Competence and Commitment report – past examples

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Example 1	I have been responsible for a number of process trials involving processes which are new to my company or are being used in a new application. See Aiv for information on the ion exchange trial. A further example is at XXXX where first stage filters needed replacement. Pressure membranes were suggested as it was likely they could fit in an existing building. The company had never installed membranes following a ballasted clarification process and there was a risk that carryover ballast and polyelectrolyte would damage or cause excessive fouling of the membranes. I was responsible for planning, implementation, and closedown of the trial including: ■ **Determining and gaining approval of the budget.** ■ **Producing a six month programme on a Gantt chart, identifying the resources required and key milestones using critical path analysis.** ■ **Negotiating contracts with two membrane suppliers to provide pilot rigs and technical support.** ■ **Producing an experimental protocol including instrument monitoring, sampling programme and an operation plan to test different fluxes, backwashing and chemical cleaning regimes.** ■ **Producing risk assessments for the installation and operation of the pilot rigs and organising access certificates for the suppliers, following the company's health and safety procedures.** ■ **Organising sample analysis at our central lab.** ■ **Analysing the trial results and writing up the findings in a trial report.** ■ **Arranging for the membranes to be inspected for damage when the trial was complete.** The results showed that the membranes could operate without irreversible fouling occurring. However the required backwash and chemical clean frequency was high and heated chemical cleans were required. The information from this trial allowed the membrane plant to be sized and it was found that the process would not fit into the existing building and so other processes were then deemed more appropriate for this application.
Example 2	At the refinery where I am a technologist, I developed a project to move fuel oil export away from the main site jetty to a spare jetty (with export capacity). The aim of the project was to allow the export of another product through the main jetty (which was operating at full capacity). In the scouting stage, I identified process options ranging from installing a new export pipeline to renewal of existing infrastructure. I then organised the inspection of redundant pipelines to aid option selection. Subsequently, I secured funding and then developed the process plant change. This involved designing the process route, line work sizing, thermal relief design, establishing a waste management strategy, undertaking a hazard review and revising the operating philosophy. I worked with the operations team during commissioning to incorporate changes to existing procedures and methods.

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Example 3

a. I led the EHS aspects of the redesign of a building, following an EHS issue on containment on the chemical plant. I led the EHS aspects of the project from project conception to commissioning and start up. I was involved in design review and provided EHS advice using my chemical engineering skills and knowledge. For example, the project was able to put measures in place to help minimise drug exposure to operators and avoid runaway exothermic chemical reactions taking place. In achieving the EHS aspect of the project:-

ai) I went to a factory to validate the design of isolators (dispensing, reactor charge) was suitable from an EHS point of view, particularly ergonomics and to ensure the acid used in the reaction process is compatible with materials of construction of the isolators and the half suit being worn by operators.

aii) I led a 3 day HAZOP study on some changes to the chemical reaction process for producing a pharmaceutical drug. I was also the Safety Engineer on the HAZOP team. I contributed as a safety advisor/engineer and also took actions from the HAZOP for which I am responsible for completing. I led actions completion and closure.

aiii) I trained the project engineer in carrying out work equipment risk assessment in line with PUWER. Work equipment risk assessments have now been carried out on his project and have been reviewed by an EHS adviser.

I support the site continually by training/educating staff across site in carrying out EHS assessments, such as, work equipment risk assessments, DSEAR and general risk assessments.

b. I was the EHS representative on a tender bid, where 3 companies were assessed for completing a multi-storey car park project on site. The team consisted of the project manager, civil engineer, purchasing officer and me. I asked EHS related questions and scored each company based on a list of criteria that was set up by the team. Other members of the team scored the companies separately. The team compared and discussed the performance of the companies and selected the best company for the project.

c. Most of the hazardous area assessments on site were out of date and the site had lost its expertise in carrying out and approving hazardous area assessments. It was decided that the services of a consulting company was required to help the site maintain compliance with the Dangerous Substances, Explosive Atmosphere Regulations (DSEAR) 2002.

I was the EHS representative for selecting a suitable consulting company for carrying out hazardous area assessments on site and developing explosion protection documents for such assessments.

An electrical engineer and another engineer were also on the team. I contributed questions for the selection process, scored the bidders seperately, compared my scores with other team members and gave the team my experience based on previous work with one of the companies.

A suitable company has now been selected and is now on board. The project team reviews progress of work carried out periodically.

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Example 4

I managed a complex project involving a high level of building work and plant modification that had to be scheduled around ongoing production on existing equipment. I brought together the contractors involved and we put together a detailed work schedule that incorporated:

- **Additional containment around material addition points and raw material storage, plus creation of small work areas for demolition works that were fully contained from the production area, to minimise contamination of the ongoing manufacture.**
- **Defined slots for pipe fitters and electricians to complete "tools work" and welding within the area, and other periods for running cables and measuring for off-site fabrication.**
- **Temporary access periods for ingress and egress of large plant and equipment through a 24/7 work area, which involved demolition and rebuilding of walls and warehouse racking within tight timeslots.**
- **Detailed intervention plans to allow hour by hour tracking of install and commissioning activities during the few process outages that were possible.**

I was given responsibility for improving the materials efficiency of a liquid-liquid extraction process during my placement. With limited data available on the product in question, I completed a range of short term plant trials on the plant to gather base data on the extraction efficiency and saturation levels at different temperatures, and completed a detailed mass balance of the system and its downstream crystallisation process. I recommended a significant increase in the proportion of filtrate from the crystallisation stage that was recycled into the extraction stage, as the loss in yield of product was negligible in comparison to the reduced solvent requirement. Through following the impact of this change to downstream crystallisation, I then recommended alteration to the staged cooling and discharge of the batch crystallisation process that resulted in a reduction in cycle time from 12-16 hours to 4-6 hours with no overall loss in yield - the increased quantity of product lost to filtrate was returned to the extraction stage rather than disposed of with the waste filtrate.