lifesavers” which is aimed at engaging all citizens with emergency preparedness, enabling citizens through training in

life saving skills and empowering citizens who commit themselves to volunteer hours and serve as dedicated responders.

Dr. Richard Walls, lead of the Fire Engineering Research Unit at Stellenbosch University, the first Fire Safety research Group in Africa, presented 2 papers to the Conference. On the first day in his paper entitled “Fire Safety Engineering Education for Africa - The Role of our Universities” discussed what Fire Engineering is and how valuable Fire Safety Engineering can be to the Continent of Africa. Particular challenges for the African Fire Engineer in recent years include Wildland Fires, the destruction and loss that fire causes to informal settlements, loss of critical medical and other supplies due to major fires in Regional and National repositories, fires in markets and other groups of high density buildings due to ineffective fire stopping, fires in mines, railway incidents etc. and he discussed the development programme of the Fire Safety Engineering Department in Stellenbosch University to make fire education accessible and the types of educational programmes that they are putting in place.

In his second paper “Industrial Structures in Fire”, Dr. Walls discussed the relationship between fire curves/equations prescribed in codes of practice and what is encountered in actual incidents. Some of the points he identified for this divergence



Commissioner Eric Yap



Dr. Richard Walls





Dr. STHAMER HAMBURG

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were that fire curves/equations are not functions of the amount of fuel available nor do they factor in the interaction between the passive protection and the structural members when using prescriptive designs.

He said that South Africa does not currently have a structural fire loading code and most structural engineers in South Africa have very little knowledge about fire design.

The second Keynote Speaker was **Jason Sertori, Officer in Charge, United Nations Fire and Rescue Unit Monusco (West) Democratic Republic of Congo (DRC)**. He talked about the difficulties and challenges of "Firefighting in the DRC – the United Nations Way."

DRC is a country located in Central Africa which by area, is the largest Country in Sub-Saharan Africa, the second largest in all of Africa and the 11th largest in the World. With a population of over 80 million, DRC is the fourth most-populous country in Africa. An Ebola epidemic in DRC, the second largest in history, is currently out of control with more than 2000 confirmed cases and more than 1,600 confirmed deaths.

The United Nations Organization Stabilization Mission in the Democratic Republic of the Congo or MONUSCO, an acronym based on its French name, is a United Nations peacekeeping force in the DRC. MONUSCO took over from an earlier UN peacekeeping operation in 2010. This mission has been authorised to use all necessary means to carry out its mandate relating, among other things, to the protection of civilians, humanitarian personnel and human rights defenders under imminent threat of physical violence and to support the Government of the DRC in its stabilization and peace consolidation efforts. Jason's presentation was about providing fire and emergency response in a Country where all these conditions – and more – exist.

JOIFF Chairman, Randal Fletcher was the Keynote Speaker for Day 2 presenting a paper entitled "Diverse Challenges Successfully Resolved". His presentation was based on emergency response from the perspective of assurance which he explained is in this context, confidence in one's own abilities.

Randal explained that his job role as Global Response Advisor for BP PLC for a number of years was to provide assurance to many locations regarding their emergency response capabilities. This included him assessing if sites were meeting minimum expectations, providing gap assessments where they were needed and supporting development of forward planning. He explained the "Bow -Tie" Risk Assessment method, showed how this method could be used and gave examples of its use.

Accurate assurance must be based on reality and truth. It requires clarity of the situation, honest transparent disclosure, a perspective that is balanced and not biased and requires clear communications.

Colin Diener, Chief Director, Disaster Management and Fire Rescue services, Western Cape Government presented a paper on "Firefighting Challenges in Wildfire and Informal Settlement Environments". Colin said that Western Cape is the most disaster prone province in South Africa. The Region is under severe pressure from bigger and hotter fires, along with the influx of homes into fire-prone areas since 1990 which has made



Jason Sertori lives 13 km from the airport. A 2 hour trip. When it's raining it takes more than 6 hours.



United Nations Fire Crew Kinshasa



Jason Sertori



Randal Fletcher



wildfire vastly more costly and dangerous.

Colin outlined the major contributors to this problem based on two main factors -

Climate change: In the 2017/18 Wildfire Season Western (Dec-April) Cape Fire Services dealt with over 17,000 fires. Approximately 2,000 of these were reported in informal settlements involving close to 5,900 individual units resulting in 142 fatalities. Roughly 9,000 wildfires (veld/vegetation fires) have been reported.

Alien Invasive Species: Invasives steadily diminish water resources, as they typically use significantly more water than native vegetation. South Africa is remarkably biodiverse, and the Cape Floristic Region is famed for having one of the highest concentrations of plant species per unit area globally. Two-thirds

of the region's 9,000 plant species are found nowhere else on earth, and no less than 2,000 of these species are threatened with extinction by invasives.

Fuel loads can increase by up to 60% in invaded fynbos - fine-leaved plants in a small belt of natural shrubland or heathland vegetation located in the Western Cape and Eastern Cape provinces of South Africa - which could then support higher intensity fires. Other fuel attributes of invasives, like moisture content, chemical composition and fuel structure also affect fire behaviour.

Increased fire intensities fuelled by invasives may also damage soils and worsen erosion - after the 2000 Cape Peninsula fires, soil loss was 60 times higher in pine plantations than in adjacent fynbos.



Colin Diener

Wildland Urban Interface: Wildland Urban Interface (WUI) is a zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. A "WUI Fire Disaster" occurs when homes ignite during wildfires. Structural firefighters usually limit a fire to a single structure and prevent spreading. Only during extreme wildfire conditions do numerous houses ignite and burn simultaneously and overwhelm efforts.

Colin said that Western Cape is facing the challenges by Integrated Fire Management which is a series of actions that includes fire awareness and prevention activities, prescribed burning, resource sharing and co-ordination, fire detection and suppression, fire damage rehabilitation and research at local, provincial and national levels in order to create a sustainable and well balanced environment, reduce unwanted wildfire



*The Speakers: Left to Right: **Back row:** Jason Sertori, Randal Fletcher, Pine Pienaar, Richard Walls **Front row:** Colin Diener, Eric LaVergne, Gerry Johnson, Alec Feldman, Commissioner Eric Yap, Graham Morrison, Lloyd Pethlo, Lynley Carols. Chris Gilbert, Absent.*

damage, and promote the beneficial use of fire.

Colin related that the 5 "E"s of Integrated Fire Management as:

- Environmental modifications to focus on modifying the physical environment, e.g. separating fire-prone areas with barriers such as firebreaks.
- Engineering directed at enhancing fire safety with equipment, e.g. sprinklers and smoke detectors.
- Education involving the provision of training and information to improve fire safety.
- Enforcement focusing on interventions that enforce fire safety legislation.
- Evaluation providing information to determine fire-risk reduction priorities and which interventions work.

He then discussed the risk to informal settlements which are a particularly serious risk in South Africa. In informal settlements, most fire-related deaths occur in the dwelling of fire origin, 70% of fire-related deaths occur during sleeping hours, there is a limited time to escape - less than 3 minutes, fire victims often die from inhalation of smoke and toxic gases and security bars and gates increase the complexity and time required to safely escape.

Smoke Alarms provide valuable time to escape and Western Cape have introduced

a Smoke Alarm Project which entails door-to-door campaigns aimed at increasing smoke alarm ownership and can be useful in both rural and urban environments. The Smoke Alarms used, have a 10 Year Battery which provides 10 years of protection for R15 rand per year.

Other papers presented at the JOIFF Africa Summit included:

Alec Feldman, Director of JOIFF : JOIFF – Past, Present and Future.

Lynley Carols, Head of College and Technical, Fire Protection Association of Southern Africa: "2017 Fire Losses and Mitigation Strategies".

Chris Gilbert, Managing Director of Rural Metro Fire Services: "Private Fire Services - an African necessity".

Lloyd Pethlo, Assistant Director National Fire Services in South Africa: "South Africa Perspective – Status with Fire Service Delivery".

Eric LaVergne, Williams Fire and Hazard Control: "Lessons learned from the latest case studies Worldwide."

Graham Morrison, Gexcon: "Evaluation of the Tianjin explosion and comparisons to the West Fertilizer Explosion A review of risk management yesterday, today and tomorrow".

The Premier Sponsor, **Advanced Fire Suppression Technologies**, presented a practical demonstration including a





During the Conference, JOIFF Chairman Randal Fletcher and JOIFF Director of Standards of Training and Competence Gerry Johnson presented certificates to Laurika Loots, Sipho Mbebe, Rowland Lee Minnie and Johnathan Pienaar emergency responders in Astron Energy Refinery, Cape Town, who had successfully completed the JOIFF Diploma programme of key Emergency Response competences.

To the speakers: JOIFF thanks you for your presence and your presentations. To the delegates: JOIFF thanks you for your participation in all aspects of the event. To the Sponsors and Exhibitors, JOIFF thanks you for making this and other JOIFF activities possible, Without your support we would not be able to do it.

CO SPONSORS

Bristol Fire Engineering, United Arab Emirates; Dr. Sthamer, Germany; Fomtec; Sweden; Marcé Fire Fighting Technologies, South Africa; Perimeter Solutions – Auxquimia, Solberg, PhosCheck.

hydraulic platform, vehicle suppression system, unmanned aerial system (drone) and dual media extinguishment.

Gracelands Hotel Casino & Country Club was the ideal location for all to network and the programme provided the opportunity for this with a Welcome reception on Sunday night, refreshment and lunch breaks during the event and a dinner hosted by the Premier Sponsor on Monday night all held in the same venue. JOIFF compliments Pieter De Villiers; General Manager and his team of Sandy, Nompumelelo, Buzi, Trudi, Brian, Johan, Andrew and the rest of the hotel staff on the excellent service that they provided throughout the event.



JOIFF QUALIFICATIONS



Dip.JOIFF: This is awarded to persons who have successfully completed the JOIFF Diploma which is a competency programme for personnel who respond to emergencies. It covers necessary key skills, learnt and demonstrated by the student in practical training and exercises that allows them to deal competently with site emergencies.


Tech.JOIFF: This is awarded to persons who have successfully completed the JOIFF Technician programme which allows emergency responders to enhance their knowledge and skills having already demonstrated their competence in Key Skills.

Grad.JOIFF: Graduate of JOIFF is awarded to a person from any JOIFF Member Organisation who has a minimum of 5 years full time service in an emergency response role and has shown professional attainment in Industrial Hazard Management activities.

MJOIFF: JOIFF Member is awarded to operational personnel from any JOIFF Member Organisation who have a minimum of 10 years full time service in an emergency response role, have demonstrated competence and shown significant professional attainment in Industrial Fire and Explosion Hazard Management activities and have been successfully assessed as competent through recognised training in the range of activities in Industrial Fire and Explosion Hazard Management.

AMJOIFF: Associate JOIFF Member is awarded to non-operational personnel who have made significant contributions to the development and profile of JOIFF over a number of years by their actions and their work activities.

For further details contact the JOIFF Secretariat joiff@fulcrum-consultants.com

A firefighter in full protective gear is shown from the side, fighting a large, intense fire in an industrial setting. The firefighter is holding a hose and spraying foam onto the fire. The background features industrial structures and scaffolding.

Our employees fight fire and so do our products

*My name is Magnus.
I am working with product
development at Fomtec.
This picture is from a fire
test in Sweden. Follow us
if you want to find out more
about me, the Fomtec way
and all our products.*

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Fire Fighting Foams & Equipment



Falck

FALCK CALCULATION TOOL: EMERGENCY RESPONSE ORGANISATION

At FALCK Industrial Fire Services it's our mission to contribute to a safe society. We continuously optimize our processes from best practices and lessons learnt. Therefore, we share insights to improve the level of safety.

What led us to develop the Calculation Tool? It has always been our aim to create financial transparency and a better understanding of the cost involved when deploying a fire brigade for Falck's internal processes. We then developed a tool to help us in that approach and added the additional safety tasks that our teams perform on site.

We started to apply this tool in external processes and to our delight received a ton of positive feedback from our customers in the high-risk industry.

They welcomed the opportunity to have a better insight and a clear overview of the cost involved of their emergency response organization. With that we assist them to control and sustain (fire) safety in their businesses with a more efficient approach and cost-saving method. Which contributes to overall business continuity.

Even more reason to share this assessment tool with a broader audience that can benefit from this, as well as for you. Follow the steps/instructions to assess the different cost elements within your organization, gain better insight and find out where you could possibly optimize and save on cost.

Download [Link to Falck website | Excel Calculation Tool]

https://www.falck.nl/nl/fire_services/nieuws/2019/pages/falck-lanceert-calculatie-tool.aspx

We trust this tool provides you with a clear overview and even better insight of your annual associated cost to deploy a

company fire brigade as part of your emergency response organization. Including a complete overview of related additional (fire) safety services within your business.

With this holistic approach as well as a full comprehension on the various aspects involved it allows for the next step to start optimizing this part of your business. At Falck it's our experience that by combining additional safety services with our emergency response task, we gain efficiency and cost savings. A proven concept at our local sites.

Our experienced consultants gladly advise you on this to see what is possible for your business and/or assist you with any questions you may have regarding the calculation tool. Please contact us to see what we can do for you. In addition, we value your feedback which allows us to optimize this tool for you. Please reach out if you would like to share.

Falck Industrial Fire Services, Berthil van den Poll

Phone: 00 31 6 55703818, Email: b.vandenpoll@falck.com



NEWS FROM JOIFF ACCREDITED TRAINING PROVIDERS



ARC FIRE TRAINING SERVICES LTD.

JOIFF accredited Training Provider Arc Fire Training Services Ltd., United Kingdom recently presented its JOIFF Accredited Crisis Management and Emergency Response Seminar in Antwerp, Belgium. The picture shows Eric Dempsey of Arc Fire, with students from organisations in Belgium, Greece, Hungary, Saudi Arabia and the United Kingdom who had successfully completed the Seminar after the presentation of JOIFF accredited certificates to them.



CFB RISK MANAGEMENT

JOIFF Director of Standards of Training and Competence Gerry Johnson presenting a certificate of JOIFF Accreditation to Natalie Lynd, Business and Quality Manager, CFB Risk Management, Cleveland, United Kingdom, following a successful re-accreditation audit.



JOIFF

THE CATALYST

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› OTHERS FOLLOW TRENDS WE SET THEM

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ARE SOCIETY'S EXPECTATIONS BEING MET BY FLUORINE FREE FOAMS (F3)?

BY MIKE WILSON

*Image: Dubai B777
crash, 3 Aug 2016*

*Editor's note: The
Catalyst is happy to
publish this article
submitted by Mike
Willson and we would
like to emphasise that
JOIFF is completely
neutral and does not
hold a position on
Foam.*

First, let's answer an important question – Why are we even using firefighting foams?

As most realise, water alone sinks through flammable liquid fuels, rapidly spreading flaming liquids into unaffected areas causing rapid escalation, which is dangerous and unhelpful. It's worth reminding ourselves a good firefighting foam blankets these fuels, excluding oxygen, preventing vapour releases, cooling, and blocking radiant heat from flames igniting more fuel. ...But not all foams are equally effective at controlling all fuels... in all fire scenarios!

So what are our society's realistic expectations when major fire strikes? ...What are those key priorities we must address?

Presumably the key priority is life safety – preventing loss of life and minimising injuries. We want people to walk away unharmed by such major events, so everyone's lives can carry on relatively unscathed. Getting the fire out fast also seems high on that priority list, to achieve this objective. From this single action - delivering fast reliable fire control and extinction - many extra benefits can flow.

Reducing critical infrastructure damage, salvaging as much as possible, reducing financial and emotional losses, enabling site recovery and re-operation quickly, without losing jobs or closing businesses which causes community suffering.

Minimising environmental harm - another clear expectation. Less pollution, less smoke, minimised foam usage, fewer potentially harmful breakdown products, less firewater run-off, collected and contained – whichever foam type is used, less mess to clean-up, greatly helps achieve that objective. Cleanup costs are reduced, most wildlife toxicity and suffocation impacts avoided, adverse human health issues and contamination

problems minimised.

We also expect subsequent investigations to prevent such incidents re-occurring, by seeking causes and failures, reviewing incident handling – both good and bad, to improve responses next time and avoid such problems repeating. These objectives can be summed up in the dual aims of reducing environmental impacts, while providing reliable life safety protection. How is that achievable?

A lesson learned half a century ago in 1967's USS Forrestal aircraft carrier disaster

Tragically 134 servicemen died, 161 injured, 21 planes destroyed and 40 more were damaged. A Fluorine free foam was used, which like modern F3s, had no fuel shedding capability and poor vapour sealing to suppress the fire, although nothing better was available back then. The fire spread rapidly, setting off armaments on the flight deck and in confined spaces below deck. It brought carnage to what should have been a safe haven, and accelerated AFFF developments with a tough US Mil Spec AFFF test to verify future robust performance, ensuring such tragedies could never happen again. Let's not reverse such noble objectives.



USS Forrestal - 1967



Some misleadingly claim the single 15°C freshwater fire test required to pass International Civil Aviation Organisation's (ICAO) Standard Level C fire test, with no supplementary test requirements, is somehow considered "equivalent" to Mil Spec? ... How can that be? US Military PRF24385F(SH) Amdmt.2 (2017) specification (Mil Spec) requires 7 separate tough fire test successes, using fresh and seawater. Half strength, low application rate and over-rich tests, plus a raft of supplementary tests for corrosion, aquatic toxicity, degradation, dry powder compatibility, storage stability and mixing with approved agents, which are ALL rigorously required to pass. The latest F3s still seem to fail both Mil Spec's environmental and fire performance test requirements.

Real Fires Review

Assessment of recent major fires where both fluorinated and F3 agents have been used, could uncover a practical track record - beyond these small indicative test fires.

1978 - Los Angeles DC10 landing gear collapses during take-off, puncturing a fuel tank intensifying the fire, placing all passengers' lives on the line. Extensive fire spread was prevented by quick control from Mil F spec AFFF. The initial foam attack protected escape routes for evacuating passengers on the right side. It took only 2 minutes to extinguish the left side of the aircraft once extra fire crews arrived. Seconds count when saving lives. Speed of response, fire control and capability of fire crews making the attack, enabled these 198 lives (out of 200 passengers and crew) to be miraculously saved.



LA DC10 crash - 1978

US passengers are protected by the best performing foams and the US Mil Spec standard. However international airports with ICAO Level B or C requirements have fire tests made easier in 2014 amendments, allowing foams 120 seconds to completely extinguish the test fire, not the 60 seconds required previously. Surely this erodes our travelling safety?



Korean Air B777 crash - Tokyo 2016

May 2016 - Boeing 777 engine fire, Tokyo

Debris ruptured a fuel line during take-off catching fire. On-board engine fire suppression systems failed to extinguish, which fire crews achieved once the plane came to rest in a few minutes using AFFF. All 319 passengers and crew evacuated safely. After repairs the plane returned to service.



A319 engine Fire - Heathrow - May 2013

May 2013- Airbus A319 engine fire, London Heathrow UK

Incomplete maintenance left both engine cowls unlatched, subsequently damaging fuel lines during take-off, causing engine ignition. Immediate shut-down and on-board suppression system activation took the sting out of this fire. F3 was used to rapidly extinguish the remaining small fire on landing. All 80 passengers and crew safely evacuated, with no injuries reported.



Fredericia port fire, Denmark Feb 2016

Feb 2016 - Danish Port Fire

A Silo explosion of 12,000 tonnes of liquid Ammonium Nitrate fertiliser became mixed with Palm Oil and caught fire. Palm Oil is not volatile with a high flashpoint $>148^{\circ}\text{C}$, while being stored at 70°C .

Firefighters reportedly worked into the next day to control the fire using F3 and is claimed an "F3 success", ...but was it really? Potentially cooling watersprays could have extinguished Palm Oil, reducing temperatures below its flashpoint. Foam may not have been "essential". Significant quantities of F3 used may have contributed to serious harbour oxygen depletion problems,



resulting in an environmental disaster. it caused resignation of the Danish Environment and Food Minister. Reportedly "one of the worst environmental disasters in recent Danish history", more than 100 people were required to "clean up a thick layer of palm oil, water and foam".



Singapore B777 engine and wing fire, Jun 2016

June 2016 - Singapore Boeing 777 engine fire

A large engine fire involving much of the wing with leaking fuel caught fire upon landing. Application of the thrust reversers intensified the fire through the core of the engine, which was quickly extinguished using ICAO Level B approved AFFF & FFFP foam in just 3 minutes. All 241 passengers and crew were safely disembarked using regular mobile stairways, 15 minutes after the fire was extinguished. No emergency chutes deployed, no injuries sustained. Minimal disruption resulted. A quick, safe and well executed response.

July 2016- Singapore F3 demo - replaced by more robust C6 AFFF

Why then - a month later in Singapore (where temperatures vary only a few degrees during the year) - should we find this happening?

An F3 agent was intended as the Aviation Conference highlight – an ICAO Level B fire demonstration "showcasing its effectiveness" in 32°C heat. Last minute, this F3 was replaced by a high purity C6 AFFF. Why? - because "too many environmental factors were not under our control to do F3" said the leading F3 manufacturer operating the demo! It was too hot, yet F3 is being used by Airservices Australia at all main airports continent-wide, Dubai and others ...which raises more important questions.

The C6 AFFF worked quickly, effectively with no flashbacks and no re-ignition, yet the F3 failed this demo twice the day before at 32°C, reportedly also igniting the training area's fuel separator,

indicating virtually no fire control. Several delegates had not appreciated ICAO Level B fire tests require conducting at typically 15°C. Fuel volatility usually increases with rising ambient temperatures, while foam quality usually decreases; making fires harder to extinguish under warmer ambient conditions. Shouldn't there be sufficient safety margin built-in, to expect foams to still operate effectively in summer temperatures of 30-35°C? It does for C6 foams ...why not F3s?

August 2016 – Boeing 777 engine detachment, Dubai

Contrast that Singapore Boeing 777 engine fire with this Boeing 777 engine detachment, 2 months later in Dubai during an "attempted go-around" manoeuvre in 48°C heat, with difficult wind-shear conditions. The detached right engine caused structural damage and a subsequent fire. Miraculously all 300 passengers and crew were safely evacuated, before the fuel fire took hold.



Dubai B777 crash, 3 Aug 2016

Foam was applied trying to suppress the fire, but a brave firefighter tragically died after 9 minutes, when the right fuel tank exploded. Extensive foam application almost certainly Fluorine Free (Dubai is promoted by IPEN as a major F3 user), continued. Full control of the fire was not achieved until 16 hours after impact leaving the plane completely destroyed. Almost 3 years later – why is there no final investigation report explaining the cause(s) of this firefighting failure? Knowing could potentially help save future lives.

August 2018 – Footscray Chemical Factory Fire, Melbourne Australia

This was a 1.4 ha site, crowded with chemical drums, in a residential suburb - the largest Melbourne fire in decades. Over 100 firefighters attended the blaze. Billowing thick black smoke

Singapore C6 AFFF ICAO Level B fire demo, July 2016



for days, caused 50 school closures and warnings for residents to stay indoors. It reportedly took 17 hours to bring this large fire under control & 5 days to fully extinguish all hot spots. Access was reported as difficult. Some areas were heavily shielded from effective foam attack. EPA Victoria confirmed only Fluorine Free Foam (F3) was used in this incident.

Yet PFOS and PFOA were detected in the creek, 16 times above the permitted recreational water quality guidelines downstream of the fire. Presumably emanating from fluorinated containing materials on site - clearly not from F3. Diverse and ubiquitous other products and applications use materials which also contain PFAS, presumably also involved in the fire.

EPA Victoria's water quality sampling confirmed PFOS and PFOA remained at

creek is still on-going, nearly a year later. Remember F3s are also an order of magnitude higher in aquatic toxicity, when higher amounts are usually needed for most incidents.



Avonmouth UK Chemical fire - 1996

1996 - Chemical Fire, Avonmouth UK

This 6.8ha site was surrounded by another chemical complex, fuel storage depots, Bristol docks, industrial units, 2 villages

firefighters were hospitalised with smoke inhalation. Fast, reliable, efficient fire control & extinction of this complex escalating fire protected life safety, communities, critical infrastructure. Dangerous escalation was prevented. All realistic expectations were fully met, without resulting in environmental disaster.

April 2019 - Campbellfield Chemical Fire, Melbourne Australia

175 firefighters and 40 fire trucks battled this blaze for 4 days using only F3. It seems almost a repeat of Footscray, with EPA Victoria reporting "very low dissolved oxygen levels on 6 April ...low enough to cause fish deaths". The scale of environmental impacts from chemicals and foam used is not yet known ... although Footscray was widely declared an environmental disaster.

Very disappointing results - just one successful small F3 incident against four major F3 failures - best explained by this chart. It highlights key fire and environmental performance considerations between F3s, legacy C8s and C6 agents, necessary to deliver on society's realistic expectations.

These include fuel shedding capability - of which F3 has none - because unique fluorochemical ingredients delivering this ability have been removed. Consequently, when using F3 re-ignition risks are inevitably higher and application flexibility is restricted. Any forceful application into varied volatile fuels will result in fuel pick up by F3s making the blanket flammable. F3 agents generally need to be aspirated, reducing stream range and bringing fire crews closer to the hazard. Fluorinated additives also impact the speed of control and extinguishment, resulting in less C6 usage, while delivering faster, more reliable, robust performance outcomes.

Environmentally we all agree transitioning



Footscray chemical fire, Melbourne Aug 2018

elevated levels for 2 weeks following this incident. Melbourne Water pumped 55million litres of contaminated runoff from the creek by day 3, plus 170million cubic metres of contaminated sediment removed from Stony Creek by 24th Sept. clearly dispelling suggestions by some that "F3 use prevents any costly incident clean-up". EPA Victoria's Chief Environmental Scientist confirmed this incident was "...probably as bad as it could be ...the chemicals from the fire have had a 'massive impact' on the creek system. We've had more than 2,000 fish killed." EPA Victoria confirms remediation of the

and a congested residential area all within a 2.5km radius.

A 20 tonne road tanker was delivering when an explosion caused this major fire. Truck driver and 7 plant operatives "observed a large white vapour cloud around the tanker and vessel, ...on hearing a pressure-release valve operate, evacuated the area". They basically ran to safety, while sounding alarms and starting plant shut-downs. The 2,400m² fire area was quickly extinguished after 4 hours using fluorotelomer based AR-FFFP foam.

Miraculously there were no fatalities, but 6



Campbellfields chemical fire, April 2019



2012 Denmark ICAO Level B test results of commercial F3 foams – Revisited

ICAO Level B Test Results of Fluorine-Free Foams (F3)*

Test Configuration: ICAO Level B / UN168 Nozzle Test Fuel: Jet A1 / Premix: In Fresh water Times in min:sec

F3 Foam ID	Foam Expansion Ratio	Quarter Drain Time	Control Time (90%)	Total extinguishment (including rim flicker fires)
F3 Foam A – 6%	9.6	18:26	0:35	None FAIL
F3 Foam B – 3% / 6%	10.2	15:07	0:40	1:24 FAIL
F3 Foam C – 3%	9.6	16:16	0:50	2:00 FAIL
F3 Foam D – 3% / 3%	8.5	22:57	0:55	1:40 FAIL
F3 Foam E – 3% / 6%	7.4	17:00	0:40	1:50 FAIL

ICAO Level B test results of commercial F3 foams – Revisited

ICAO Level B test results of commercial F3 foams – Revisited

* These fire tests were run according to 3rd edition of ICAO Standard, RPL, a coordinator of LASTFIRE, witnessed the tests and approved the final report (by N. Ramsden & P. Watkins) which was subsequently published: "Independent Evaluation of Fluorine-free Foams (F3)", Mitch Hubert, Chang Jho and Eduard K. Kleiner, Asia Pacific Fire, p37, Issue 43 – September (2012).

** ICAO Standard 4th edition (2014) allows rim flicker fires, effectively extending the total extinguishment time from 1 minute to 2 minutes.



IPEN 2018 POPRC-14 Report is based on Misinformation and Missing Information:

Current F3 foams are

NOT VIABLE ALTERNATIVES

to C6-AFFF foams!

Characteristics	C8 Legacy Foam	Fluorine Free Foam (F3)	High purity sC6 Foam
Speed control/extinguishment	faster	slower	faster
Fuel shedding ability	high	none	high
Re-ignition risk (volatile fuels)	lower	higher	lower
Application flexibility	foreful, gentle, non-asp, asp, in-depth, sub-surface	semi-forceful, gentle, aspirated, shallow (limited applications)	foreful, gentle, non-asp, asp, in-depth, sub-surface
Volume foam required (for given size volatile fuel incident)	smaller	larger	smaller
Fire performance ability	reliable and robust	limited (ability & apps)	reliable and robust
Persistence	concerns	no known concerns	concerns
Bioaccumulation	major concerns	no known concerns	low concerns
Aquatic toxicity	concerns	10x higher than C8/C6	low concerns
Human health	major concerns	no known concerns	low concerns

Sources include: 2015 & 2017 US Naval Research Laboratory testing; 2016 Swedish Research Institute UL testing; 2016 Spanish comparative F3 & AFFF testing; 2012 Jho - Flammability and degradation of fuel contaminated foams; 2016 Singapore ICAO Level B Demo; 2014 Monash Uni Australian Firefighter Study; 2015 QFES Combustion products in firefighting apparel; 2015/2016 NICNAS IMAP Tier II Human Health and Environmental Assessments of C6 PFAS; 2018 Dept. Health Expert Panel PFAS Report; FFCC Aquatic Toxicity Factsheet, 2006; 12x Fire incidents - 1967-2019.

Key:		Good
		Acceptable
		Bad

away from legacy C8s is essential- but are F3s as benign as some try to make out? Most F3s have not been independently characterised to assess their ecotoxicity and human health impacts. Do we just “assume they are safe” ...containing no fluorosurfactants, when they are at least 10 times more aquatically toxic to fish than C6s?

Extensive research studies on high purity C6 fluorotelomers confirm C6s are not ecotoxic, not bioaccumulative, nor carcinogenic, nor mutagenic, nor reproductive toxicants. They are of low concern. C6 fluorochemicals are quickly excreted from our bodies via urine, so cannot build up. All in line with Australia's 2018 Department of Health Expert PFAS panel's low concern findings regarding C6 human health impacts.

F3s can play important roles in training and small fire scenarios where containment is impossible. Yet F3s seem currently unsuited for major fires where life safety and critical infrastructure are in danger. Realistically a thorough risk-benefit analysis is required to ensure society's security expectations are adequately met. Which should frequently determine that we probably still require C6 foams at all major hazard facilities, including airports, military and offshore installations.

Best available techniques delivering fast incident control, seems to represent best practice today.

Probably, this should include knowledgeable, effective and well-trained teams, using the most appropriate, best suited, well-maintained, fire protection systems, equipment and foams, - for the range of site hazards and site conditions - likely to be experienced year-round.

If all runoff is reliably collected, tested, with safe treatment and remediation (which is available to remove C6 and C8 PFAS from firewater runoff, spillages, surface, drinking and groundwaters down to no detect levels) before entering Waste Water Treatment Plants, as directed by the Authority Having Jurisdiction, it should also deliver lowest environmental

emissions - without compromising life safety. Isn't better containment and remediation therefore the best answer to protecting life safety?

The UK Environment Agency summed it up quite well in 2014 “... Foam buyers primary concern should be which foam is the most effective at putting out the fire. All firewater runoff and all foams present a pollution hazard.” They re-inforced this in 2017, “The key to preventing the worst pollution, is having a response plan to clear potential fire hazards ...All fire water runoff will be detrimental to the environment if allowed to enter water courses. ... the best technique is to prevent pollution from entering in the first place.”

So foams providing effective, fast, and reliable extinction should deliver on society's realistic expectations, ...and with runoff best collected and treated, should also deliver lowest environmental impacts. It seems like common sense ...Would you agree?

Bio – Mike Willson BSc Hons, MCIM

Mike is an internationally recognised firefighting foam and foam systems specialist with over 30 year's experience of developing, testing, comparing and reviewing fire performance and environmental impacts of both fluorinated and fluorine free foams plus their delivery devices and integrated fixed systems. He was also instrumental in developing improved tank fire, bund protection and LNG recommendations in the EN13565-2: 2009 Foam Systems Standard.

Mike is an active member of the Fire Protection Association Australia's Technical Advisory Committee on Special Hazards, including firefighting foams and foam systems, across most sectors involving flammable liquids, further developing his technical specialist knowledge on protecting Class B flammable liquids. He has co-ordinated several emergency foam responses to major incidents worldwide. Since 2000 he has been at the forefront of the debate concerning legacy C8 issues and potentially suitable C6 and F3 alternatives, providing guidance to end-users and regulators, trying to ensure life safety and fire protection capability is not being unintentionally compromised. He can be contacted by e-mail: willsonconsulting26@yahoo.com.au



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JOIFF ROLL OF HONOUR



During April, May and June 2019 the following people were awarded JOIFF Qualifications

JOIFF DIPLOMA

Salem Rashed Al Nuaimi Dip.JOIFF
Officer, Fire Services, ADNOC, Fujairah Terminal Division, Abu Dhabi, United Arab Emirates.

JOIFF TECHNICIAN

Paul Le Grange
Fire Commander, ADNOC, Abu Dhabi, United Arab Emirates.

On successfully completing the JOIFF Technician programme, Paul said "I found this programme to be challenging and very informative. It had me consulting widely and mulling through resources to find the information which was not always that simple. I have definitely been enriched by the course and the process". Since being awarded Tech.JOIFF, Paul has been awarded Grad.JOIFF.

JOIFF LEADERSHIP 1 (TEAM LEADER)

Location: **LUKOIL Mid-East Ltd. West Qurna 2 Project, Basra, Iraq**

The following Officers successfully completed the JOIFF Leadership 1 (Team Leader) programme

Abdullah Al Rashid Dip.JOIFF.

Kareem Al Battat Dip.JOIFF.

Hasan Al Kabi Dip.JOIFF.

Ibrahim Al Sameri Dip.JOIFF.

Sarmad Al Hameed Dip.JOIFF.

Mustafa Al Ameri Dip.JOIFF.

Wisam Al Najjarri Dip.JOIFF.

Matt Brown Dip.JOIFF.

Phil Petersen Dip.JOIFF.

Abdullah Taha Qasim Alfandi Dip.JOIFF.

Mustafa Sameer Saddam Al-Gharbawi Dip.JOIFF.

JOIFF LEADERSHIP 2 (OFFICER)

Location: **LUKOIL Mid-East Ltd. West Qurna 2 Project, Basra, Iraq**

The following Officers successfully completed the JOIFF Leadership 1 (Team Leader) programme

Matt Brown Dip.JOIFF

Alexander Telenkov Dip.JOIFF

Simon Williams Dip.JOIFF, Health, Safety & Environment Department

Adam Sivell Dip.JOIFF, Senior Global Safety Lead Capex (Capital Expenditure) Projects, Heineken International.

On successful completion of the Leadership 1 (Team Leader) programme **Adam Sivell Dip.JOIFF** said "Over the last year and a half I have worked my way through the JOIFF Leadership qualifications and although at times they have been quite challenging, they have also been enjoyable and enabled me to research certain areas of the role that I have not always been exposed to, such as the budgetary impact on the department. Overall, the JOIFF competency training has been very beneficial".



JOIFF ROLL OF HONOUR

GRADULATE OF JOIFF GRAD.JOIFF



Paul Le Grange Grad.JOIFF

Fire Commander, ADNOC, Abu Dhabi, United Arab Emirates.

Paul Le Grange started his career in the emergency services as a reservist firefighter with the Cape Winelands District Municipality Fire Service, and the City of Johannesburg EMS. He joined Eden District Municipality Fire Service as an operational firefighter and shared the leadership to establish and run a satellite fire station covering rural communities in the Southern Cape, South Africa. He's a member of the South African Emergency Services Institute (SAESI) and registered with the Health Professions Council of South Africa (HPCSA) as an Ambulance Emergency Assistant (ANA). With more than 15 years of experience in training, development and capacity building, he co-founded Firefly Emergency Management

Services, a private company and began to focus his attention on professional firefighter development as Instructor. He also held a management position in the company.

During this time, he worked extensively on contracts providing firefighter training both Nationally and Internationally. Saipem S.p.A. later appointed him as Senior Fire Officer at SONATRACH's new LNG Plant in Algeria. Paul currently works for ADNOC (Abu Dhabi National Oil Company) where has been for the last five years. Over the last 2 years, he held the position of Fire Commander, operationally in charge of the resources of 5 stations responsible for protecting the people and assets of ADNOC's Group Companies in the Ruwais Industrial Complex. His most recent achievement is his promotion to Fire Chief of the Main Fire Station of the Central Fire Brigade. After successfully completing the JOIFF Diploma in November 2018, he enrolled for the JOIFF Technician programme, which he successfully completed in May 2019.

JOIFF ASSOCIATE MEMBER

Mohanned Awad B.E.Sc, B.Sc

Director of Business Development, Concorde-Corodex Group, United Arab Emirates

Mohanned Awad is a Bachelor of Chemical and Biochemical Engineering and a Bachelor of Environmental Science. Mohanned is Regional Director of Business Development of Bristol Fire Engineering, which is the leading manufacturer of firefighting and fire protection equipment in the Middle East. Bristol Fire Engineering has 2 major manufacturing divisions, one which manufactures emergency mobile equipment such as fire vehicles, ambulances, hydraulic platforms and specialist vehicles and the other which manufactures static solutions such as pumps, cabinets, extinguishers and fixed suppression systems. Bristol Fire Engineering is a Business Unit of the Concorde Corodex Group of which Mohanned is also a Director. Concorde Corodex Group is one of the Middle East region's pioneering providers of fire protection, water purification, wastewater treatment and environmental services.

Mohanned is an ardent and active supporter of JOIFF and has given encouragement and assistance to many individual fire personnel working in the U.A.E. in supporting their efforts to further their knowledge of fire and emergency response and to progress with JOIFF Post Nominals. His efforts in promoting the knowledge and reputation of JOIFF in the Middle East Region has resulted in a significant growth of interest in JOIFF leading to many enquiries about JOIFF membership and JOIFF accredited training.

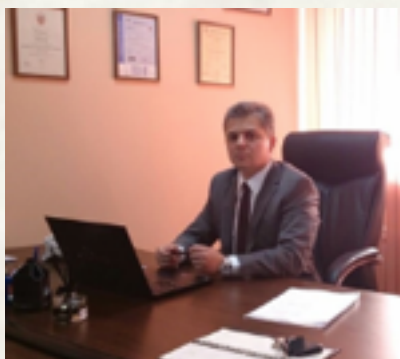


Mohannad Awad & Alec Feldman, Director of JOIFF

JOIFF ROLL OF HONOUR



JOIFF ASSOCIATE MEMBER



Vitaly Baranov

Advanced Safety Technologies, LLC, Astrakhan, Russia

Vitaly Baranov first made contact with JOIFF in 2006 when he introduced the Training Provider who became the first JOIFF accredited Training Provider in Russia. In 2009 Vitaly established his own Company, Advance Safety Technologies LLC, which was JOIFF accredited as a Training Provider the following year. Vitaly's goal is to provide only high-quality services in organising and conducting training in full compliance with the current requirements of International standards and the laws of the Russian Federation.

Since his first contact with JOIFF, Vitaly has been a loyal and active supporter of JOIFF and has worked with the JOIFF Secretariat to promote JOIFF within High Risk Industries in Russia and its neighbouring Countries.

Dr. Jeanne van Buren

Senior Consultant, Marsh Risk Consulting B.V. Rotterdam, The Netherlands

Dr. Jeanne van Buren joined JOIFF as an Individual member in 2004 when she was a Senior Specialist with the Fire Department, Rotterdam Port District. In 2012, Jeanne moved from the Rotterdam Fire Service to take up a role as Senior Consultant with Marsh Risk Consulting B.V.

Jeanne has degrees in Chemical Engineering, Process Engineering, Applied Chemistry, an MSc in Environmental Quality Management and an MSc in Risk Crises and Disaster Management. In 2014 she was awarded a Doctorate following completion of her thesis entitled "Principles and Management of Information Process Integrated Management of Fire Safety at Seveso Sites".

For many years, Jeanne has been a regular contributor of articles to The Catalyst on a wide and diverse range of subjects relating to High Hazard Industry in which she has put forward interesting and innovative ideas for the improvement of safety and procedures. She has also exchanged views and ideas in the JOIFF Shared Learning network through her questions for "Peer Assistance", she has participated in the development of a number of JOIFF Guidelines and was Chair of the Working Group that developed the JOIFF Guideline on Inerting Vertical Storage Tanks, published in 2015.

On receiving the award of Associate Member of JOIFF Jeanne said "It is an honour to learn that I have received the Associate Member of JOIFF award as part of the program for valued non-operational members who make a very important contribution to the development of JOIFF. JOIFF provides so many options to support cross industry learning and exchange knowledge and information to support industry, to identify risks, manage these risks, learn from incidents that have occurred and deliver JOIFF accredited training.

The support to submit questions to peers within the network works really well, which is quite unique. The work which is presently done by members of the PFPnet on improving practices in the use of passive fire protection is a spinoff of a previous JOIFF Conference in Malta where Simon Thurlbeck and myself addressed this topic in different presentation".



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DIARY OF EVENTS 2019/2020

September

- 4 - 6 IAFPA-ARFF 19th Annual Conference, Honolulu, Hawaii
- 24 - 26 Fireexpo East Africa, Nairobi, Kenya

October

- 23 - 24 19th International Water Mist Conference, Berlin, Germany

2020

January

- 19-20 Intersec 2020, Dubai, U.A.E.

February

- 10 JOIFF Foam Technical Summit

June

- 15 - 20 Interschutz 2020, Hanover, Germany

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.*

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