Qatar Process Safety Symposium

“Process safety is not achieved by accident”

13 -14 March 2012

The Importance of Leadership Commitment in Making Safety a Core Value

Education City, Texas A&M University at Qatar, Engineering Building, Lecture Hall 238
Conference delegates —

“Safety is no accident,” quips an old adage. Your presence at the annual safety symposium is a demonstration of that, and it is my honor to welcome you to on behalf of Texas A&M University at Qatar.

Safety is a responsibility we all share, and the best way to promote it is to talk about it. The annual safety symposium at Texas A&M at Qatar has become an important gathering of experts and industry practitioners to discuss best practices, emerging trends and new challenges that threat the safety — and, ultimately, the productivity — of Qatar’s industrial operations.

We are privileged to enter a five year partnership with ConocoPhillips for the organization of the annual Qatar Process Safety Symposium. By supporting this important event, ConocoPhillips commits to not only the discovery of new knowledge about safety, but also its deployment and practical application. ConocoPhillips is a leader in the energy industry and, too, in their philosophy about safety as something we live rather than something we do.

Texas A&M at Qatar is proud to support Qatar’s ambitious vision and development strategy, and we are eager to serve as a valued resource for the nation’s industrial and commercial sectors. This safety symposium is but one of the many ways we strive to do that.

Thank you for your participation, and my best wishes for a fantastic safety symposium.

Sincerely,

Mark H. Weichold, PhD
Dean and CEO
It is my pleasure to welcome you to the first Annual Process Safety Symposium in Doha, jointly hosted by Texas A&M University at Qatar (TAMUQ) and ConocoPhillips (COP). ConocoPhillips is thankful for the opportunity to enter into this five-year collaboration initiative, to jointly host such an important gathering of renowned safety experts here in Doha.

Such a distinguished platform enables a sustained exchange of knowledge on industrial safety, increasing awareness, expanding the fields of research and development as well as resulting in more stringent safety practices. This symposium will offer participants a venue to exchange safety success stories, incident case studies, best practices, new legislative regimes, and recent advances of research on process safety. Most importantly, it will provide excellent networking opportunities for participating companies, educational institutions, government agencies and the public.

Good safety practices have played a central role in Qatar’s rise to a leading position in the world energy sector. At ConocoPhillips, safety is a core value and a corner stone of sustainable development. Both COP and TAMUQ are committed to offering their support to the State of Qatar in its continued efforts at ensuring safety is a top priority.

We firmly believe that hosting gatherings like today’s Annual Process Safety Symposium will help further strengthen Qatar’s endeavors regarding safety.

Once more, welcome to the Symposium wishing you a productive gathering.

Be Safe,

Erec Isaacson
President of ConocoPhillips Qatar
# Program

## Tuesday, 13 March 2012

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<td><em>JBOG (Jetty Boil Off Gas) Project Safety Program – 5 Million Safe Hours</em></td>
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Wednesday, 14 March 2012

08.30 – 09.00  Registration, refreshments

09.00 – 09.30  Keynote Lecture
Role of Education and Research on Training Future Leader Committed to Safety
Dr Sam Mannan, Mary Kay O’Connor Process Safety Center

09.30 – 10.00  Robert Munster
Vice president HSSE/SD & manager HSSE/SD
Pearl GTL, Qatar

10.00 – 10.30  Transformation and the Integral Approach as applied to Personal and Process Safety
Dennis Percy, JMJ Associates, Middle East Business Unit

10.30 – 11.00  Coffee Break

11.00 – 11.30  Ensuring the Safety and Competence of the Oil and Gas Workforce by the Adoption of Common Industry Safety Training Standards
Ian S Laing, OPITO

11.30 – 12.00  Effective Management of the HSE&S Aspects of a Major Plant Shutdown
Albert Lipana, Dolphin Energy

12.00 – 12.30  Oil Spill and Emergency Response
Ali Rajab Ashkanani, Qatar Petroleum

12.30 – 13.30  Lunch and networking

13.30 – 14.00  Lessons to be Learned from the Buncefield Explosion
Dr Graham Atkinson, Health and Safety Laboratory, UK

14:00 – 14:30  Lessons Will Be Learned: Do We Take This Statement Seriously?
Dr Simon Waldram, Waldram Consultant, UK

14.30 – 14.45  Wrap up – End of the Symposium
Qatar Process Safety Symposium
13-14 March 2012
Doha, Qatar

Speakers
Saif S Al Naimi
DIRECTOR, HSE REGULATIONS AND ENFORCEMENT DIRECTORATE, QATAR PETROLEUM

Mr. Saif S Al Naimi, Director of HSE Regulations and Enforcement Directorate, is vested with the primary HSE responsibilities for regulating and enforcing the implementation, compliance with applicable State laws, convention, treaties and protocol in the energy and industry. As the Director of HSE Regulations and Enforcement his present responsibilities include liaison with the national, regional and international institutions/organisations in relation to conventions, treaties, protocols and agreements related to HSE issues and sustainable development and also to develop and maintain synergies between HSE local regulations and international developments. As the Director of HSE Regulations & Enforcement, Mr. Saif’s vision involves to assure that risks from major industrial/petroleum activities will be regulated and controlled. As a HSE regulator our aim vests to provide ‘independent’ assurance to society, governments, and industry that companies have identified the risks to health, safety and environment and have put appropriate measures in place to control these risks. This ‘control’ can be exercised in a variety of ways, from a ‘licence regime’ at one end of the spectrum to ‘safety case regime’ at the other. The “technical” safety framework to facilitate the regulating the energy industry for HSE in the State of Qatar has been developed. He has also embarked on the initiative of the sustainability reporting from the energy and industry sector as one of the key starting points to showcase the achievements and challenges to the sustainability performance of the Energy and Industry sector of Qatar. This was initiated from the year 2010 onwards for implementation. He is a graduate in Chemical Engineering from Qatar University. After graduation, he joined QP in the year 1991 and worked in various capacities. Prior to his current position, he was Manager of the Corporate Quality and Management Systems and was responsible for managing all aspects of the Quality Management Systems and its development throughout the Corporation. Mr. Saif holds membership in various national, regional and international committees.

Title: Safety Case Framework in Qatar’s Energy Industry - Major Accident Hazards (Safety Case) Framework

Abstract: The Oil and Energy Industry represents the backbone of the State of Qatar economy with needs to be regulated and managed to mitigate significant and intolerable safety risk. The role of the Health, Safety and Environment Regulations and Enforcement Directorate (hereinafter HSE DG) is to assure the stakeholders, investors and the State level that Major safety risk to the State of Qatar Energy Industry is being appropriately managed whilst not forgetting the environment and occupational health and safety risks issues. Events that can impact the offshore and onshore operations may include major fire/ explosion, uncontrolled hydrocarbon or toxic substances release, significant structural failure, e.g. offshore platform leg, pipeline or riser failure, leak, rupture; oil or chemical spills and toxic substances release etc. Major safety event in industry can result in multiple fatalities, injuries or health related problems, loss of revenue generating assets with high replacement cost and long time downtime, significant uncontrolled impact on environment and decline in investment interest due to event or lack of regulations. The proposed Technical Safety Case approach shall meet the content and purpose of the
existing laws of State of Qatar, as well as:
- Focus on Prevention of Significant HSE Risk that impacts the State level – as priority,
- Process Safety is a key industry focus (Major Accident Hazard Prevention),
- Assure compliance with (regulatory) HSE obligations in close cooperation with other relevant authorities (focal points, MOU etc.),
- Influence “World Leading – Best in Class” to those with “Significant Opportunities for Improvement,”
- Promote continuous improvement HSE practices with aim to achieve shift in culture, attitudes and requirements – to promote an improvement mentality and compliance culture,
- Build on gathered supervision experience and lessons learnt from last few years of industry engagement.

The Framework will include, but not limited to – statement of regulatory intent, as low as reasonably practicable (ALARP) demonstration, licensing system, compliance assurance system (supervision), incident investigation system, enforcement and reporting system, as well as emphasis on continuous improvement. The Framework foresees several regimes, such as – major accident hazards, occupational safety and health, environmental, licensing system, pipeline management, marine and other. Principles of Major Accident Hazard’s regime will be based on a regime that requires the operator to demonstrate safety risks have been reduced to not only tolerable levels, but to ALARP, case acceptance by the HSE (DG), link acceptance case to existing licensing process in cooperation with other regulators, and supervise industry through case compliance supervisory inspections process.

The benefits and value added to the State of Qatar are obvious and can be summarized as following – enhanced health, safety and environmental performance of the Oil & Gas Industry; and population, shareholders and investors confidence that industries are adopting the world class HSE practices. The State of Qatar will continue to build upon its role in the regional and international community as a stable and reliable partner in Oil and Energy Industry Sector by implementing HSE culture based on the highest international standards and best approach. The HSE (DG) Directorate will do its outmost best to contribute to this effort.

Ali Rajab Ashkanani
MANAGER OIL SPILL & EMERGENCY RESPONSE, DEPARTMENT SAFETY, QUALITY & ENVIRONMENT DEPARTMENT QATAR PETROLEUM
Dr Graham Atkinson  
PRINCIPAL ENGINEER, HEALTH AND SAFETY LABORATORY, UK

Graham Atkinson has a degree and PhD in Physics from Cambridge University - specialising in Fluid Mechanics. He worked as a research fellow in the Fire Dynamics Unit at Edinburgh University before joining HSE in 1989. At the Health and safety Laboratory he has been responsible for a large number of investigations following serious fire and explosion incidents. He has also carried out numerous research projects on a range of industrial safety issues. He was awarded the Frank Lees Medal by the IChemE in 2006 for work on IBC fires and the Hutchinson Medal in 2010 for forensic work at Buncefield.

Title: Lessons to be Learned from the Buncefield Explosion

Abstract: The Buncefield oil depot explosion of 11th December 2005 is thought to be the largest explosion and fire in Europe since the end of World War II. To quote from a joint statement from HSE and the Environment Agency following the conclusion of main legal proceedings in 2010: “The scale of the explosion and fire at Buncefield was immense and it was miraculous that nobody died. Unless the high hazard industries truly learn the lessons, then we may not be that fortunate in the future.”

Dr Atkinson was awarded the Hutchinson medal by the IChemE in 2010 for forensic work after the explosion and this talk will include examples of the process data, photographs of blast damage, CCTV clips and other types of evidence that were used in the investigation to piece together: why the release occurred; how the vapour cloud accumulated and why the subsequent explosion was so severe.

The main purpose of the talk is to describe the lessons learned for the future. These lessons should be of interest to those involved in the day to day running of petrochemical storage sites, those carrying out risk assessments and even to members of the explosion science research community.
Toufik Benmosbah
CHIEF SAFETY, ENVIRONMENT & QUALITY OFFICER, QATARGAS

Toufik Benmosbah has over 34 years experience in the oil and gas field. He graduated in 1978 from the University of Florida with a BSc in Industrial Engineering with further post graduation from Sorbonne Université de Paris 1. He worked extensively in the Upstream field in Algeria until 1998 holding various field positions with an intermediate experience in the pharmaceutical industry in charge of the Quality and Audit department. He rejoined afterwards Sonatrach where he was involved in various capital projects as a Safety Engineering lead. Joined Qatargas in 1998 as a senior safety engineer and has since 2006 been in charge of the Safety, Environment & Quality Department.

Toufik believes that Safety in its overall understanding is a matter of belief, ownership, commitment and leadership. No sustainable or robust result can be achieved without these principles.

**Title:** Building a Process Safety Culture

**Abstract:** The global Oil & Gas industry is under more intense scrutiny, as newer greener energy solutions are winding support from the public. Our industry feels this pressure and although not alarmed by this competition it is reacting properly, by investing in alternative energies and by enhancing its excellent records in safety performance, which has already set high design and operational standards. However, the LNG Industry’s possible vulnerability comes from the risk of a major event, which if happens, would taint, not just the LNG business, but the global gas industry.

In recognition of this, the industry has responded with a very successful programme on behaviour based safety, with the aim to continuously lowering the frequency of recordable cases, in addition to setting the pace, for the gas industry. Unfortunately the number of major events has not followed the same trend and could continue, to jeopardise the, considerably good, reputation the industry has been built upon.

Acknowledging the industry’s powerful drive, in occupational safety culture, the need to build on this momentum and to embed an operational safety culture, across the industry, remains critical for a real breakthrough and success in Process Safety culture. Qatargas has invested enormously, over many years, to build and sustain a successful Incident and Injury Free (IIF) culture, embedded in the very heart of the company and its people.

Using this successful model, as a springboard for best safety practice throughout the Industry, Qatargas truly believes this is the necessary step, to a successful Process Safety culture change.
Brett Doherty
SAFETY, HEALTH, ENVIRONMENT AND QUALITY GROUP
MANAGER, RASGAS COMPANY LIMITED

Brett Doherty was appointed the Safety, Health, Environment & Quality Manager for RasGas Company Limited, now one of the largest integrated gas processing facilities in the world, in December 2005. His portfolio of responsibilities, in addition to SHE includes Loss Prevention and Risk Management, Integrity Management and Quality, Security, Fire Service, Emergency Response and Business Continuity. RasGas produces LNG, LPGs, gas condensate, sales gas, liquid helium and sulphur.
Mr. Doherty has over 24 years post-graduate experience, predominantly in the oil and gas industry, occupying a variety of roles in the design, construction, commissioning and operation of these facilities. Prior to his current position, Mr. Doherty worked as Asset Manager in Operations and before RasGas worked in Australia for Santos overseeing asset management of oil and gas production facilities & pipelines. Mr. Doherty is a member of the Institute of Engineers Australia, & a Chartered Engineer, graduating from University of Queensland in Electrical Engineering in 1987. He also graduated in Law with honours from Queensland University of Technology in 2000. He has recently led the International Oil & Gas Producers (OGP) task force on Process Safety.

Title: Implementation of Recent Industry Guidance on Process Safety Key Performance Indicators

Abstract: Since the major incidents at Texas City refinery and Buncefield oil depot in 2005, the oil and gas industry has embarked on significant efforts to establish a system of performance indicators, the collection of which allows operators to better gauge the risk of suffering a major incident and, more importantly, identify the precursors to major incidents and mitigate these, thereby improving process safety performance. This body of work somewhat utilized the Byrd Triangle for personal injuries.
RasGas Co Ltd, an LNG producer, has adopted the recently published ‘Process Safety - Recommended Practice on Key Performance Indicators’ (Report no.456) by the International Association of Oil and Gas Producers for the upstream industry, based on the ANSI / API 754 recommended practice for downstream, approved in 2010. This presentation will cover how RasGas has adopted the four tier KPI model practically, including the recent selection of the more leading Tier 3 & 4 KPIs. Some detail of how the process safety KPI approach is embedded within the company’s management system will be given.
Robert G. Flesher is chief operating officer for the QatarGas 3&4 Project. The project involves building two of the world’s largest LNG processing trains as well as the offshore platforms, wells and pipelines to bring sour gas from the giant North Field to the LNG facilities. Flesher began his career as an engineer in Borger, Texas, in 1977. He worked in various engineering assignments in Stavanger, Norway, Kenai, Alaska and Houston, Texas. After two years as director of investor relations in New York, he served as staff director of drilling and production engineering in Borger, Texas. In 1991, he served as area manager in Farmington, New Mexico, and then was named manager of northern operations in England in 1994, and drilling and production manager of the U.K. division in 1996. He served as corporate planning and development manager in 1998 prior to becoming the general manager of the Hamaca Venezuelan Heavy Oil Project in 1999. In 2004, Flesher transferred to ConocoPhillips Canada where he was senior vice president of operations. After the purchase of Burlington Resources in April 2006, he was named senior vice president of Western Canada Gas Development and Operations. In June 2007, he became vice president, drilling and production in Houston. He served in this position until May of 2009 when he filled his current position in Doha, Qatar. He is a registered professional engineer in Texas and an SPE member. Flesher was born in McAllen, Texas, in the Rio Grande Valley. He received a bachelor’s degree in geological engineering in 1973 from Texas A&M University in College Station, Texas and a master’s degree in engineering science in 1976 from the University of Missouri in Rolla, Missouri. He served in the U.S. Army Corps of Engineers from 1974-1977.

Title: HSE Leadership: Making safety a Core Value

Abstract: Effective safety leadership begins with integrating safety expectations in the stated values, policies, standards, procedures and management systems of the organization. This framework for safe operations must be continually improved and reinforced through leadership’s commitment to safety, not only in words but in actions as well. By establishing a safety culture at all levels of the organization, leaders are expected to echo the same safety commitments set forth by the company. In turn, employees and contractors are expected to fully embrace the safety culture. A leader must be present and demonstrating a commitment to safety every step of the way – from design and planning to implementation at the job site. Leaders need to be willing to spend the time, make the effort, and concentrate their activities on safety. Safety leadership means always placing top priority on safety concerns. It’s getting in front of the workforce and reminding them that being safe is the most important thing they will do all day. It’s making decisions that echo a commitment to safety.
Dr. Hamouda is currently the Associate Dean for Research and Graduate Studies, College of Engineering, Qatar University. Prior to this appointment, Dr. Hamouda held the position of Chairman of Mechanical and Industrial Engineering Department, College of Engineering, Qatar University. Dr. Hamouda held joint appointments in University Putra Malaysia, Faculty of Engineering as well as the Institute of Advanced Technology where he was the founding program manager in computational Science and Engineering, Research manager at Road Safety Research Center, UPM. He is an active member of a number of International Scientific Committees, Professional Societies and Standards Boards. Dr. Hamouda has supervised/ supervising more than 15 Ph.D. and more than 50 Master degree students (By Research Thesis). Dr. Hamouda has published over 300 papers of which over 130 in leading scientific journals. He has often been invited as keynote and invited speaker for various conferences, seminars and workshops. He has several patents, and has edited several conference proceedings. He is currently engaged in research activities worth over US$6,000,000. He and his co-workers have received a number of prestigious awards; Gold Medal at the British Invention Show Alexandra Palace, UK, in 2004 and 2006. In December 2007, he won the 2nd place at the Arab Business Plan competition in Amman, Jordan. In 2010, he has been honored with the Takreem Scientific and Technological Achievement Award, one of the highest awards in the Arab world. Also, he won Qatar University Merit Award for the year 2010.

**Title:** Degradation Modeling and Reliability Prediction for Condition-Based Maintenance

**Abstract:** An effective maintenance program assures a satisfactory level of system safety and reduces the operating cost. Traditional maintenance strategies vary from simple corrective maintenance where maintenance is performed upon system failure, to time-based preventive maintenance where maintenance actions are taken at pre-determined periodic intervals. However, corrective maintenance often leads to safety concerns, while periodic preventive maintenance often causes unnecessary maintenance. Advances in sensors and technology have resulted in the development of a new class of maintenance that overcomes the disadvantages of the traditional approaches, namely condition-based maintenance. This talk presents a new model for condition-based maintenance scheduling for systems with multiple and statistically dependent failure modes. Recent advances in measurement technology and deployment of sensors have prompted manufacturers to move towards the real-time health monitoring for individual systems. Based on the information collected through real-time condition monitoring, more precise evaluation of the system safety can be obtained, and maintenance actions are recommended only when there is evidence that the system state has deteriorated to a certain maintenance threshold. The model is then utilized to obtain the optimum threshold value that maximizes the system’s availability over its life cycle, reducing the risk of catastrophic system failure.
William Joseph Hobbs
JBOG (JETTY BOIL OFF GAS) HEAD OF SHES

William Joseph Hobbs is married to Pamela Quenon Hobbs and they have 3 children and 4 grand children who reside in Oklahoma / USA. Joe has a BS degree from West Virginia Tech and a MS degree in Safety from Marshall University. He has been with ConocoPhillips for 31 years and has worked in West Virginia, Texas, Oklahoma, Czech Republic, Venezuela, France, Germany, and Qatar. Joe started his career in 1980 as an operator for DuPont, then after getting his Masters degree in 1983 was promoted to an SHE (Safety, Health, and Environmental) Resource in 1984. Joe has worked in a number of SHE Management positions, including several Industrial Hygiene positions in the late 80’s to mid 90’s. Joe is a CIH (Certified Industrial Hygienist) since 1996 and takes much pride in having good SHE performance everywhere he has been assigned.
Joe’s hobbies include daily walking and jogging, but his passion is his family. Every opportunity he gets he goes back to Oklahoma to be with his wife, children, and grand children.

Title: JBOG (Jetty Boil Off Gas) Project Safety Program – 5 Million Safe Hours

Abstract: JBOG is an Environmental Project designed to minimize flaring of hydrocarbons by recovering Jetty Boil-off Gas (JBOG) and using it as fuel gas. From the beginning of project construction in 2010 Safety, Health, and Environmental (SHE) have been the projects top priorities and this has been continuously demonstrated with fine SHE performance. Development of an incident and injury free (IIF) culture starts with strict compliance to our 12 Golden Rules, daily STAs (Safety Task Assignments), weekly safety huddles, periodic safety stand downs, weekly SHE communications (SHE Alerts and Bulletins), routine management walks, monthly Safety Leadership and quarterly Safety Sponsors Team meetings. A strong safety presence is vitally important in the field, but in addition, a strong SHE Management System with strong training programs is essential. For example, an aggressive heat stress program with heat index monitoring, clear communication, acclimatization, and strict work rest regimens has been implemented. The project also has a requirement of 1 safety professional or more per 50 workers.
All work must have method statements and JSA’s and all work considered high risk must have a risk assessment completed with contractor, client, and all potentially impacted area representatives. After this is agreed all work must be completed under a work permit with appropriate certificates attached.
Along with being an environmental project JBOG has initiated several additional environmental initiatives such as beach clean-ups, paper, wood and metal recycling, and plantation program for tree planting. Wood from piping and equipment crates was used to build animal shelters and feeding trays.
It’s critical that all workers are pre screened with physical exams and proven healthy to work. To gain access to JBOG workers must also receive orientation training and IIF (incident and injury free) training. To retain access they must follow our Golden Rules. JBOG has just completed 5 million safe hours without an LTI (lost time injury) and no reportable environmental incidents. We still have a long way to go, but are determined to complete this project safely.
Dr Andy Johnson  
TECHNICAL HSE AND SITE ENVIRONMENTAL MANAGER, QATAR SHELL GTL

Dr Andy Johnson has a PhD in Applied Mathematics from Oxford University. He has worked for Shell in the field of Process Safety for 25 years. As a consultant for Shell Research and Technology, he developed and applied tools for the prediction of consequences of large hydrocarbon fires and led Shell’s contribution to joint industry projects on large storage tank fires and the characteristics and impacts of oil and gas fires. He has developed quantitative risk assessment (QRA) tools and carried out QRAs for onshore and offshore oil and gas projects. He has also applied process safety design assurance activities for a number of large capital projects. For the last eight years Andy has lead process safety assurance of the Pearl GTL Project in Qatar throughout all phases from the initial concept selection to start-up and operation.

**Title:** Qatar Shell GTL Implementation of Process Safety Management

**Abstract:** The presentation will contain details of the following aspects of Qatar Shell GTL limited's implementation of Process Safety Management.

**The business case for Process Safety Management**
The continuing incidence of major industrial accidents has driven the recognition that management of process safety requires a different approach from the management of occupational safety.

**Process safety in Design, ALARP Demonstration and The Design HSE Case**
Process Safety Management begins with the design of facilities. The presentation describes how Shell uses the Hazards and Effects Management Process to identify process safety hazards, assess their risks and manage them to be As Low As Reasonably Practicable (ALARP) at each stage of the Design of oil and gas facilities, and the formal record of this process in a Design HSE Case.

**Process Safety Management in Operations – The Operations HSE Case**
The presentation will describe how the Operations HSE Case is used to continue the management of process safety in operations. The use of a Hazard Register to record the hazards present during operations and the selection of those hazards with high process safety risks. The use of Bowties to record threats that can lead to loss of containment or control and the barriers (either hardware or task related) used to prevent or recover from such loss. The link between the barriers and the operational activities required to maintain those barriers during the lifetime of a facility.

**Instilling the right behaviours in Process Safety Management - Chronic Unease**
Challenging the risk management of major accidents requires a retuned leadership mindset, so that leaders ask the right questions, and pick up on the weak signals of potential failure. The presentation describes what Shell leaders are doing to improve awareness and focus on process safety.
Ian Laing
MANAGING DIRECTOR OF OPITO INTERNATIONAL FZ LLC, DUBAI, UAE

Ian Laing has over 35 years of international oil and gas industry experience, a career that includes technical positions in well servicing, founder and managing director of a consulting and training company and as an international business development advisor.
In recent years he has provided international development advice to OPITO and joined the organisation on a full time basis in 2007 to support the growth in global demand for common industry standards in the training and competence sector. He is the Managing Director of Opito International based in Dubai in the United Arab Emirates responsible for the global development of the organisation and its accreditation of safety training provision to industry standards worldwide.

Title: Ensuring the Safety and Competence of the Oil and Gas Workforce by the Adoption of Common Industry Safety Training Standards

Abstract: The presentation will outline the process where indigenous aspirations in the development of a safe and skilled workforce can be supported by the adoption of industry best practice through the integration of globally recognised training and competence standards.

Through an explanation of the role of OPITO in ensuring a safe and competent workforce it will demonstrate the values of:

- Establishing a common strategic direction and policy relating to workforce safety for the oil and gas sector.

- Building a world class learning infrastructure to ensure the workforce can gain the skills, knowledge and qualifications needed to meet local demand and receive global industry recognition of their achievements

- Establishing a fit for purpose workforce safety training framework based on global industry standards and qualifications
Albert Lipana
HSE SPECIALIST FOR SHUTDOWNS, FIELD HSE, DOLPHIN ENERGY LIMITED, QATAR OPERATIONS

Albert is the HSE coordinator for shutdown activities for Dolphin Energy Limited, Qatar Operations in which capacity he is responsible for coordinating the Health, Safety, Environmental and Security aspects of Dolphin shutdowns. Albert earned a Bachelor of Arts in Industrial Engineering from Adamson University in the Manila, Philippines in 1982. He is a fellow of NEBOSH, is IOSH certified and has attended about 75 Safety Training Courses over the years. Albert started his career working for Saipem/ENI as Junior Engineer on a Pipelaying vessel from 1982 to 1991 in the North Sea. He started his career as a Safety Practitioner since 1992 in several offshore projects in Africa (Cameroun, Congo, Nigeria and Ivory Coast), Far East, Gulf of Mexico and Latin America (Brazil and Argentina,) on drilling rigs, survey ships, drill ships, platforms and FPSOs. He has worked for several companies including Schlumberger, Sedco Forex, Diamond Offshore, Noble Drilling International and MODEC USA. Albert joined Dolphin Energy in 2006 as an Offshore HSE Officer and was promoted to a Field HSE Officer for the pant and offshore in 2008. He was promoted to his current position, HSE Shutdown Specialist, in 2011.

Title: Effective Management of the HSE&S Aspects of a Major Plant Shutdown

Abstract: This paper will describe the preparation and management of the HSE&S aspects of the several major maintenance shutdowns (SD) at Dolphin’s gas processing plant in Ras Laffan Industrial City, Qatar. The detailed preparation work that was developed to engage and guide the HSE staff of the main contractor for each SD will be described as will the details of how the day-to-day activities of the work were executed and managed from an HSE&S perspective. A key component of shutdown activities was the preparation of comprehensive Work Method Statements (WMS) and the completion of Task Risk Assessment (TRA’s) for each approved WMS using DEL’s rigorous TRA protocol. For each major SD, as many as 350 TRA’s were completed to identify the hazards and associated risks of each work activity. A Field HSE technician was assigned responsibility for overseeing the HSE&S aspects of all work in each area involved in the SD and prepare a comprehensive work plan and drawings to fully understand the details of all work to be conducted in his area and the support requirements (cranes, purging with N2, etc.). A daily audit of permits in play in each area is also conducted by a small team dedicated to this task to ensure conformance to the Dolphin PTW requirements. This paper will describe the operation of the “war room” where detailed daily updates of the work was discussed and the HSE issues addressed. The PTW planning and execution work is discussed as well as the robust manner in which all recommendations / mitigation measures generated by the TRA’s were transferred to and acknowledged in the field as part of the work execution process. The paper will also discuss how the issues and concerns that came to light during the shutdowns were actively addressed and resolved in order to keep the focus on the execution of the work. DEL Field HSE&S staff oversaw the work and closely coordinated the management of the HSE&S aspects throughout the intense shutdown periods. All major SD’s were completed to date without a Loss Time Injury (LTI) or a medical treatment case (MTC). HSE&S aspects throughout the intense shutdown periods. All major SD’s were completed to date without a Loss Time Injury (LTI) or a medical treatment case (MTC).
Dr Sam Mannan
REGENTS PROFESSOR AND DIRECTOR, HOLDER OF T. MICHAEL O’CONNOR CHAIR I, MARY KAY O’CONNOR PROCESS SAFETY CENTER, ARTIE MCFERRIN DEPARTMENT OF CHEMICAL ENGINEERING, TEXAS A&M UNIVERSITY SYSTEM

Dr. M. Sam Mannan is Regents Professor in the Chemical Engineering Department at Texas A&M University and Director of the Mary Kay O’Connor Process Safety Center at the Texas Engineering Experiment Station. The mission of the Center is to improve safety in the chemical process industry by conducting programs and research activities that promote safety as second nature for all plant personnel in their day-to-day activities. Before joining Texas A&M University, Dr. Mannan was Vice President at RMT, Inc., a nationwide engineering services company. Dr. Mannan’s experience is wide ranging, covering process design of chemical plants and refineries, computer simulation of engineering problems, mathematical modeling, process safety, risk assessment, inherently safer design, critical infrastructure vulnerability assessment, aerosol modeling, and reactive and energetic materials assessments. He co-authored the Guidelines for Safe Process Operations and Maintenance published by the Center for Chemical Process Safety, American Institute of Chemical Engineers. He is the editor of the 3rd edition of the 3-volume, 3,680-page, authoritative reference for process safety and loss prevention,” Lees’ Loss Prevention in the Process Industries. Dr. Mannan has published 146 peer-reviewed journal publications, 2 books, 7 book chapters, 151 proceedings papers, 12 major reports, and 152 technical meeting presentations. Dr. Mannan is the recipient of numerous awards and recognitions. In September 2011, Dr. Mannan was awarded the honorary degree of doctor honoris causa by the senate of the Technical University of Lodz in Poland. Dr. Mannan received his B.S. in chemical engineering from the Engineering University in Dhaka, Bangladesh in 1978, and obtained his M.S. in 1983 and Ph.D. in 1986 in Chemical Engineering from the University of Oklahoma.

Title: Role of Education and Research on Training Future Leader Committed to Safety

Abstract: Advancements in science and technology have provided us the necessities and means to achieve, and we must achieve higher standards in safety. Nevertheless, incidents keep on occurring, and sometimes with catastrophic consequences. Incidents such as Bhopal, Piper Alpha, Deepwater Horizon and many more present an enormous challenge on us on how we could do better, in both preventative and responsive terms. It is easy to assume that safety primarily relies on technological competence, but as witnessed in many cases, incidents occurred because of a lack of leadership and commitment from leader. Safety is much more than the responsibility of one person or one group of persons or one industry; it is the responsibility of the society as a whole. The overwhelming factors involved in safety require the absolute commitment of each and every level in the chain of command. Leaders, although bounded by endless priorities, bear the responsibility of creating and promoting the safety culture, and, more than anyone, should understand, commit to, and support safety program and activities. It is through a comprehensive involvement with a curriculum based on education and research, the future leaders can truly master the fundamentals, complexities and broad implications of safety knowledge. And only with their commitment to safety, we can effectively face and solve current and future safety issues. The Mary Kay O’Connor Process Safety Center, having a robust and advanced safety education and research program in both undergraduate and graduate levels, is helping prepare and imbue the safety knowledge into future leaders.
Robert Munster
ROBERT MUNSTER,
VICE PRESIDENT HSSE/SD & MANAGER HSSE/SD,
PEARL GTL
QATAR

Dennis Percy
SENIOR CONSULTANT, JMJ ASSOCIATES, MIDDLE EAST BRANCH

Dennis Percy is a senior consultant with JMJ Associates. Having joined the firm in 1993, Dennis developed the European Safety Practice while based in London. Dennis and his wife Natalie, a colleague, moved to Qatar in 2006 to open the Middle East Branch for JMJ and support projects in the Middle East. Dennis began his career in the early 70’s as a personal development trainer working for one of the pioneering firms in that area and delivering programs internationally to more 120,000 participants during his 21 year career in that field.

Title: Transformation and the Integral Approach as Applied to Personal and Process Safety

Abstract: This presentation will address the following:
- The evolution of safety management 1800’s to present;
- The necessity for an evolutionary step change today;
- The pitfall a focus on personal safety may expose us to;
- The distinction between transformation and paradigm shift;
- The opportunity the integral Approach provides in both personal and process safety arenas
Mike Richardson
PROCESS SAFETY TECHNICAL AUTHORITY,
CONOCOPHILLIPS INDONESIA

Mike Richardson graduated from Imperial College of Science and Technology, University of London in 1982 with an honours degree in Chemical Engineering. He joined a well-known pipeline consultancy in London, covering a wide range of disciplines particularly concerning the plants and facilities that the pipeline projects interfaced with and often included. Mike held various technical and project execution roles in numerous pipeline and non-pipeline related jobs in UK, Holland, Bangladesh, Qatar, South Korea, Italy and Indonesia. He started working with ConocoPhillips in Indonesia in 2000 in support of a large offshore development project and then joined ConocoPhillips staff supporting operations in project handover, as well as, reliability and safety upgrade projects for its large offshore FPSO project. Mike is now with ConocoPhillips Indonesia as Process Safety Technical Authority.

Title: Process Safety Management: Standardizing Safe Operating Limit Information

Abstract: Many company, national and international standards require that safe operating limit information be documented for each process system, however is just stating Safe Operating Limit values in the operating manual or procedures really the best we can do? This presentation will show one approach that can be used to standardize the way that Safe Operating Limit information can be not just documented, but used as an analysis tool, link and consolidate other important safety study results and be an operator reference and training aid.
Iftikhar Turi
QATAR FERTILIZER CORPORATION (QAFCO)

Mr. Iftikhar Turi is currently the Head of Section Ammonia 2 at QAtar Fertilizer CORporation (QAFCO). Mr Turi holds a Bachelor of Chemical Engineering and a Master of Chemical/Environmental Engineering from a collaborative program of the University of Toronto.

Title: Qatar Fertilizer Company Process Safety Improvement

Abstract: Since 1973, Qatar Fertilizer Company (QAFCO), now a multiproduct company and a leading producer of ammonia and urea, is successfully enhancing its capabilities to increase its production capacities without compromising on safety. Keeping focus on safety while maintaining the organization growth QAFCO management is successfully fostering a strong safety vision at all levels of organization by showing its commitment towards continues improvement, risk mitigation, employee’s engagement and implementing, adopting industry best practices and available technologies. This presentation will focus on how QAFCO is keeping its expansion while improving and maintaining its safety track record in the region.
Dr. Luc Véchot
ASSISTANT PROFESSOR OF CHEMICAL ENGINEERING AT TEXAS A&M UNIVERSITY AT QATAR
CHAIRMAN OF THE QATAR PROCESS SAFETY SYMPOSIUM ORGANIZING COMMITTEE

Dr. Luc Véchot obtained a PhD in Chemical Engineering from the École Nationale Supérieure des Mines de Saint-Étienne (France) in 2006. He then joined the Fire and Process Safety Unit of the Health & Safety Laboratory (HSL) in Buxton (United Kingdom) where he held the position of Process Safety Engineer for 3.5 years. Dr Véchot joined the faculty at Texas A&M University at Qatar in September 2010 as an Assistant Professor of Chemical Engineering where he took over the lead of the Process Safety activities at the university. Dr. Véchot has worked on process safety related research topics for the last 7 years in collaborations with universities, public laboratories and industries. He focused his researches on exothermic reaction hazards and calorimetric hazard screening techniques, runaway reactions and adiabatic calorimetry, pressure relief design applications for untempered peroxide systems and accidental releases of water reactive chemicals. His current research activities include a major 5 year project on LNG safety sponsored by BP. Dr Véchot is also the chairman of the yearly Qatar Process Safety Symposium organizing committee.

**Title:** Recent Advances in LNG Safety Research at TAMUQ

**Abstract:** The prediction of the potential hazards associated to accidental releases of LNG on land and water has motivated a number of different studies including experimental and numerical approaches. Over the last four years, the Chemical Engineering Department of Texas A&M University at Qatar has had some research activities on the major field of LNG Safety under a major project funded with a five year grant from BP (2008-2013) and supported by Qatar Petroleum. This project aims to perform the study of the consequences of LNG spill on land both in terms of vapour production and dispersion. The presentation will give an overview of the recent advances in the LNG Safety Research project and will focus on the experimental and modeling work performed at TAMUQ on the source terms prediction.
Dr Simon Waldram
MANAGING DIRECTOR, WALDRAM CONSULTANTS Ltd
PREVIOUSLY PROFESSOR OF CHEMICAL ENGINEERING
AT TEXAS A&M UNIVERSITY AT QATAR

Dr Simon Waldram is currently the Managing Director of Waldram Consultants Ltd. Dr Waldram trained as a chemical engineer in both the UK and USA and obtained his PhD from University College London, University of London where he was a faculty member for 21 years and where he remains an Honorary Reader. He was appointed Technical Director of Hazard Evaluation Laboratory, later to become HEL, in 1992 and subsequently was appointed Director for Business development. He was responsible for 970 process consultancy projects and reports during his 15 years at HEL. He has made a number of overseas visits to India and Bangladesh as a specialist lecturer with the British Council. He joined the faculty at Texas A&M University at Qatar in 2007 where he led the Process Safety activities at Texas A&M Qatar including a major 5 year project on LNG safety sponsored by BP. He retired in December 2010. Dr Waldram is author of more than 100 publications, many in the safety related fields and is an expert in calorimetry and runaway reactions.

Title: Lessons Will Be Learned: Do We Take This Statement Seriously?

Abstract: After many catastrophes – for instance “natural” such as a tsunami, flood, or lightening strike, or “man made” including financial, political, business, or engineering disasters – a spokesperson will say that lessons will be learned. And for the most part the public probably believes that this will happen – to some extent. But in reality is this the case? In the process industries how do we document and disseminate the lessons learned from both incidents and accidents? Such dissemination may need to be to everyone in a specific production plant, throughout a whole site, to similar sites that the company may own elsewhere, to other companies who are in analogous areas of business or to all others for whom some of the “lessons learned” may be relevant. Professional associations, and those who write codes and standards, will also need to be contacted. For instance a problem (and more importantly a proposed solution) involving a roll call following an emergency evacuation of an offshore production platform may have applications in many totally different types of business activity. As a community of professional engineers and scientists who work in industry we need to recognise that we should be doing a much better job at helping a wide variety of others learn from our incidents. The potential role of a free at the point of use, international, multilingual, database of incidents and the associated lessons that should be learned will be discussed. Some comments regarding funding and possible legal requirements both to submit to, and consult, such a database will be made. An example of a major accident and how it might be classified so as to be of maximum use to others will be discussed.
List of Posters

Mitigation of LNG vapor dispersion modeling by Water Curtain
Tomasz, Olewski, Subramanya Nayak, Luc Véchot
Texas A&M University at Qatar

Safety Assessment for Selecting Supercritical Solvents for Novel Gas-to-Liquid Technology Reactor
Natalie Hamad\textsuperscript{a}, Nimir O. Elbashir\textsuperscript{a}, Mahmoud M. El-Halwagi\textsuperscript{a}, Sam Mannan\textsuperscript{c}
\textsuperscript{a}The Artie McFerrin Department of Chemical Engineering, Texas A&M University College Station, TX 77843, USA
\textsuperscript{b}Chemical Engineering Program, Texas A&M University at Qatar PO Box 23874, Doha, Qatar
\textsuperscript{c}Mary Kay O’Connor Process Safety Center, The Artie McFerrin Department of Chemical Engineering, Texas A&M University, College Station, TX 77843-3122, USA

The effect of different heat transfer mechanisms on liquid nitrogen vaporization rate
Tomasz Olewski, Luc Vechot, Carmen Osorio, Yi Liu, Mohamed Chakroun, and Sam Mannan\textsuperscript{1}
Chemical Engineering Program, Texas A&M University at Qatar, PO Box 23874, Doha, Qatar
\textsuperscript{1}Chemical Engineering Department, Texas A&M University, Texas, USA

Modeling of a cryogenic liquid pool boiling and spreading using CFD code
Omar Basha, Yi Liu, Tomasz Olewski, Luc Vechot, and Sam Mannan\textsuperscript{1}
Chemical Engineering Program, Texas A&M University at Qatar, PO Box 23874, Doha, Qatar
\textsuperscript{1}Chemical Engineering Department, Texas A&M University, Texas, USA

Small field experiment of liquid nitrogen spill onto concrete
Tomasz Olewski, Ming Zeng, and Luc Véchot
Chemical Engineering Program, Texas A&M University at Qatar, PO Box 23874, Doha, Qatar

LNG Vapor Dispersion with Application of High Expansion Foam
Bin Zhang and Sam Mannan
Chemical Engineering Department, Texas A&M University, Texas, USA

JBOG (Jetty Boil Off Gas) Project Safety Program – 5 Million Safe Hours
William Joseph Hobbs, Head of SHE&S
Jetty Boil Off Gas Project

Study of CF3Br – Fire Suppressant Kinetics Mechanism
Carmen Osorio, Sam Manna and Eric Petersen\textsuperscript{1}
Chemical Engineering Department, Texas A&M University, Texas, USA
\textsuperscript{1}Mechanical Engineering Department, Texas A&M University, Texas, USA

Dust Explosions and Hybrid Mixtures
Jiaojun Jiang, Diana Castellanos and Sam Mannan
Chemical Engineering Department, Texas A&M University, Texas, USA

Develop a human performance modeling system for process safety operations
Emrah Harputlu, Sam Mannan, Ray Mentzer and Susan Murray\textsuperscript{1}
Chemical Engineering Department, Texas A&M University, Texas, USA
\textsuperscript{1}Missouri Science and Technology
Qatar Process Safety Symposium

“Process safety is not achieved by accident”

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