



Angus Keddie



+44(0)1344455800

info@processsafety matters.com

Angus combines a strong technical safety background, proven management and facilitation credentials and robust communication skills. He has leveraged the use of these assets to achieve success in the industry posts he has held to date in his career. He has recent experience as HAZOP, SIL, LOPA, HAZID and SIMOPs Leader for several leading Oil Industry company. In addition, he has held senior proposals posts in two major Oil Industry contractors (FW/KBR) for 5+ years, giving him a broad overview of design and operations requirements.

Languages

- French – Fluent
- Dutch – Fluid

Education/Associations/Accreditations

- 1986: BSc (Hons 2:1) Chemical Engineering – University of Edinburgh
- 1992: Member of the Institute of Chemical Engineers (IChemE)
- 1997: MBA – University of Aston
- 2012: Shell Approved HAZOP Chair
- 2014: Fellow of the Institute of Chemical Engineers (IChemE)
- 2016: Centrica Approved HAZOP Chair
- 2019: INEOS Approved HAZOP Chair

Training Courses

- I have developed and successfully presented several peer reviewed Effective HAZOP training course sessions since 2013.
- In addition, I generated and delivered a PSM Fundamentals training course to RasGas in 2015/16.
- Furthermore, customised LOPA and HAZOP Leadership courses were developed and presented to PCS and Macdermid respectively

Publications / Abstracts

- “What If We Tried Something Different?...Some Maverick Ideas to Improve Process Safety”, presented at Hazards AP 15, in Kuala Lumpur, in April 2015
- “The Battle for the Soul of Process Safety”, presented at 13th Global Congress on Process Safety, in San Antonio, in March 2017
- “The Gamification of Process Safety”, presented at Hazards 28, in Edinburgh, in May 2018
- “How to Keep the Peace in a Post war world?”, will be presented to Australasian Hazards 19 in Brisbane, November 2019

Achievements

- **Successfully facilitated 100+ Process Safety Reviews (HAZOP, HAZID, ENVID, SIL, SIL Verification, LOPA, SIMOPS, PSA. Layout, HAZCON, Constructability) for major Industrial clients**
- **Saved client around £0.5m on long term HAZOP close out costs by rigorously applying Core HAZOP principles**
- **Managed and motivated an FPSO project Constructability Review, thus compressing the project risk by 25% and consequently reducing the required funding guarantee by \$50m**
- **Prepared and presented 4 Process Safety Training Courses: Effective HAZOP; HAZOP Leader; PSM Fundamentals; LOPA Fundamentals**



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2016 - now Process Safety Matters

Technical Safety Consultant. Process Safety Matters is a leading Consultancy which provides technical facilitation support to the International Processing Industry, including Oil and Gas, Petrochemical, Pharmaceutical, Food Processing and Nuclear. I am a Technical Safety Consultant, with experience across the spectrum of materials processing. I have delivered the following projects:

Client	Project	Units/Location	Activity	Duration
ARC	Linde Singapore Gasification	Power Gen Unit	HAZOP/SIL	3 days
ARC	Linde Singapore Gasification	Refrigeration Unit	HAZOP/SIL	4 days
Fluor	INEOS New Energy Project		HAZOP/SIL	6 weeks
Fluor	AGPP	Misc /Russia	HAZOP /SIL	2 weeks
ARC	Linde SABIC ASU 9	Compressor, Expander Packages/Germany	HAZID/LOPA	2 weeks
ARC	SBM Carcara FPSO	Holland	HAZID/ENVID	2 days
Gulf Keystone	PF1 Pumping Station	Kurdistan	HAZOP	2 days
ARC	Linde NKNK HAZOP	Ethylene/Germany	HAZOP/SIL	5 weeks
ARC	Linde Singapore HAZOP	Gasifier/Germany	HAZOP/SIL	6 weeks
Veolia	Johnson Matthey CHP	UK	HAZOP Closeout	2 days
ARC	Fluor EPC Design of Shell Penguins Project	FPSO / Philippines	HAZOP	5 weeks
ARC	Fluor EPC Design of Shell Penguins Project	FPSO / Philippines	ALARP Workshop	1 day
KPO	Schlumberger HL Well Test	Compressor / Kazakhstan	HAZOP	1 week
Fluor	Total Tilenga Oil Field Development Uganda	UK	HAZOP/SIL	4 weeks
Veolia	Johnson Matthey CHP	Royston, UK	HAZOP	2 days
KPO	Schlumberger HL Well Test	Kazakhstan	HAZOP	1 week
Veolia	Johnson Matthey CHP	Brimsgate, UK	HAZOP	4 days
Petroedge	HAZOP Leader Training Public Course	Malaysia	Training	2 days
Petroedge	HAZOP Training Public Course	Malaysia	Training	3 days
Petroedge	In house HAZOP Training for PCS	Singapore	Training	3 days
Genesis Oil and Gas	Centrica DP8 Detailed Design	UK	HAZOP	1 day
Harris Pye	British Sugar HRSG Project	UK	HAZOP/SIL	3 days
Expro	KPO Well Test Units	Kazakhstan	HAZOP	2 weeks
OSL	Centrica Barrow terminal FGC	Dry Gas Seal / UK	HAZOP	2 days



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	Rewheel			
WorleyParsons	KPO 5th Trunkline	<i>Kazakhstan</i>	HAZID, ENVID, HAZOP, LOPA	6 days
Petroedge	LOPA Fundamentals Public Course	<i>Singapore</i>	Training	2 days
Petroedge	LOPA Fundamentals Inhouse Course for PCS	<i>Singapore</i>	Training	2 days
Genesis Oil and Gas	Centrica DP8 Rationalisation Detailed Design	DP8 Satellite Platform	HAZOP	2 Days
Centrica	Morecambe Bay Field Gas Compressor Cat Converter	SCR and NH3 storage	Layout Review, HAZCON, HAZOP	3 days
WorleyParsons	Innovia Security As Built	Ink Making Plant	HAZOP / LOPA	3 weeks
SynergenOG	Expro Sonatrach BBK BBKN	<i>UK</i>	HAZOP	2 days
MacDermid	Effective HAZOP Training	<i>UK</i>	Training	2.5 days
OSL	Centrica Barrow terminal FGC Rewheel	<i>UK</i>	HAZOP	1 day
EPC	PSM Fundamentals Training Course	<i>Qatar</i>	Training	2 days
Genesis Oil and Gas	Centrica DP8 Rationalisation	DP8 Satellite Platform / <i>UK</i>	HAZID / HAZOP / SIL	1 Day
Genesis Oil and Gas	Centrica DP6 Rationalisation	DP6 Satellite Platform / <i>UK</i>	Destruct / Construct Review	1 Day
AMECFW	Centrica DP1 CPP Simplification FEED	<i>UK</i>	HAZOP	3 days
Wilde Analysis	BPA Bacton Sump Tank replacement	<i>UK</i>	HAZOP / LOPA / SIL Verification	1 day
Genesis Oil and Gas	Centrica DP6 Rationalisation	DP6 Satellite Platform / <i>UK</i>	HAZID / HAZOP / SIL	3 days
Genesis Oil and Gas	Reliance Clusters HAZID	Subsea Wells, Flowlines and Platform / <i>UK</i>	HAZID	1 day
Genesis Oil and Gas	Taqa Atrush HAZOP	Process, Utilities and Export Pipeline / <i>UK</i>	HAZOP	3 weeks
Total (and others)	PSM Fundamentals Training Course	<i>UK</i>	Training	2 days
Eley	Tetrazone (Explosive) Production	<i>UK</i>	HAZOP	2 weeks



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2011 - 2016 AK Safety First

Technical Safety Consultant. AK Safety First is a leading Consultancy which provides technical facilitation support to the Oil and Gas Industries worldwide. I am a Technical Safety Consultant, with experience across the spectrum of the hydrocarbon production chain. I have delivered the following projects:

Client	Project	Units	Activity	Duration
IChemE	Public Effective HAZOP course		Training	2 days
EPC	RasGas In house PSM Fundamentals Training x 4		Training	8 days
EPC	Mondi In house Effective HAZOP Training		Training	3 days
Genesis	Tullow Oil FPSO Expansion	Process	Constructability Review	1 day
Genesis	Tullow Oil FPSO Expansion	Process	HAZID	1 day
IChemE	Bombardier In house Effective HAZOP		Training	2 days
Lisbon Group	Pan African SSGP	Expansion Project - Refrig & Compression	HAZOP	1 week
IChemE	Effective HAZOP		Training	2 days
ERM	Shell Curlew FPSO	Process, Marine	HAZOP	4 months
Worley Parsons	BGC Rumaila Gas 'Quick Wins'	Qurainat Temp Compressor Tie-Ins	HAZOP	1 day
RHDHV	ENI Kuryk Ship Repair Yard	Fuel Gas, Diesel Storage	HAZOP	1 day
RHDHV	ENI Kuryk Ship Repair Yard		HAZID	2 days
ERM	Unilever Elais Edible Oils Refinery	Process and Utilities	HAZOP	1 week
Risktec	AmecFW Duqm Refinery	SGP/DHT	HAZOP / SIL	3 weeks
Xodus	Suncor Beta Field	SPS, Pipelines, Topside	HAZID	2 days
DNV	BWO Catcher FPSO Marine HAZOP	COTs, WBTs, N2, Fire Water etc	HAZOP	3 weeks
IChemE	Effective HAZOP		Training	2 days
Xodus	Tullow South Lokichar Field Development	Well Pads, In-field Pipelines, CPF	HAZID / ENVID	2 days
Xodus	Chiyoda LNGC	Process, Utilities, Storage and Marine	HAZID	1 day
Xodus	Chiyoda LNGC	Process, Utilities, Storage and Marine	Construction Strategy Workshop	1 day
ERM	GS/STAR	Refinery Utilities	HAZOP / SIL	4 weeks
Petrofac	Apache Nevis	Heater Reconfiguration	HAZOP / LOPA	1 week
Petrofac	Apache Aviat	New Field Tie	HAZOP	1 week



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		Back		
ENI	ENI Zabazaba FPSO	Process and Utilities	HAZOP / SIL	4 weeks
DNO	Summail Gas Plant	Flare, RO, Hot Oil Packages	HAZOP	1 week
Wood Group Frontier	BGC Rumaila Gas 'Quick Wins'	LP Networks Tie-ins	HAZOP	1 week
Haztek	TTOPCO Taq Taq CP Facility	CPF1 and TLS	Process Safety Audit	2 weeks
Xodus	Shell Corrib Pipeline	Wells to Terminal	Valve Interlock Workshop	2 days
Xodus	Total Martin Linge Platform	WYE Subsea Tie-in	HAZID	2 days
ERM	BHP Liverpool Bay Asset	Douglas Platform	Slickline Intervention HAZID	2 days
Eni Engineering	ENI Confidential Project, Africa	Gas Plant	HAZOP	2 weeks
EPC	Effective HAZOP Training Course	N/A	Training	1 week
Genesis	Shell Gabon Gamba Terminal Re-HAZOP	Terminal and Gathering Station	HAZOP	2 weeks
ERM	Genel Energy Miran W Production Facility	EPF (Early Production Facility)	HAZOP Action Closeout	9 weeks
ARC	ExxonMobil ERHA Ph 2 Project	Expansion of Production on ERHA FPSO	SIL Review	4 days
WG Frontier	Total Alwyn N GC Installation HAZOP	Well Fluid Gas Chromatographs	HAZOP	2 days
WG Frontier	Enquest Process Simplification Project	Thistle Platform	SIL Review	2 days
WG Frontier	Shell Mossmorran Heating Oil System Repair	1V-5501-H Electric Start-up Heater	HAZOP	2 days
ADTI	Endeavor Rig Water Injection Test	Endeavor Well test Facility	HAZOP and Procedure Review	2 days
Genesis	BGT Hasdrubal Produced Water Project	Hasdrubal Platform and Gas plant	HAZOP	3 days
Genesis	Shell Brent Bypass	Brent Alpha and Bravo	Operating Procedure Review	3 days
Genesis	Shell Brent Bypass	Brent Alpha and Bravo	HAZID	2 days
KBR	Aramco	Jazan Refinery	HAZOP	3 weeks
Genesis	BP Miller	Miller	Dismantling Comparative Hazards and ISD Reviews	2 days
Genesis	BP Valhall	Annulus Management System	Design Safety Review	2 days
ARC	Linde El Tablazo	Demethaniser column and C2 Splitter	HAZOP	6 days
Genesis	BG Tunisia SAP	Legacy Units	Standards Gaps Review	4 days



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Woodhill Frontier	Talisman Flotta 2013 SD	Pig Trap Replacement	HAZOP	3 days
Genesis	BG Tunisia 2014 SD	Gas Plant	Dispensations Review	1 week
Genesis	GRN Reggane Gas Plant	Utilities	HAZOP, Risk Ranking	2 weeks
Genesis	NOSPCO Kamose Minimal Platform Study	Kamose Platform	HAZID, HAZOP	1 week
Genesis	Total Elgin Restart	Liquid Filled Gas Pipeline	Pigging Safety Review	1 week
CB&I	Goldboro LNG Terminal	Terminal	HAZID	4 days
Risktec	Shell Shearwater	Production Platform	HAZOP	12 weeks
Genesis	RWE Breagh A	Topsides Tie-in Protection	SIMOPs	2 days
Genesis	Nexen Golden Eagle Area Development Ph 2	Topsides Production	HAZOP / LOPA	1 week
Woodhill Frontier	Talisman Hummingbird FPSO	N2 Unit	HAZOP	2 days
Genesis	Nexen Golden Eagle Area Development	Subsea	HAZOP	1 week
ARC	Linde Sadara HYCO/HN3 Plant	NH3 Production	HAZOP / SIL	4 weeks
Genesis	BG Tunisia Miskar Well Test	Flare Tie-ins	HAZOP	2 days
Risktec	Geoglobal Israel	Rig Well Test	HAZID / HAZOP	1 week
Woodhill Frontier	Talisman Bleo Holm FPSO	Process Units	HAZOP	3 days
Haztech	Drax Power Ecostore (Woodchip Storage)	Utilities	HAZOP	1 week
Genesis	Shell Brent Alpha Decommissioning	Subsea Tieback	HAZOP / HAZID Op Review	1 week
Expro International	Bentley Field Rig Extended Well Test	Well Test Package	HAZOP including closeout	1 week
ARC	Total C2 Cracker Expansion	Refinery Offgas Recovery	Operability Review	2 days
ARC	GSP Saturn Rig Refurbishment	Saturn Rig	HAZOP	1 week
ARC	Linde Carmel Olefins C3 Splitter	Changes and C3 Dryer Unit	HAZOP	1 week
Expro International	Aker Skandia Crown FSPO	Well Test Package	HAZOP	1 week
Expro International	Victoria Oil and Gas Logbaba Gas Plant, Cameroon	Gas Plant	HAZOP	2 weeks
Worley Parsons	FLEX FLNG, Papua New Guinea	Process and Utilities	HAZOP	5 weeks
ARC	Shaw Maissan / Kirkuk Refineries	Various Refinery Process Units	HAZOP / SIL	3 months



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I have received many testimonials for my work, of which the following are examples:

'Angus Keddie of AK Safety First led several HAZOP and SIL reviews for us during the summer of 2011. The scope was Units on a grassroots the Maissan Refinery in Iraq, where our client was SOC, and included CCR, FCC and Interconnecting Pipework. Angus was able to strike the right balance between eliciting input from all the members of the HAZOP team and keeping the process on track towards a challenging Bid Package deadline. He combines an extensive industry and process knowledge with the communication and diplomatic skills which are necessary to get the best out of the disparate band of experts that constitutes a HAZOP team. I would have no hesitation in recommending Angus for similar work within the Oil and Gas Industry.'

Kurt Bosse, HSE Process Supervisor, Shaw Energy and Chemicals

Having just completed our first Process Safety Fundamentals training course in Dec 2015, I am happy to recommend Angus Keddie of AK Safety First, who both prepared and delivered this course to a group of our Field Supervisors. The course succeeded in its primary objective which is to bring process safety awareness to the forefront of our daily operations. I am more than satisfied with the service provided by Angus and would encourage other Oil and Gas Operators to work with him to help ensure that we make our industry as safe as we possibly can.

Sholto Diack

Head (Competency Assurance)
Competency Assurance and Training
Operations Business Department
RasGas Company Limited

In my capacity as VP of Engineering for Crestech, a subsidiary of Technip, I participated in the recent SIL review for Phase 2 of the ERHA project, which took place in Lagos, Nigeria in June 2013. The purpose of the review was to determine the SIL (Safety Integrity Level) of critical instrumentation associated with the expansion of the subsea tie-backs of the ExxonMobil ERHA FPSO, which is located in offshore Nigerian waters.

The review was chaired by Angus Keddie of AK Safety First. Reviews of this sort, especially in countries like Nigeria, can be challenging due to the personalities of the participants and the distinct motivations of the various stakeholders. Angus addressed this immediately by describing the scope, methodology and review ground rules and procuring agreement from those 25 people present. He then robustly and systematically steered the team through the process, at the same time as engaging the quieter members of the team while diplomatically restraining some of the more outspoken players.

In summary, Angus led the review with aplomb and I would have no hesitation in recommending him for similar activities in the future.

Dr Rajendar Kumar, VP Engineering, Crestech Engineering, Nigeria



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2009-2011

KBR, England. International Engineering Contractor

Manager of Proposals. KBR is a major Engineering Contractor employing more than 11,000 people worldwide. I manage the team responsible for preparing the proposals to win new business for our Hydrocarbons Division, for projects with a value of up to \$15bn. Notable bids include:

Client	Project	Scope
BP, Azerbaijan	Chirag Field Development Project	FEED
Saudi Aramco, Saudi Arabia	Shaybah, NGL Project	FEED
Saudi Aramco, Saudi Arabia	Shaybah NGL Project	EPC
ADCO SAS, Abu Dhabi	Artificial Islands Project	FEED
Nexen, North Sea	Golden Eagle Field Development	FEED
BP, Azerbaijan	Shah Deniz 2	FEED/EPCm

The role involves overseeing the production process to ensure that KBR differentiates itself from the competition. As a manager, I see my primary function as enabling my team to thrive professionally. I have also acted as Proposal Manager for several of the above bids.

2005-2008

Foster Wheeler, England. International Engineering Contractor

Senior Proposals Manager. Foster Wheeler Energy Limited is a major Engineering Contractor employing more than 5000 people in the UK and India. I worked in a team of 10 Proposal Managers preparing bids to support FWEL's business winning strategy in the upstream and downstream oil and gas sector, for projects with a value up to \$4bn. Notable bids included:

Client	Project
Hyundai Oilbank, Korea	Heavy Oil Upgrade Project
BP, Algeria	In Salah Gas Field Development
KNPC, Kuwait	New Refinery
BP, Scotland	DF1 Carbon Sequestration Project
ADCO, Abu Dhabi	SAS Field Development

This work involves preparing the strategy for the bid preparation, managing and motivating a bespoke multi-disciplinary bid team of up to 20 members, presenting the key elements of the bid to Management for approval, ensuring that the client's bid deadline is respected, negotiating with the client and handing over to operations when the bid is successful.

2002 - 2005

Business Synergy

Consultant offering business development and technical safety support to clients in the UK and France:

Air Liquide

France – Industrial Gas Manufacturer
Senior Sales Consultant. Responsible for Sales and Business Development for Cryogenic and Membrane Industrial Gas Units. Achievements: 3 membrane units and 1 Cryogenic unit sold.

Technical Safety Engineer. Following a couple of site incidents, was nominated to take charge of the application of AL's Process Safety Requirements across their European sites. This included generation of Project Risk Assessments, setting up and leading of HAZOPs and HAZIDs, preparation and presentation of targeted Process Safety Management inductions.

Terreco

The Netherlands – Environmental Solutions Company
Responsible for the preparation of a business development study for Terreco's Groundsoil Remediation Technology in French and UK market place. Achievements: Identification of 15 potential projects in the UK and 5 in France.



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- 2000 - 2001** *BOC Edwards, England – Vacuum Pump and Systems Manufacturer*
Market Manager Industrial Systems
Managing transition of Industrial Systems products from bespoke to generic offerings.
Developed and presented ATEX Communication Strategy for Vacuum Pumps Process Industry applications.
- 1997 - 2000** *Simon Carves, England - Technology Driven Process Plant Design Company*
Sales Manager, Polymers and Petrochemicals:
- Facilitated and negotiated a Licence Agreement with ICI for their successful Oxo Alcohol's technology and sold two licences to Nan Ya in Taiwan and Aristech in the US.
 - Secured contract with Roche Vitamins to develop business outside of traditional client Zeneca and establish Scottish base.
- 1993 – 1996** *Norton CPP, England - Mass Transfer Equipment Manufacturer*
European Agents Sales Manager:
- Commercial and Technical responsibility for Norton's European Agency Territories - Italy, Spain, Portugal, Greece, Sweden, Eastern Europe
 - Exceeded orders target in 1996 by more than 30%
- Senior Process Engineer** designing and pricing mass transfer systems for many blue chip clients including BP Chemicals, Rhone Poulenc, Nynas, Shell and Exxon Chemicals
- 1990 - 1993** *BP Chemicals SNC, France - Licensor of Petrochemical Technology*
Commissioning Engineer with the following responsibilities:
Technical Advisor to Licensees of the BP Gas Phase Polyethylene Process during the Start-up Phase of the plant, for projects in Japan, China and India.
- Technical Trainer.** Designed and delivered computer based operator training courses to several licensees in France and at PT Peni (BP JV PE plant) in Indonesia.
- 1986 – 1990** *John Brown, Holland - Process Plant Design Company*
Process Design Engineer involved in various Chemical Industry projects with blue chip clients including Exxon, Shell, GE and BP Chemicals.

References

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