



UNIVERSITI
TEKNOLOGI
MARA

Cawangan Johor
Kampus Pasir Gudang



INDUSTRIAL TRAINING FIELD REPORT (CHE353)

AT

WHITE QUEST SYNERGY SDN BHD

Programme:

Diploma in Chemical Engineering (EH110)

Duration of Training:

8/04/2021 – 31/07/2021 (17 Weeks)

Submitted by:

[MUHAMMAD AIMAN BIN MOHAMAD ROSLI]

2018429544

Supervisor:

[EN. SHUKRAN BIN MD FARID]

Company Address:

Unit 9-E-1, Block E,
Megan Avenue1, 189 Jalan Tun Razak,
50450 Kuala Lumpur, Malaysia

ACKNOWLEDGEMENT

Alhamdulillah, in the name of Allah SWT, the Most Gracious and the Most Merciful. All praises to Allah and His blessing for giving me the opportunity to complete my 17 weeks industrial training programme at White Quest Synergy SDN BHD. I thank God for giving me this experience to completing my internship while in the middle of the pandemic Covid-19 as it is the requirement that need to be accomplish for the subject Industrial Training (CHE353).

First and foremost. I would like to express my sincere appreciation to White Quest Synergy SDN BHD for giving me the opportunity to conduct my industrial training programme and guidance to complete this internship. The internship opportunity I had with White Quest Synergy SDN BHD was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of the risk management team.

In light of the foregoing, I'd like to take this opportunity to express my heartfelt gratitude and special thanks to Mr. Shukran bin Farid, Head of Risk Management who, despite his busy schedule, took the time to listen, guide, and keep me on the correct path, allowing me to complete my project at their prestigious organization and continuing throughout the training.

I express my deepest thanks to Mr. Khairul Firdaus, Senior Risk Engineer in the risk management for taking part in useful decision and giving necessary advices and guidance and arranged all facilities to make life easier. I chose this opportunity to express my gratitude for his contribution gratefully.

It is with great pleasure that I express my heartfelt appreciation to Mr. Najib, Mr. Rafaei, Mrs. Maisarah and Mrs. Khadijah for their attentive and useful advice, which was highly beneficial to my studies both conceptually and practically. Not only that, but I would want to express my gratitude to all of the White Quest Synergy employees for their hospitality, which made me feel at ease during my internship and as if I belonged there. Not to mention my family, friends, academic adviser, Mrs. Noorhaliza Aziz, and fellow coordinators, Ms Hidayu and Mr. Haikal, for their continued support in assisting me in overcoming all difficulties till the end of my internship period.

This opportunity is a milestone forward in my professional growth. I will make every effort to put my newly acquired skills and knowledge to the best possible use, and I will continue to work on improving them in order to achieve my professional goals.

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1 Introduction

1.1 Introduction to Industrial Training CHE353

Industrial Training CHE353 is the final course subject in Diploma of Chemical Engineering at Universiti Teknologi MARA (UiTM). This industrial training is compulsory for Semester 6 students, in order to complete their diploma studies. Before stepping into the real working life, students are required to seek and apply for an internship at any company that is related to the chemical engineering field. They are also required to submit important documents upon their application. The objective of this course programme is to give students exposure and opportunity for them to embark in the real-life working experience. This course is also beneficial for them as they get to expand their knowledge, learn more on the current chemical industries and apply the theories they have learned during their diploma into real-world scenarios.

At the end of this industrial training, students should be able to:

1. Identify the types of work that chemical engineers do in real engineering world and appreciate the theoretical knowledge learnt.
2. Perform basic engineering practices, including technical writing report, communication with colleagues, handling project and generating proposal for betterment of the industries.
3. Have higher level of integrity, ethical and accountability in practicing engineering.

Students are required to undergo in this industrial training program for at least 17 weeks in order to earn a total of 7 credit hours. The 17-week period of this industrial training is required in order to complete the diploma requirements. During my internship, industrial training has been conducted during pandemic Covid 19 which started in 8th April and end in 31st July 2021.

2 Content

2.1 Company Background



Figure 1: Logo of White Quest Synergy SDN BHD.

White Quest Synergy SDN BHD (hereinafter named as "WQS"), was established in Malaysia to provide solutions and services to the oil & gas and petrochemical industries. The company started with equipment lifting and crane services for onshore activities before venturing into asset integrity and process safety for onshore and offshore operations.

WQS offers an extensive range of services that includes risk and safety consultancy, asset integrity management, maintenance and inspection services. These services are available when needed and are promised to be delivered on time. Our multi-disciplinary and talented team excels at thinking beyond boundaries - questioning, innovating, finding and producing outstanding solutions for complex problems.

White Quest Synergy has enjoyed a steady growth since inception, with staff comprising of experienced management team, skilful technical experts and reliable support personnel. Our resources enable us to provide the utmost quality in meeting the varied client needs and expectations in today's competitive market.

2.3 Company's Vision

To be firmly entrenched as a preferred consulting and engineering services provider within oil and gas industry.

2.4 Company's Mission

To exceed the expectations of our clients, providing impeccable and world class consulting services.

2.5 Shared Values

Professionalism, Integrity, Quality, Commitment and Passion.

2.6 History of Establishment

2012	<ul style="list-style-type: none">• Established on 4th May 2012, subsidiary of White Quest Holdings.• Awarded key licenses by Ministry of Finance, PETRONAS and Tenaga Nasional Berhad (TNB).• Was Operating at Bangsar South Office, Selangor.
2013	<ul style="list-style-type: none">• Collaboration with Chilworth (UK) and Hofincons (Oman).• Secured Technical Integrity and Process Safety (TIPS) umbrella contract to provide consultancy services under PETRONAS Technical Services Sdn. Bhd.
2014-2015	<ul style="list-style-type: none">• Accredited with ISO 9001:2008, QMS by Lloyd's Register, United Kingdom.• Received Domestic Investment Strategic Fund from MIDA to develop local experts and work force in Technical Safety & Asset Integrity.• Established fully in-house technical teams covering Technical Safety and Asset Integrity.• Moved to KL Central Office.
2016-2017	<ul style="list-style-type: none">• Completed 1st International project for SAIPEM-ENI, on Safety Scope for Front End Engineering Design (FEED) Competition of Kasawari Green Field.• Received a contract from Iraq Drilling Company (IDC) to provide safety consultancy for Onshore Drilling Project at Garraf Field, South Iraq.• Completed Asset Integrity Management Projects in Turkmenistan.• Megan Avenue 1 office.
2018-2019	<ul style="list-style-type: none">• Rated as an Excellent Contractor with 4 Stars rating in Supplier Tracking Assessment Rating (STAR) by PETRONAS.

	<ul style="list-style-type: none"> Secured PETRONAS Umbrella Contract for Technical Consultancies in HSE, Safety, Asset Integrity, Reliability and Verifications for 3+2 years. Received Bumiputera Marketing Development Grant from MATRADE for 3 years (2018-2021) to further promote offerings to international market. Expanded market reach to United States, Nigeria, Ghana and Abu Dhabi (UAE). Successfully transitioned to new management in August 2018.
2020-2021	<ul style="list-style-type: none"> Continues to serve myriad Clients amidst uncertain market conditions due to Covid-19 pandemic. Successfully served IPC BV umbrella contract supporting their operations, projects and audit programs. Successfully conducted two Offshore Self-Regulation Audits on behalf of Malaysia Petroleum Management (MPM). Received Business Exports Program Grant from SME Bank for 3 years (2021 – 2023) to further promote offerings to international market.

2.7 WQS Client Base

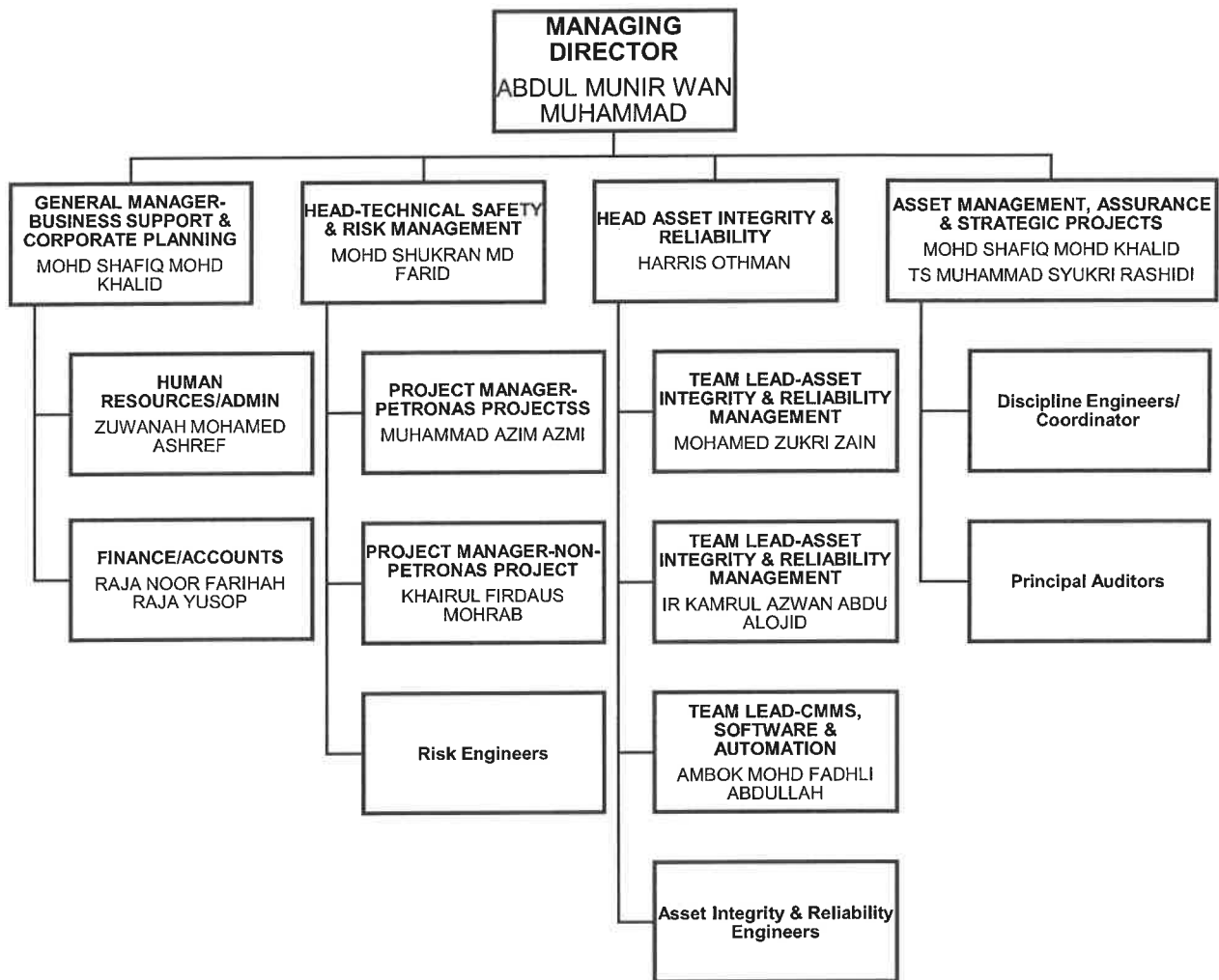
Since incorporation, White Quest Synergy SDN BHD has satisfy diverse requirements of their clients with absolute perfection. This has supported the company in gaining a huge customer base. The company unbeatable service quality and attentive customer support have also been a major reason behind the same. Furthermore, the company fair-trade policies and transparent dealing habits have also helped them in earning their patron's trust and loyalty. WQS immense growth in the market would have been impossible without their constant support. These are some major clients that stood by WQS throughout all the years as shown in figure 5.



Figure 5: WQS's Clients Base

2.8 Organizational Chart of the Company and Department

The organization structure of the company is comprised of Managing Director and three technical team which consist of Technical Safety & Risk Management Team, Asset Integrity & Reliability Team, and Asset Management Team. This whole organisation is led by the Managing Director, Abdul Munir Wan Muhammad. White Quest Synergy consists of 33 engineers, 2 assistant engineers, 2 business support executives and 2 principal auditors. During my internship, I had been reporting to Technical Safety and Risk Management Team that led by En. Shukran.



2.9 Job scopes

White Quest Synergy SDN BHD offers extensive range of services including risk and safety consultancy, loss prevention services and asset integrity management. WQS major services can be categorised with 2 major services which are Technical Safety and Asset Integrity Consultancy Services to Energy and Oil & Gas Industries.

2.9.1 Technical Safety & Risk Management

WQS assist their client in identifying and reducing the risk of catastrophic accidents posed by hazardous materials used in their operations. These services help companies to protect employees the public and environment as well as prevent damage to facilities, process equipment and company reputations.

2.9.2 Fire Safety & Loss Prevention Services

WQS provides comprehensive fire safety and loss prevention services to the industry which assist their clients to identify and draw attention to the dangers of fire and the means of which their potential for loss is kept to a minimum. Our experienced fire and safety specialist are capable of supporting fire, security or safety professionals achieve and maintain the highest standard of safety management.

2.9.3 Asset Integrity & Reliability Management

Our detailed knowledge of correlation between asset integrity and process safety means we understand the business, safety and environmental risks associated with the failure of plant and equipment. It enables us to optimize that asset integrity management process, whilst helping our customers to make the most cost-effective use of their capital and operating expenditure.

2.9.4 Maintenance Strategies & Optimization

WQS has extensive experience in understanding factors that influence the successful and safe operation of assets. Our in-house experts are able to provide technical solutions to ensure that reliability, availability and maintenance strategies of assets are properly built, implemented and optimized. Our offerings are fully aligned with relevant international standards such as ISO 55000 and ISO 14224.

2.9.5 Audit & Verification

WQS through its Asset Management team offers Auditing, Assurance and Verification service for the oil & gas and energy industry. Our specialist and auditors provide in-depth, reliable due diligence audits to our customers detailing confidential confirmation of risk levels likely to be encountered.

2.9.6 Asset & Facilities Management Assurance

Our specialist engineering services will ensure the best asset management infrastructure is established and implemented, following a systematic and robust process. This is achieved through proven methodologies and tools that evaluate the entire spectrum of integrity risks so we can provide recommendations allowing safety and performance to be assured.

2.9.7 Production Optimization & Asset life extension

Production optimization and asset life extension are deemed as crucial for oil & gas and plants especially for those ageing assets. WQS through collective of well diverse experts from design to operation background offers wide range of assets life studies and production optimization service from sub-surface right to export metering.

2.9.8 Equipment Performance Analysis

Performing major equipment performance test, which quite often requires plant shutdown longer than turn-around planned, along with hefty costs involved had long become owner's dilemma. With sets of skilled specialists WQS had, equipment's performance analysis can now be performed online, without plant shut-down anticipated, to at least identify surface information of equipment current conditions, performance and risks they are exposed to.

2.9.9 Other Services

2.9.9.1 Spares & Parts Supply

WQS offer a wide range of spare parts and associated services to ensure the smooth and efficient running of client's facilities within upstream, downstream and petrochemical industries.

2.9.9.2 Technical Trainings

Along with carrying out comprehensive training, our experienced team capable of assisting the clients with transferring best practice, delivering the application and implementation advice that will drive your business forward.

2.9.9.3 Advisory Services

Through proven methodologies and tools that evaluate the entire spectrum of integrity risks, we could provide recommendations allowing safety and performance to assured.

3.0. Flowchart of company

WQS does not have specific process flow as it is not a production company. WQS provide consultant services and preparing report related to risk assessment and proposal for bidding the project. Their engineer will prepare the services based on the demand of their client. Process flow below showed flow on how the engineers prepared and concluded their reporting task.



Figure 6: Report Preparation Flowchart

3 Overview of internship experience (Activities)

3.1 Prepared Proposal

As a consultant engineer, they should prepare a proposal and sent to the client to bid the project. The proposal was divided by two which are technical proposal that describes the scope of work and commercial proposal that proposed fee to complete the tasks outlined for the project. The engineer who prepared a proposal should follow the flowchart as shown in figure 7 to improve the proposal quality and probability to winning the projects.

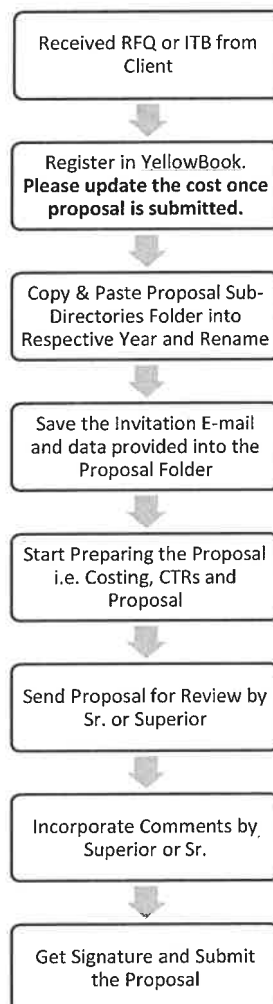


Figure 7: Project Bidding Flowchart

3.2 WEBINAR

1. Ask the Experts webinar – Flare Radiation Modelling

On 19 May 2021, Ask the Experts Webinar have been organised by DNV that explained and share about the Vent Dispersion Modelling using Phast and KFX Software. The objective of the webinar is to optimize the locations and height of flare stacks to protect nearby workers and equipment due to the thermal radiation levels that emitted from flares. In this virtual session, they will demonstrate on how to model the radiation hazards from ignited flare using the software. This webinar used Zoom cloud meeting as their platform and started at 2:00 pm until 2:30 pm.

2. Major Challenges for HFE Implementation in Oil and Gas Facility Design Webinar

On 24 April 2021, Major Challenges for HFE Implementation in Oil and Gas Facility Design Webinar have been organised by Human Factors and Engineering Society Malaysia (HFEM) and will be presented by Mr. Mohd Hafizul Hilmi bin Mohd Noor from Technip Engineers. This webinar explained about the important role of Human Factors Engineering (HFE) discipline during the engineering design of complex socio-technical system and the major challenge in HFE implementation program for designing offshore facilities. As design and construction phases involve hundreds of project team members, thousands of design components and documentation, different internal and external stakeholders, various disciplines with their own priorities and interests, tight schedule and fixed costs. Therefore, HFE could be the last choice of consideration. This webinar used Zoom cloud meeting as their platform and started at 10:00 am. Figure 8 is the screenshot of the seminar on the zoom platform and Figure 9 is the E-certificate of attendance the seminar.



Figure 8: Screenshot of Seminar

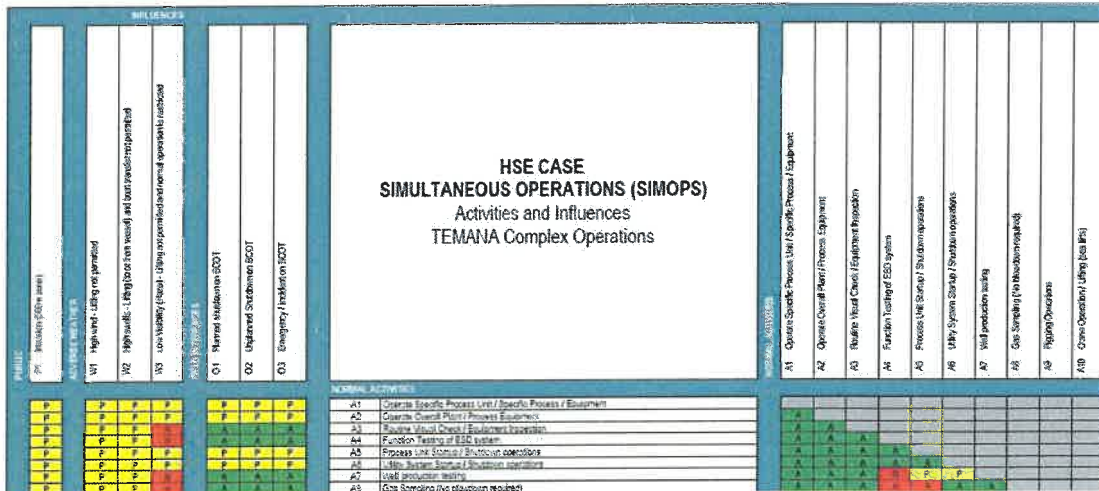


Figure 9: Simultaneous Operations (SIMOPS)

A	Combination allowable with normal procedures including PTW
P	Activity permitted subject to suitable risk assessment and OIM/ Plant Manager approval
N	Activity not permitted in these circumstances
NA	Not applicable

Figure 10: Traffic Light Systems

4.2 PURPOSE AND OBJECTIVES OF MOPO & SIMOPS.

The main purpose of the MOPO & SIMOPS is to facilitate risk management by eliminating or reducing activities that could compromise safe operation and to do so consistently across all operations and facilities.

Purpose of the MOPO & SIMOPS:

- To provide guidance for decision-making;
- To provide a process to assess if additional controls are needed; and
- To provide a comprehensive set of references.

Objectives of the MOPO & SIMOPS:

- To define limitations on activities and operations during period of abnormal operating conditions (MOPO) or when other activities taking place (SIMOPS);
- To serve as planning and management tool to manage operational risk;
- To identify operations and activities that could compromise safe operating limits; and
- To provide guidance for carrying out certain activities and operation during period of abnormal conditions or simultaneous operations.

4.3 MOPO & SIMOPS WORKSHOP

Prior to conducting the MOPO and SIMOPS workshop, an agreed Terms of Reference (TOR) document shall be produced that details the following:

- I. Introduction including facility description;
- II. The MOPO and SIMOPS objective and scope;
- III. Proposed Agenda;
- IV. MOPO and SIMOPS workshop methodology;
 - List of Activities;
 - List of Influences;
 - List of Safety Critical Element (SCE) Impairment;
 - List of Critical Manpower Unavailability; and
 - List of Assumptions to be confirmed during the workshop.
- V. Documentation required for the workshop team members; and
- VI. Workshop participants.

The team to develop or review the MOPO and SIMOPS shall comprise personnel from the following areas who are familiar with the operation of and required activities at the facility:

- I. Operations
- II. Maintenance
- III. HSE
- IV. Third Party Contractor (as applicable).

The workshop shall be chaired by an experienced facilitator approved by the HSE Case Custodian. Figure 11 shows the methodology that shall be adopted during MOPO and SIMOPS workshop.

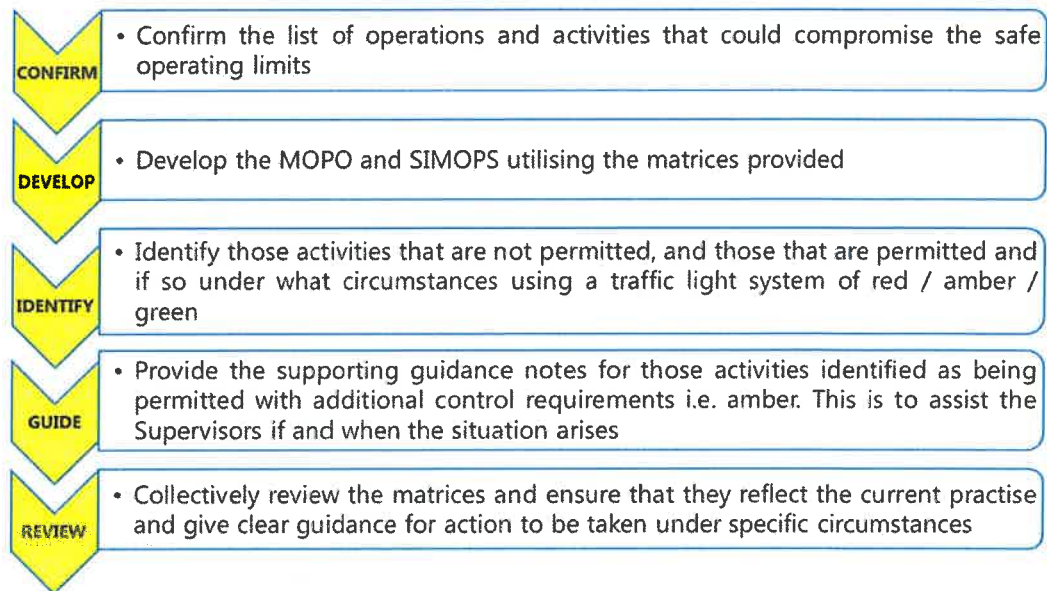


Figure 11: MOPO & SIMOPS Workshop Methodology Flowchart

4.4 Assumptions for MOPO & SIMOPS Workshop

The assumptions that shall be applied during MOPO and SIMOPS development are as follows:

- The SIMOPS shall assume two or more activities e.g., production and well intervention are simultaneously being performed in the same location or area;
- The MOPO shall assume that the operation or activity is in the vicinity of, or within the area affected by the impaired SCE;
- The MOPO shall define the minimum level failure mode assessed as having an impact on or more of the high-level activities or operations. If the failure mode is less than this shall be the subject of a specific risk assessment and remedial action plan;
- When SCEs are in test mode, alternative controls shall be put in place to ensure that their functionality is provided. Testing of these systems is not generally considered to be impairment for MOPO purposes;
- In case where multiple barriers are unavailable or impaired then the combined effect of the simultaneous failure on the activities shall be the subject of a separate risk assessment;
- Onshore Helipad is assumed to be at grade and not an elevated structure. If the helipad is an elevated structure, then the relevant sections of the offshore MOPO/ SIMOPS should be used
- Where the field comprises, multiple facilities covered by a single HSE Case then it may be required to have several MOPO/ SIMOPS matrices to cover satellite and main platform facilities; and
- Construction phase activities shall be subject to a separate MOPO and SIMOPS study.

5 Conclusion

UiTM has always strived to develop well-rounded students with outstanding academic accomplishments, improved communication skills, and leadership abilities that will aid them in their future endeavours. The students' enrolment in this industrial training has provided them with the chance to obtain real-world job experience and gain a better understanding of the industries.

In a nutshell, there are many things I've learnt throughout my internship with White Quest Synergy during the last four months. Many unforeseen events occurred that I had to deal with in order to earn my diploma; it is a bitter-sweet memory for me.

Working in the real world is not simple, and even a minor blunder may quickly transform a situation into a disaster. This training taught me to think in a variety of ways and to think beyond the box. It was not easy for me, but I am thankful for the chance to experience both industrial and work-from-home job styles; it was an excellent learning experience that will help me prepare for the future. If I had another chance for industrial training, I would choose 'hands-on' industrial training since it exposes me to the realities of chemical engineering. Working with White Quest Synergy, on the other hand, was an incredible experience for me.

6 Recommendations

- The duration of the industrial training should be at least 5 months and no more than 6 months. This would allow students to take advantage of additional time during their internship to explore and learn more while also boosting the likelihood that the employer would accept their internship offer.
- Students should be encouraged to participate in corporate initiatives. The student does not need to be personally involved in the project (for completing the actual work), but they should be included in the group discussion, brainstorming, or problem-solving session.
- Students should be required to attend site visits in order to get more experience in the chemical engineering sector or to meet clients for business engagements in order to improve their communication skills and confidence.