# KEY EXPERIENCE

A Malaysian with broad experience in process safety, technical risk, functional safety, loss prevention & overall HSE (EHS). A chemical engineering graduate from University Malaya I have **approximately 24 years** the in the oil and gas and petrochemical industry (Liberty, Shell, DNV and Aker, Worley Parsons Indonesia, Hess Malaysia). At Hess currently my role requires me to have oversight on all Technical safety, risk assessments, loss prevention & process safety deliverables. I’m currently the **Process Safety/Risk Assessment Technical Authority for Hess Malaysia** . As part of my TA portfolio I’m also required to represent Hess as the client rep for the Design 1 Build Many **(D1BM)** project steered by PETRONAS .

Currently I lead a team of engineers and site safety leads. I am the client head for all technical safety / process safety and site EHS issues. I’m required to take on the leadership mantel and steer on Process Safety/Loss prevention & EHS decisions internally and with the contractors for all of projects. This requires conscious influencing, coaxing and interpersonal skills to align contractor’s ambition with our company goals. Team synergy between us in the client team and our contractors is critical to the success of the project, and part of my role is to foster this bond from the start and nurture it throughout each project.

# PROFESSIONAL EXPERIENCE

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| May 2012 – Current | Process Safety & EHS Lead, Projects – HESS Malaysia  CPP Process Safety/Technical Safety Lead (2013-2017) : Our CPP is approximately a 500 MMSCFD producing platform , 120 POB, with a helideck and an FSO adjacent to it. I was responsible for an array of safety studies (HAZOP, HAZID, SIL, FERA, QRA,EERA, ESSA Firewater studies , Dropped Object, PFP Optimization, etc) and loss prevention work (HAC drawings, safety equipment specs and TBE). Layouts influencing via constant PDMS reviews where part of my staple as well. I was based in Korea , at the Hyundai Yard for more than a year interfacing with multiple teams internally and externally from EPCC contractor Hyundai, vendors and consultants. The challenges at this stage was to ensure all contractors and disciplines, aligned with our EHS specifications and expectations and codes. There were a number of packages under my purview NOVEC etc that required FAT oversight as well.  My scope has extended in the last 3 years into planning for offshore campaigns. The challenges here are numerous – i.e. planning for loadout, hazardous area classification (HAC) for equipment, installation and HUC where safety vs cost is often a contention point. The plans are more complex and requires bringing together people in a synergistic way to contribute at risk assessment workshops (Constructions risk assessments (CRA), SIMOPS clash, etc). We, EHS are pivotal to the success of the campaign and I steered a lot of the decisions from rated equipment selection, manning philosophies, fatigue management and other safe working policies and procedures (SIMOPS, PTW, ERP etc).  Currently I’m involved in multiple projects. The first being an intricate brown field work with engineering and installing our mercury removal unit (MRU) onto our producing Central Processing Platform (CPP). I am required to have oversight over all safety work and I make it a point to attend all workshops from HAZOP, SIL, HAZID, ALARP, etc. There are many challenges as we seek to integrate these modules with our CPP; We were required to reassess all previous safety studies (FERA using CFD, QRA, PFP work etc). As the lead I am required to endorse all studies prior to approval and involved directly in technical EHS notes when required. I’m also required to attend multiple PDMS, material handling & Human Factor Engineering (HFE) workshops and ensure EHS practices are integrated into the engineering work. Part of my role requires also coaxing, guiding engineers and motivating them to find the most optimal solution without complicating the design.  The most complex challenge for the MRU project is pulling together plans to install and commission safely. I’m responsible for to bring all parties i.e. projects , operations and contractors together in construction risk assessment (CRA) workshops. As the CPP is a producing platform we need to be cognisance of the hydrocarbon hazards while producing these detailed EHS plans.  Phase 4 Concept definition: These are 3 wellheads with varied design concepts. At this stage we are defining components, philosophies and going through approval process with the regulator. I am required to present EHS philosophies and concepts to PETRONAS for their approval. Being a proponent of inherently safe design my quest at this stage is to largely reduce inventories and challenge the team for a more minimal design. The safety studies conducted are CFD work around mercury dispersion from exhaust, HAZOP and HAZID, SILs. For Phase 3 & Phase 2 : I had oversight over all safety studies and loss prevention work . Phase 3 is more complex with high pressures at 2500# and a derated pipeline at 900# requires a series of detailed engineering to reach a safe solution.  Phase 2 – Completed and Installed 2 Remote/Minimum Well Head (RWHP & mWHP). Part of the design team involved in layouts, process safety (HAZOP etc) and tech safety (FERA , Operations Case, QRA etc) and loss prevention (HAC etc). Involved in assuring offshore campaigns ran safely and successfully (CRA, onboarding , Contractor alignment to our EHS standards, etc)  Phase 3 – I was part of the design team for a RWHP . Completed design and currently being fabricated  At Hess ; My focus has been primarily on tech safety and process safety throughout design of our CPP, FPSO, FSO and numerous satellite platforms. As the overall EHS lead in the I had to also develop a set of Malaysian EHS Standards (e.g. Safe working practices (SWP), SIMOPS standards, Risk Assessment standards, etc) for use at the yard and offshore as we strive for better EHS performance as a company. |

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| May 2010 –May 2012 | | **Lead Safety & Risk Engineer – Expat at PT WorleyParsons Indonesia, Jakarta (selected work)**  I was the overall only Lead for the department managing Technical Safety/Loss Prevention  Lead Safety & Risk Engineer for the Detail Design for Pearl Oil Ruby Field. The project consists of a detail design for a Central Processing Platform (CPP) integrated with Living Quarters together with a wellhead platform. I steered the following ; Quantitative Risk Assessment (QRA), Fire & Explosion Risk Analysis (FERA), Flare Radiation Study, Flare Flame Out – Dispersion Study, Fire Water Hydraulics, Fire Water Transient, PID for Fire Water Systems, Hazardous Area Drawings, TBE for Deluge Valves, Fire water pumps and other fire suppression systems, Noise Study, EERA Study, ESSA Study, Hazardous Area Classification drawings and schedule, Escape Route and Safety equipment drawings, HAZOP, HAZID, SIL Study, Exhaust Plume Dispersion Study using CFD software, Safety Philosophies, SIL verification as well to be conducted.  Involved in all PDMS model reviews and layout discussion. Involved in constant review meetings and experience goes broadly across helping other disciplines with matter surrounding technical safety e.g. stack heights, detectors, blast walls, PFP, piping blast loads etc. . Experienced with firewater networks, PIPENET Vision modelling, For firewater systems experienced in specifying pumps as per NFPA 20, PID and fire water demand. Involved in detailed design speciation (TBE and specification) for firewater systems , fire suppression system and fire fighting equipment. Additionally live saving equipment’s specification and TBE evaluation and preparation are the norm during any detail design. For flares - FLARESIM (for flare radiation calculation). Other experiences include passive fire protection (PFP) calculations for pressure vessels and other risk safety and loss prevention aspects of the platform. Familiar with CFD software FDS for modelling plume exhaust gas dispersion  Fluent in consequence assessment using DNV PHAST, BP Cirrus and risk using DNV SAFETI and SOQRATES (DNV’s tool for offshore QRA). Understand and used FLACS , a CFD explosion modelling software. Used FDS, a CFD software for smoke effects from a fire event. Participated as a lead engineer in a number of HAZOP, SIL and HAZID workshops. Familiar with API, NFPA, IP, ISO, DNV Offshore CAP 437 and other operator related safety and loss prevention codes & standards.  Lead Safety & Risk Engineer for FEL3 , Conoco Philips South Belut Project. The South Belut project consists of Brownfield modification to North Belut CPP and subsea elements. The project has delivered the following ; Quantitative Risk Assessment (QRA) updates to existing CPP, Fire & Explosion Risk Analysis (FERA), Fire Water Hydraulics Update, PID updates for Fire Water Systems, Critical Vessel Analysis (used HYSYS as the base for fire case modeling), Noise Study Update, Flare Radiation Study, Flare Flame Out – Dispersion Study, SSIV Study, ETRERA Study, Hazardous Are Classification Update, Escape Route Update, HAZOP, HAZID, SIL Study Update  Lead Safety Engineer for Gendalo and Gehem Pipeline FEED Project. The project delivered on the following ; HES Plan (Safety Philosophy) , IHAZID, Pipeline Risk Assessment (Subsea), Dropped Object Study, Diving Operations Safety Study. Familiar with RiskMan2 procedures and derived all studies based on alignment with chevron Riskman2 procedures.  Lead Safety Engineer for Gendalo and Gehem SUBSEA FEED Project. The project delivered on the following ; HES Plan (Safety Philosophy) , IHAZID, Pipeline Risk Assessment (Subsea), Dropped Object Study, Diving Operations Safety Study, Safety Critical Element (SCE). Participated in a HAZOP-SIl (PHA SSFA conducted by third party facilitator | |
|  | | *Lead Safety & Risk Engineer for Detail Design for Greenfield development of Pertamina APNE/F platforms* . It involves Brownfield modification of existing compression platform as well. The detail design project involves NUI detail design and Brownfield modification of the compression platform. The project delivered the following ; HAZOP, HAZID, SIL for both green field and Brownfield, Quantitative Risk Assessment (QRA) for Greenfield NUI platforms, Fire & Explosion Risk Analysis (FERA) updates, Flare Radiation & Dispersion Study Update, Vent Dispersion and Radiation Study, Dropped Object Analysis, Hazardous Are Classification Update, Escape Route and Safety Equipment Drawings, Escape, Evacuation and Rescue Philosophy (EERA) and Safety Equipment and Fire Fighting Specification. | |
| Feb 09– Aug 10 | | ***Lead Safety Engineer – Aker Engineering Malaysia***  *Oil and Natural Gas Corporation Ltd.(ONGC) – Detail Engineering –* Lead Involved in producing Loss prevention drawings , specifications , e.g. Hazardous Area Classification , Escape Route and Safety Equipment drawings, Flare Radiation, Dispersion Report, PID for firewater networks, PIPENET modelling of firewater networks and reviewing of all safety cases from external third party vendors. Additionally involved in reviewing all bid documents related to safety items and part of an integral project preparing RFQ. Continuous daily need for client engagement and interfacing with other disciplines (instrumentation, piping and mechanical) to ensure safety views are incorporated. Participated as engineering lead for HAZOP, HAZID and SIL workshops  *Deputy Lead - Conoco-Philips – Kebabangan FEED and Detail Design*- Involved in preparing Hazardous Area Classification (HAC), Escape Route & Safety Equipment Layout, Passive Fire Protection (PFP) Study for Pressure Vessels (using HYSYS for modelling depressurisation scenarios), layout meetings and model reviews, HSE philosophy, review of all third party safety studies, QRA , FEA , EERA, etc and other safety engineering related issues related to layout, firewater network etc. Participated in the HAZOP, HAZID and SIL workshops  Prepared CTRs for Kebabangans Detail Design Safety Scope of Work.. Project planned entire set of safety deliverables. Discussed with vendor and client on scope and involved in award of individual contracts to a variety of vendors. | |
| Feb 2006 – Jan 2009 | | **Senior Risk Engineer – Det Norske Veritas (DNV) Malaysia (selected work)**  QRA & CFD Explosion Analysis for Murphy Gas Plant 1 – MMC OIL  Project managed and completed a CFD project for dispersion and explosion scenarios. This study provided for assessment of key buildings and process pipes and equipment that may be vulnerable to explosion risk. The installation was assessed using the NORSOK method in order to obtain the Accidental Load (DAL) due to explosion. Modelling was completed in FLACS and DNV express.  Floating LNG – BWO- Completed a Conceptual Quantitative and Qualitative Risk Assessment in Norway. The project encompasses concepts which are novel and hence a QRA was required and completed as part of the requirements. Design accidental loads (DAL) were calculated using DNV express for explosion modelling and PHAST for other consequence modelling. It involves structural fire risk assessments.  Semi Submersible Drill Rig – Frigstad Engineering. Co facilitated a HEMP session using BowTie. Guidelines used were adopted from the Shell standards and THESIS was used to facilitate Bow Tie creation during the workshop sessions.  FSO Orkid Safety Case – MISC - Developed and completed a Design HSE Safety Case for a Floating, Storage and Offloading facility. Safety case involves QRA, ETRERA, ESSA, FEA related to marine and offshore risk as part of the formal safety assessment. The scope of work also involves a HAZOP, HAZID. Guidelines used were adopted from the UK HSE regime and PTS standards.  LUN-A addendum QRA and EERA study – Amec Indonesia – Completed an Addendum QRA for an offshore installation for Sakhalin Energy Investment Corporation Limited (SEIC). This involves SIMOPS activities. This work involves an extensive QRA that deals with SEIC's summer campaign needs. The QRA involves drilling and SIMOPS. Guidelines used were adopted from the UK HSE regime and Shell standards (DEP).  Kumang Cluster Development Safety Case – PCSB - Developed a Design HSE Case for all facilities. Safety case was developed as per PTS guidelines. Safety case involves QRA, ETRERA, ESSA, FEA. It incorporated the Petronas Safety Management System in the report. Other guidelines used were from the UK HSE regime.  Vantage Safety Case – Rubicon - Project managed and developed a HSE Case for Rubicon’s Vantage FPSO. Safety case was developed as per NOPSA (Australian guidelines). NOPSA requirements are extensive and equivalent to the UK HSE requirements for offshore installation. FPSO would eventually be operated in the Gulf of Thailand - Bualuang field. The safety case involves marine and offshore elements and involves QRA, FRA, ETRERA, ESSA, FEA. Additionally besides NOPSA, these studies were run in alignment with requirements from DNV offshore class  Intrepid Safety Case – Rubicon – Project managed, and completed a HSE Case for Rubicon’s Vantage FPSO. Safety case was developed as per NOPSA (Australian guidelines). NOPSA requirements are extensive and equivalent to the UK HSE requirements for offshore installation. However quite some changes were also required midway through the project as it was required to be in alignment with DNV class requirements. The safety case involves marine and offshore elements and involves QRA, FRA, ETRERA, ESSA, FEA. | | |

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| May 2002 –Feb 2006 | Technical Architect Shell Malaysia Trading (Downstream Shell in Malaysia)  Started as a developer for a year and then moved on the Architects groups within downstream responsible for desktop Infrastructure in the Asia-Pac region. Required to collaborate and steer meeting daily. Stakeholders are globally diverse. |
| 1996 – May 2002 | Senior Risk Engineer - Liberty Risk Services (selected work)  Quantitative Risk Assessment (QRA) project manager for the proposed Dow Corning silicon based processing plant in Johor Bahru, Malaysia.  QRA project manager for TITAN’s new marine jetty pipelines and Tank Farm in Johor Bahru, Malaysia.  QRA project manager for pipelines housed in Dialogs common piperack from Gebeng Industrial Estate to Kuantan port, Malaysia.  Completed a QRA for the Petronas refinery PSR-1 located in Melaka. This project is part of the Debottelenecking project that PSR-1 will undergo in order to increase the capacity of the refinery  Completed a QRA for Titans proposed VCM, PVC, LDPE, HDPE and Cogeneration facilities in Tanjung Langsat, Malaysia. Completed a root cause analysis for Titan’s polyethylene reactor problems  Completed a QRA for CABOT’s proposed Marine terminal and submarine pipeline in Port Dickson.  Completed a QRA for the Titans proposed PIB, BTX and DPP facilities in Pasir Gudang.  Completed and project managed successfully four (4) Health, Safety and Environment case studies on Shell Trading facilities located nationwide. Obtained CIMAH approval from regulators in a timely manner. |

Other skills developed were associated with converting BASIC programs to VB6

# Education & Certification & Registration

* Bachelor Degree in Chemical Engineering, University of Malaya (1992-1996) – Second Lower
* Bachelor Degree in Law , University of London (2019) – Second Lower
* *Chartered Engineer with Icheme - 2020*
* 2013: TUV Certified – Functional Safety
* Microsoft Certified Solution Developer – MCSD in 2000 - VB
* TAP Root – Root cause analysis training - 2014