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HNC Process Operations
Engineering Year 2

Responsibility, Operational and Maintenance Activities

Process Engineering Practice PCPO4007

Imogen Reynolds
12/01/2021

Contents

Task 1	2
Task 2	6
Table of Figures.....	12
Reference/Bibliography	13
Appendix.....	14

Task 1

Many of the process units at Pembroke Refinery generally all use the same key pieces of equipment in order to function and achieve the desired final product. With regards to the two following process units that are going to be discussed, the Continuous Catalytic Regeneration Unit (CRU) and the Naphtha Ultrafiner Unit also referred to as the Unifiner both of these reforming units have key pieces of equipment in order to remove poisons such as sulphur, nitrogen, water and traces of metals from the naphtha before being sent to the CRU to convert the low octane naphtha into a high octane product called reformat which is used for premium blending stocks for high octane gasoline.

The Unifiner which mainly takes sour naphtha from the Crude Distillation Unit, figure one is a typical design of the unit, in order for the process to take place hydrogen must be present to create the reaction in the reactors, the sour naphtha must also be to the reaction temperature. The catalyst used in the Unifiner reactors is bimetallic Nickel-molybdenum on alumina catalyst, the purpose of the catalyst is to therefore promote the reaction of hydrogen and sulphur which are then sent to a separator where the hydrogen is sent to the off gas unit and the treated liquid containing light hydrocarbons and H₂S are stripped out, in a fraction tower called a stripper column. From here the treated naphtha is split and sent to tankage for blending or to the CRU/Isom for further reforming.

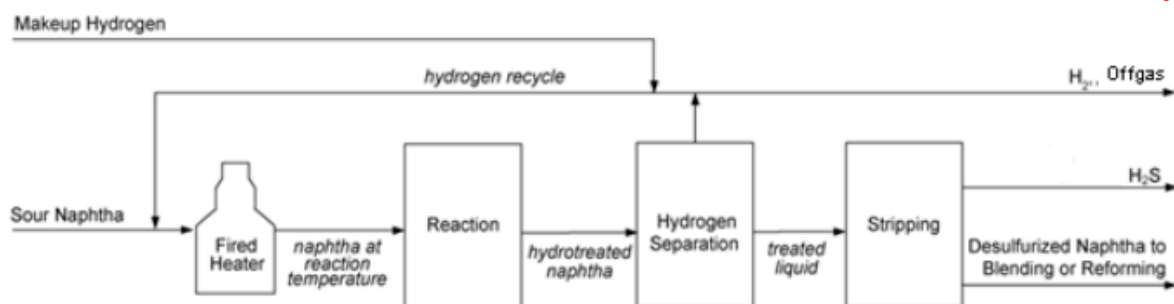


Figure one

The sweet heavy naphtha sent to the CRU is then routed through a similar process which can be seen in figure 2 below, the catalytic reforming alters composition of the feed stream in order to result in a higher-octane product. The reforming is accomplished by two methods fixed bed catalyst and continuously circulating the catalyst.

Responsibility, Operational and Maintenance Activities

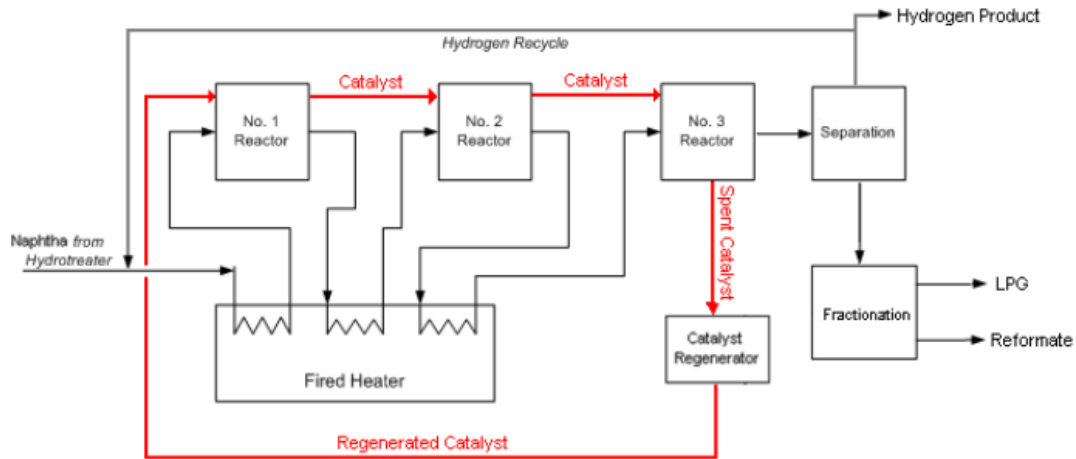


Figure two

The fixed bed method is similar to the Unifiner reaction process with the expectation that it uses three reactors instead of one. A portion of the hydrogen is continuously recycled back into the first reactor and the reformate is sent to the fractionation tower separated by distillation. The second method of catalytic reforming is continually circulating the catalyst as seen in figure two. The carbon is burnt off the catalyst and returned to the reaction process.

Products of catalytic reforming:

- Hydrogen due to the reactions that take place which is therefore sent to other white oil units such as the hydrotreaters.
- LPG sent to the gas recovery unit.
- Reformate sent to gasoline blending.

Unlike on the CRU the catalyst from the Unifiner reactor does not go through a regeneration section and requires a catalyst change out much more frequently than the CRU catalyst due to the coke build up.

With regards to the maintenance on the reactors on the white oil units at Pembroke Refinery, it is primarily dealt with via outside contracting companies WSG (Well Services Group) and Cat Tech under supervision of a competent process operator and engineer of the Valero. The change out of catalyst is predicted via Delta-P and Delta-T which is reviewed by the process engineers. Delta-P is the differential pressure that is dropped when a liquid is passing through.

Responsibility, Operational and Maintenance Activities

WSG provide the nitrogen support during in the catalyst change out, purging the vessels to ensure an inert atmosphere inside, shown below standards state all vessels are required to be purged. WSG are there throughout the change out to also provide nitrogen supply on a short-term basis when cranes etc are lifting during in the catalyst change out.

Valero CTEMS Standard		
	2.2.1- Inert Entry	Effective Date: January 1, 2007
		Revision Date: Under Revision
Standard Owner : Corporate Safety Director		

1.0 Purpose

This standard defines the minimum requirements that must be in place at each site to protect employees and contract personnel from the hazards associated with entering and/or working near vessels purged with nitrogen or other inert gases (e.g. argon, carbon dioxide, etc.). This is applicable to all refining operations and supplements applicable regulatory requirements.

In addition to performance based requirements, this standard contains design requirements; therefore, the applicable requirements will be reviewed and applied during the design phases associated with new construction or modifications.

Figure three

Once WSG have worked alongside the outside operator ensuring positive pressure stopping oxygen from getting into the vessel, the running with the change out can begin. The dense loading of the catalyst carried out by Cat Tech increases the volume of catalyst loaded therefore improving reactor processing magnitude. The flat loading of catalyst at a uniform density prevents damaging the catalyst. Prior to loading activities an inert gas test must be carried out by the operator, weather conditions must also be assessed. Wind condition is taken into consideration depending on how high the lift is will dictated if the crane will be able to lift the bags of catalyst to the manway. The catalyst is then split over the top of the manway via a funnel into the vessel. Another concern is heavy rain due to moisture being a poison to the catalyst maintenance activities will be postponed preventing damage to the catalyst. In order for the lifting to take place lifting plans and procedures must be put in order by engineers for the maintenance to be carried out. Other maintenance carried out is inspection of the vessel, while the vessel is inert atmosphere inspection can be undertaken by CAN.

The most recent catalyst change out at the refinery was the two reactors on the Isom unit, which saw issues ergonomically resulting in the unit being down for longer then expected.

Responsibility, Operational and Maintenance Activities

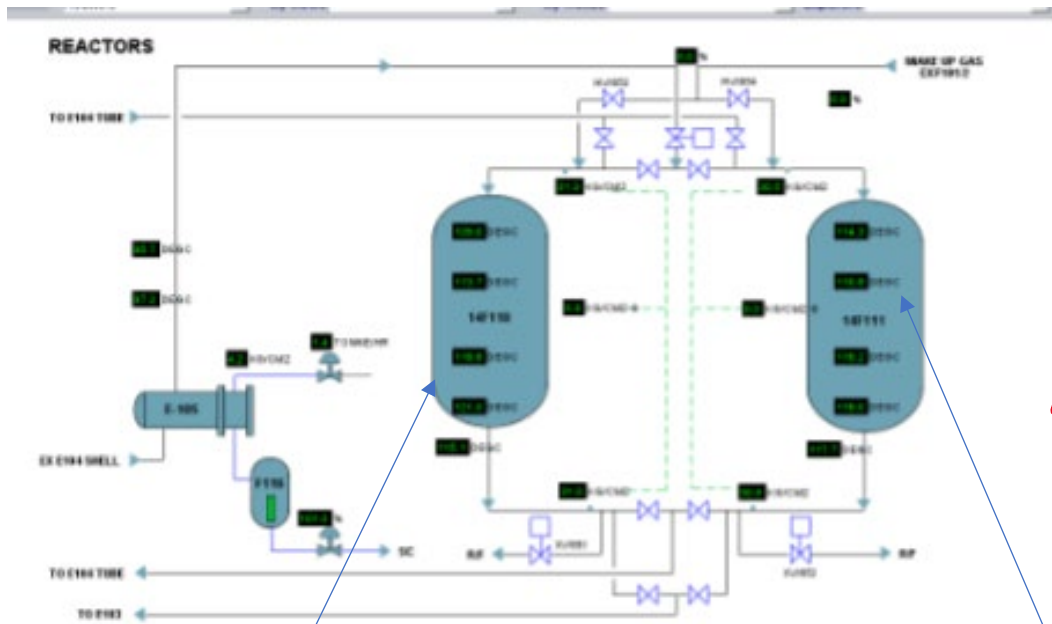


Figure four

Delta T looked at

Delta T looked at

Conclusion?

Task 2

A recent up to date Curriculum Vitae can be seen within Appendix One.

As a Plant operator at Valero the following operator routine duties are expected to be carried out three times per shift, this is in order to keep the process unit operating safely, efficiently and effectively. As well as the routine duties, additional jobs are expected to be carried out by the plant operator. Seen in the figures below is a set of instructions which are required to be followed regarding the management of a process unit.

	Doc Type/Category/Sub Category (if required): Instruction/Routine Duties Title: MANAGEMENT OF CRU / LPGRU OPERATOR ROUTINE DUTIES	Department/Sub Group/Discipline (if required): OPS/Refining/Operations
Review frequency : 10 years	Doc No: PP-OPS-GUI-0032	Unit: 7 - CCR/CRU / 10 - LPGRU
Issue/Review date: 24 11 2016	CTEMS Element/Expectation: 4.1.6	Content Contact (by Role): Engineer - Process Refining - 7 - CCR/CRU
Status: Active	Rev: 2.0	MOC No: 7241
		Human factored PP-PEM-INS-0016 applied N

Figure five

Step	Activity
1.0	Operator Routine Duties – Site Wide (shift expectations for all Operators and should be completed at least 3 times per shift.)
1.1	Compressors: Carry out 4 senses on motor/turbine, gearbox and compressor and associated equipment. Drain down suction / discharge and neutral chambers to remove oil. Note any increase in pressure in neutral chamber. Check lube/Seal oil levels and top up as necessary.
1.2	Pumps: Carry out 4 senses on the pump, gearbox and motor / turbine. Check to include seal, seal flush, seal pot levels and pressures, oil condition and level, temperature, vibration, cooling water, smells and leaks. Check pressure gauges for evidence of gassing up. Check for any slow rolling turbines and rectify to reduce steam usage. Carry out simple drop check to confirm injection pumps are working correctly and with no leaks
1.3	Pumps: Ensure pump discharge NRV bypass/warm-up line on online pump (if fitted) is closed.
1.4	Pumps: Ensure HXV bypass/pressure up line is closed.
1.5	Fin fans: Carry out 4 senses on fin fans. Check belt condition, motor temperature, and motor / fan vibration. Check fin fan bank for leaks.
1.6	Air Pots: Check instrument air pots (where applicable) for water/desiccant and drain down.
1.7	Heaters: Check Internal heater condition for the flame pattern, flame colour, debris on the floor, hot spots on the tubes/walls, heater draft and condition of pilots. Rectify any issues
1.8	Heaters: Check heater external condition for leaks (process and fuel gas/fuel oil), combustion air to online burner open, and combustion air to offline burner closed, hotspots on the heater shell / floor, burner availability for control operator.
1.9	Valves: Visually check valves for leaks and rectify if possible. Check general condition. Exercise and lubricate if required
1.10	Knock Out pots / Dip Legs: Drain as required.
1.11	Tanks / Vessels / Drums / Exchangers and Process Lines: Check visually for leaks, levels and water (as applicable). Check general condition (e.g. lagging etc.) Windsack serviceable and visible (if fitted)
1.12	Housekeeping: Complete general housekeeping duties as follows; • All minor spills / leaks that occurred on shift have been cleaned up. • Work orders raised for all major spills / leaks that occurred on shift. • Drain covers picked up and neatly stored on the hangers / edge of the unit when not in use. • All steam / utility hoses not in use have been neatly coiled on the hangers. • All sample bottles picked up and neatly stored. • All litter and debris picked up and placed in skips / bins provided. Specific duties per housekeeping area are as detailed in the housekeeping check sheets.
1.13	Unit/Stack Lighting checks: Report any defective lights and raise a MWO.
1.14	Heat Tracing: Steam tracing working with no leaks. Electrical tracing working (Lights Lit). MWO any defects
1.15	Sub Stations: check the substation to ensure all available electrical equipment is ready to run (e.g. Stop button out, reset). Ensure all doors are locked at all times

Figure six

Responsibility, Operational and Maintenance Activities

2.0	Operator Routine Duties – Unit Specific (specific to the Platformer / LPGRU and must be completed on a shiftly basis)
2.1	When draining NGC's ensure to stay in attendance
2.2	NGC: Drain down offline compressor.
2.3	NGC: Ensure end pocket loaders are unwound to prevent incorrect loading and high cylinder temps.
2.4	NGC: Ensure lube oil flow to motor is evident
2.5	NGC Manzells: Ensure regular drops of cylinder lube oil are visible and that oil pot levels are not too high.
2.6	7C321: Drain down interstage coolers of any water
2.7	Check CRU air drier skid filters for free water
2.8	7F306 & 308: Compare levels to TDC. Report any defects to Lead Op and raise work order
2.9	CCR: Check valves for signs of leakage – both catalyst and hydrocarbon
2.10	CCR Coalescers: Verify gas is dry and drain lines open to 7-F-305 via restriction orifices
2.11	CCR: If CCR is offline , ensure chloride injection is routed to feed and driers are bypassed and isolated.
2.12	SulfrZol 54 inj, Ensure sufficient stock available
2.13	Debut Water injection points: Check that all in service injection points are hot and flows are equal on all banks. If cold and flow low suspect plugged and possible salt build up and raise work order. If water injection is off, ensure neutraliser injection is also off (South IBC)
2.14	7-F-324: Ensure level is maintained above 75%. Top up as necessary. Inform NALCO if topped up
2.15	7-F-516 (Chloride drum); Ensure pressure is maintained 100mmWg and 800mmWg.
2.16	CCR: Check vent pots for catalyst by tapping. If level present, drain into container and inform OA (Night Shift)
2.17	Carry out drop chloride check and check against DOI. Record exceptions in turnover
2.18	7-C-301: Ensure 7-C-301 lube oil SOV has not tripped.

Figure seven

Issue / Revision / Review	Date	Change	Revision Content Owner	Approver
1.0	26 02 2010	Reviewed & updated	Nigel Evans	Richard Allen
2.0	24 11 2016	Reviewed & Updated	Alan Vickery AFVICKE	Richard Allen ROALLEN
3.0				
4.0				
5.0				

Note: Only the last 5 revisions need to be recorded in the Revision History

Figure eight

Among the five shift groups within the operations department a role out of objectives each year is given out to the refinery operation shift teams and one of the three complex managers that overlook and help with the improvements of the business plan. Currently for the last two years, B shift have had the yearly objective of improving the 'shift routine duties' being on B shift, I have been able to assist with reviewing and improve effectiveness of the duties that are carried out.

Responsibility, Operational and Maintenance Activities

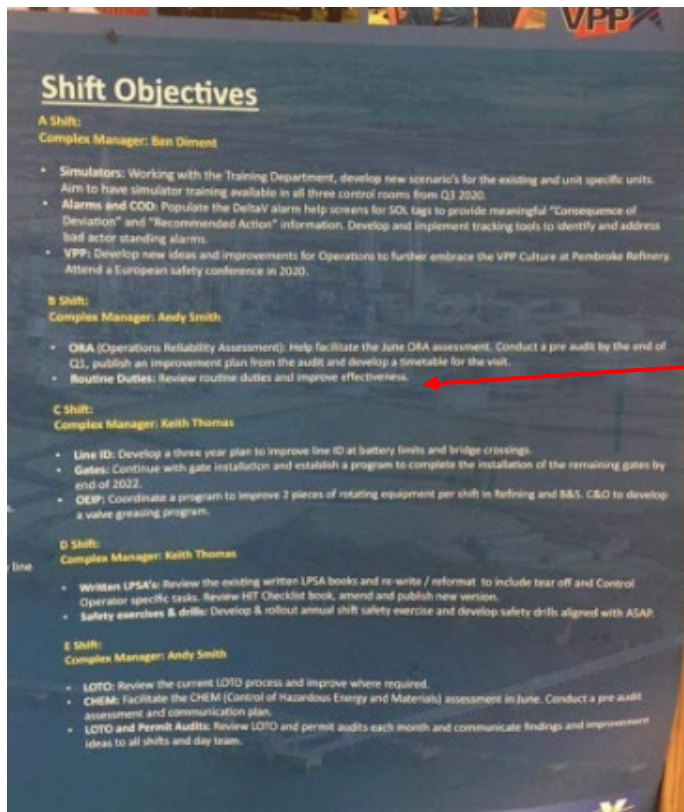


Figure nine

As previously discussed, the role of a plant operator includes additional jobs such as:

- Sampling – Final Products, Incoming Feeds, Gases, Sour Waters, Catalyst, Caustic etc. Some samples require the operator to wear a Breathing Apparatus.
- Gas testing- Ensuring the working area is safe for maintenance work to be carried out on.
- Preparing Equipment for maintenance or returning it to service – Using the site Lock Out Tag Out system.
- Dealing with process upsets - Responding quickly and safely to any high levels in columns, fired heaters tripping etc.
- Working with different departments such as the maintenance departments, lead operators, safety department, shift team leaders, control operators, in order to ensure the safe and efficient running of the plant.

Responsibility, Operational and Maintenance Activities

Development within a job role is important as it provides motivation, experience and knowledge for the individual who wants to progress and be the best they can be. An Employee Performance Review (EPR) is carried out every 12 months with the shift team leader and the operator regarding their overall performance, any concerns he/she may have and any further training relating to progression can be discussed and put into place. The EPR after being discussed with the shift team leader and operator will be reviewed by that area's complex manager.

Motivation is very well thought of at the refinery and it will lead to progression to take place. A good willingness to learn and self-determination by the individual will be noticed by others working closely alongside you. My recent EPR was carried out in September 2020 which outlined my areas for improvement in order to develop within the company. Having this system in place is a good way to encourage and promote the individual to success. Please see attached in appendix 16.

Below is a progression chart with the expedited positions that could be obtained by the individual with the support of the company and desire to achieve.

Position	Estimated Timeframe	Achieved
Apprentice	3 years	Completed
1 st Plant Operator - Continuous Catalytic Regeneration Unit and Liquified Petroleum Gas Recovery Unit	4 Years	Completed Signed off and passed out within 4 months. Consolidation period 6 months from passing out completed.
2 nd Plant Operator- Unifiner and Hydrotreater One Unit.	5 years	Completed Signed off and passed out within 3 months. Consolidation period 3 months from passing out, currently in the 2 nd month of consolidation.
3 rd Plant Operator – Hydrotreater Two, Isomerisation Unit and Hydrogen Recovery Unit.	6 years	Next unit hopefully to train in 2021.
1 st Control Operator- Both Hydrotreater One/ Two and Unifiner unit.	7-8 years	
2 nd Control Operator- Continuous Catalytic Regeneration Unit, Liquified Petroleum Gas Recovery Unit, Isomerisation Unit and Hydrogen Recovery Unit.	9-10 years	

Figure ten

Responsibility, Operational and Maintenance Activities

Figure ten is a potential estimated progression chart from being an apprentice to becoming a white oil operator down in the refining complex at Pembroke Refinery. As seen in the 'ACHIEVED' column highlighted in green is currently what I have achieved with the support of the company and determination to achieve.

At the start of any job regardless of experience, training is required whether this is through an apprenticeship, traineeship or just having refresher training by the company. Regarding a traineeship with Valero which usually takes around 12 weeks to complete and requires previous process experience or opting for an apprenticeship which usually takes between 3-4 years to complete and covers all areas of refinery.

The apprenticeship depending in which profession is undertaken will determine the timeframe, a trade apprenticeship takes 4 years to complete unlike the operations apprenticeship which takes 3 years to undertake. Starting with a year study at Pembrokeshire College covering all areas of process control, maintenance and safety theoretically and practically, learning off experienced lectures that have been in the industry. The second year of the apprenticeship allows a one-day release to college a week and the remaining time is spent on site putting the knowledge learnt from the previous year into practice. As well as finishing off the BTEC Level 3 in Operations and Maintenance Course, an NVQ in a chosen area must be completed either in electrical, instrumentation or mechanical.

Both the NVQ and college framework helps understand the aspects of the refinery equipment and the importance of it. Throughout the first-year college reviews are carried out on the individual on their performance and areas of improvement are given, see attached in appendix. This is the same process throughout the second year in order to ensure he/she are performing, appraisals are also given by their current trade supervisor of the chosen NVQ area and the NVQ assessor who meets with the individual once a month to discuss their framework and expectations.

Once completing this stage of the apprenticeship and gaining all key certificates and qualifications the apprentice group splits and the trade apprentices follow their chosen paths, whilst the operation apprentices start the basic operator training (BOT). This training covers the operating principles and information of equipment and processes that the operator will work on in the nearby future. The training is carried out by an experienced technical trainer who assess the apprentices on their knowledge of the books both theoretically and practically. Tests are carried out on the BOT books, a score of 80% or above must be achieved

Responsibility, Operational and Maintenance Activities

throughout the multiple-choice tests. After completion of all tests, further assessments on he/she, reviews on the rotation section around all the complex areas and college performance if opted to do the HNC within the third year. The individual will be given their allocated unit, along with a shift team and a mentor based on this.

I was assigned to the refining complex on B shift, 1st plant operator position was the Continuous Catalytic Regeneration Unit and Liquefied Petroleum Gas Recovery Unit (CRU/CCR & LPG). After 4 months my competency pack for the allocated area was signed off, a written test which assesses the individual's knowledge of the area was passed with a score of 89%. The Operations Advisor for that area then assesses the individual with a walkaround test passing with a score of 97%. Both tests must have a satisfactory score allowing the operator to run the unit to gain further experience and knowledge of the unit.

Furthermore, to he/she passing out, tests and refresher training regarding fired heaters, safety practices and protocols (such as LOTO) are required to be completed and passed. Completed in September 2020 Level 3 Gas testing and permit issuing was obtained by self-motivation and support of the lead operator.

As previously mentioned an annual review is completed with the shift team leader and the individual, this is professionally discussed of their requirements. Seen in figure ten, is a chart of potential training in the future. In September 2020 it was discussed with the B shift refining shift team leader and myself that I would be training my 2nd outside position. Self-motivation of cross training the new allocated unit Hydrotreater 1 and Unifiner prior to being given my training slot allowed me to see a unit upset, along with starting up and shutting down of equipment. In October 2020 I was able to train the new allocated unit, gain competency in running the unit, experience given off other operators and pass out in my 2nd outside area. The process was the same of undertaking a written plant test gaining 93% and the walk about test with the OA gaining 95%.

Since starting in the refining complex in January 2020 I have been able to have the opportunity to pass out in two outside field positions and consolidate in my first area. I am currently consolidating in my second area gaining skills and knowledge on the unit. Within the next month I am hoping to widen my knowledge and skills when safely bringing the unit down with a controlled shutdown following procedures and practices I have yet seen.

See Appendix for evidence of most of the achievements I have accomplished in the last 4 years with Valero.

Table of Figures

Figure Number	
1	Unifiner Design Sourced from Unit Manual
2	CRU Design Sourced from Unit Manual
3	Inert Entry Template (kimzim.org)
4	Isom Reactor Delta-T Sourced from Refinery E view
5	Routine duties Sourced from training pack of CRU/LPGRU
6	Routine duties Sourced from training pack of CRU/LPGRU
7	Routine duties Sourced from training pack of CRU/LPGRU
8	Routine duties Sourced from training pack of CRU/LPGRU
9	Valero Shift Objectives 2020 Sourced from refining control room
10	Progression Chart

Word Count

Task 1 – 830

Task 2- 1,364

Total word count – 2,194.

Just within limits.

Reference/Bibliography

[Catalytic reforming - Wikipedia](#)

[WSG Nitrogen Supply - Well Services Group \(wellservices-group.com\)](#)

[Template \(kimzim.org\)](#)

[CAT Tech Services \(cat-tech.com\)](#)

Should be
Harvard
method.

Appendix

Appendix 1: Operator Job Position August 2020 CV

Appendix 2: College Report Year 1

Appendix 3: College Report Year 2

Appendix 4: BTEC Level 3 in Ops and Maintenance Credits for Units

Appendix 5: Outstanding Achievement Award from Pembrokeshire College

Appendix 5: NVQ Certificate

Appendix 6: Basic Operator Training Certificate

Appendix 7: CRU/LPRGU Certificate

Appendix 8: Level 1 Operation Switching

Appendix 9: LOTO Refresher Training

Appendix 10: Completion of Operations Apprenticeship

Appendix 11: Unifiner/HTU1 Competency

Appendix 12: Unifiner/HTU1 Certificate

Appendix 13: Up to Date Completion of All Operation Training required

Appendix 14: Competing for the College and Company at Big Bang Fair Year 1

Appendix 15: Participation in WorldSkills UK National Final 2018 Year 2

Appendix 16: Employee Performance Review September 2020

Appendix 1: Operator Job Position August 2020 CV

Curriculum Vitae

Miss Imogen Paris Reynolds

1st September 1998
Tel: 01646 687012

120 Angle Road, Monkton, Pembroke, Pembrokeshire SA71 4HT
Mob: 07815722225 Email: imogenreynolds04@gmail.com

Profile

I am a very hard working, conscientious and committed female. I work well as an individual using my own initiative and also have the ability to work effectively within a team. I carry a positive outlook to life and pride myself on being determined to succeed in all situations that I come across and am faced with, no matter how big or small these may be. I love challenging myself on a daily basis and believe this industry isn't just for males and that females can succeed as well or better within it. I am very enthusiastic and have a healthy, keen and young mind to learn and embrace all things given to me.

Education

2010 - 2015 **Pembroke School**

GCSEs: (B) Welsh, Sports Studies.

(C) Mathematics, English Language, English Literature, Food Technology.

(D) Business Studies, Spanish.

BTEC: (Pass) Double Science (equivalent to GCSE C grades).

(Pass) Welsh Baccalaureate, ICT

2015 – 2016 **Pembrokeshire College**

BTEC Diploma: (Merit) Level 3 Uniformed Public Services.

Application of Number: Level 3.

Information and Communication of Number: Level 3.

Digital Literacy: Level 3

2016-2017 **Hoylake Scottish Power Training Centre (Liverpool) / De Lane House (Scotland)**

Studied

City & Guilds 2339 Level 2 Diploma in Electrical Power Engineering.

City & Guilds Level 3 Power systems.

2017-2019 **Pembrokeshire College**

BTEC Diploma: (Double Grade Distinction) Level 3 Operations and Maintenance.

Level 3 NVQ Extended Diploma in Engineering Maintenance (Electrical)

2019-Present

Studying

Higher National Certificate: Process Operations Engineering

Skills / Achievements

- Full, clean UK driving licence.
- Duke of Edinburgh Award - Silver.
- Level 2 BTEC Awarded through Pembroke Dock fire station for the 'Fire Service in the Community Award'
- Engineering Education Scheme Wales (EESW) South Wales Winner 2018
- Participant in the World Skills Finals 2018 (Manufacturing Team Challenge)
- Participant in the Big Bang Final Competition 2019

Voluntary/Unpaid Work

March 2014 – 2016

I was part of the Young Firefighter scheme at Pembroke Dock Fire Station which entitled me to volunteer for tasks such as car washing, charity collecting and marching for special occasions such as Remembrance Sunday. I volunteered for every possible event I could do as I enjoy helping out in the community.

Employment

Blueberrys Restaurant Tenby

January 2013 – 2016, 2017-2018

I was previously employed by "Blueberrys" on a part time basis, working most weekends and all of the summer/school holidays. The job allowed me to work in a busy restaurant and also in a busy kitchen working alongside a small team of people ranging from all different age groups. The job gave me the experience of working long difficult hours and dealing with difficult customers.

Scottish Power Training Centre Hoylake

August 2016-2017

I was previously an apprentice with Scottish Power, studying City & Guilds 2339 Level 2 Diploma in Electrical Engineering along with studying Level 3 in Electrical Power Systems. I thoroughly enjoyed both practical and theory aspects of the apprenticeship. The training was carried out in both Liverpool and Scotland training centre specialising in electrical fitting and overhead lines. The last 3 months of the apprenticeship was spent working at different depots on either distribution switchgear equipment or overhead lines.

Valero Energy

September 2017- Present

Initially I was an electrical apprentice with Valero for two years, I studied at Pembrokeshire College on a part time basis. Which entailed studying a Level 3 BTEC Diploma in Operations and Maintenance along with completing a Level 3 NVQ Diploma in Electrical Engineering Maintenance. I experienced working on all areas of the refinery and developed a close working relationship with the operations department when carrying out electrical reactive maintenance. I was also involved with the electrical switching outage, where I had to liaise with operations in order to carry out switching activities as well as directing and supervising with specialist contractors.

In September 2019 I was given the opportunity to transfer to the operations department to carry out my final year as an operations apprentice. I was fortunate to be able to rotate around Refining and Cracking and Olefins units, seeing the different types of processes on the refinery and learning a brief overview on how they operate as well as completing the Valero basic operator training.

Responsibility, Operational and Maintenance Activities

In January 2020 I joined B shift Refining and commenced training on the Catalytic Reformer Unit with Continuous Catalytic Regeneration (CRU / CCR) and Liquefied Petroleum Gas Recovery Unit (LPGRU). I was able to be passed out in the position within 4 months. Currently as an apprentice process operator I am responsible for the safe running, environmental and economic operation of these units. I am Gas and RAPnet permitry trained to level 2 and I am actively cross training the Unifiner and HTU1 when time allows. My job role can vary significantly during a 12 hour shift, so I need to maintain flexibility in completing all tasks with different working disciplines.

I pride myself on ensuring I do the routine checks thoroughly and safely, leaving the unit the way I would want it to be found running safely and efficiently for the next shift. Ensuring I enter work orders and tag equipment if required and follow all safety systems and procedures every working day.

Interests

- Boxing
- ~~Previously~~ a member of Pembroke Dock Young Fire Fighters Cadets.
- Keeping fit and health, I enjoy running, swimming and abseiling. I also enjoy trying new activities and challenging myself with something I have never done before.

References

Mr Paul Dyson
Head of Pembroke Dock Young Firefighters,
Pembroke Dock Fire Station,
High Street,
Pembroke Dock,
SA72 6PH.

Mrs Fergie Beynon
Restaurant Manager,
Blueberrys Restaurant,
High Street,
Tenby,
SA70 7EU.

Appendix 2: College Report Year 1

Student Name: Imogen Reynolds *Valero Report*

Staff Name	Subjects	Effort	Attitude & Behaviour	Attendance	Assessment Progress Comments	Additional Comments
Derek Bercyman	223 - Wiring & Testing	4	4	100%	Final grade for Unit - DISTINCTION	
Jo Broadshaw	201 - Working in Engineering 202 - Principle of Engineering Technology	5	5	100%	201 & 202 have been completed ahead of schedule.	
Neil Buckland	Mechanical Workshop	5	5	100%	Completed Turning & Fitting assignments, starting Milling.	Good progress being made.
Andrew Davies	210 - Maintenance of Mechanical Devices & Equipment. 219 - Fabricating Pipework Assemblies	5	4	100%		
Julie Farmer	ESQ Coms	5	5	100%	Completed controlled task 16/05/18. Worked hard over the past four weeks. Will have the results after half-term.	
Jason Felster	Unit 4 - Mathematics for Engineering Technicians. Unit 6 - Electrical & Electronic Principles.	4	5	100%	Maths - has completed all criteria for assignment 1, 2 and 3. Distinction criteria for Assignment 4 to be completed on the 11/06/18. Elect Principles - completed assignment 1, 2 and 3, assignment 4 to be completed on the 11/06/18.	
Luke Sturgeon	City & Guilds Theory & Practical.	4	4	100%	204 - Merit, 205 - Distinction, 206 Distinction, 210 Pass.	
Peter Taylor	Unit 5 - Mechanical Principles & Applications. Unit 10 - Properties & Applications of Engineering Materials.	5	5	100%	Currently up to date with assessment work.	
Richard Wray	Unit 44 - Engineering Maintenance Procedures & Techniques. Instrumentation.	4	4	100%	Good level of effort all, assessment in on time although additional work required for maintenance assignments 3 and 4.	

1 - Poor 2 - Areas to improve 3 - Satisfactory 4 - Good 5 - Excellent

Tutor Comments

Throughout the year Imogen has been a very hard working student who shows a very good understanding of the theoretical work and is producing all of the required work for the BTEC assignments to a high standard. Her practical work is very good and is on course to complete the current assessments with very good grades.

Appendix 3: College Report Year 2

Valero Report

Student Name: Imogen Reynolds

Staff Name	Subjects	Effort	Attitude & Behaviour	Attendance	Assessment Progress Comments	Additional Comments
Rod Kirk	Unit 3 - Engineering Project.	5	5	5	Identified suitable project, developing project plan and evaluations.	
Steve Roberts	Unit 51 - Electrical Technology.	5	5	5	D1 and D2 achieved on first assignment	✓
Richard Wray	Unit 50 - Industrial Process Controllers. Unit 53 - Electronic Measurement & Testing.	4	4	5	IPC assignment 1 referred. EMT assignment 1 completed and passed.	

1 - Poor 2 - Areas to improve 3 - Satisfactory 4 - Good 5 - Excellent

Tutor Comments

Working towards distinctions overall, working well since starting in September.

Appendix 4: BTEC Level 3 in Ops and Maintenance Credits for Units

BTEC

Notification of Performance

KA71119 IMOGEN PARIS REYNOLDS

PEARSON BTEC LEVEL 3 DIPLOMA (WAS NATIONAL CERTIFICATE 120+)
in OPERATIONS AND MAINTENANCE ENGINEERING (QCF)
The learner has been awarded the following credit for achieving the learning outcomes
of the unit(s) listed

UNIT REF	TITLE	CREDIT VALUE AT LEVEL	GRADE
PEMBROKESHIRE COLLEGE			
T/600/0249	HEALTH AND SAFETY IN THE ENGINEERING WORKPLACE	10.0 3	DISTINCTION
A/600/0253	MATHEMATICS FOR ENGINEERING TECHNICIANS	10.0 3	DISTINCTION
F/600/0254	MECHANICAL PRINCIPLES AND APPLICATIONS	10.0 3	DISTINCTION
J/600/0255	ELECTRICAL AND ELECTRONIC PRINCIPLES	10.0 3	DISTINCTION
R/600/0260	PROPERTIES AND APPLICATIONS OF ENGINEERING MATERIALS	10.0 3	DISTINCTION
F/600/0318	ENGINEERING MAINTENANCE PROCEDURES AND TECHNIQUES	10.0 3	DISTINCTION
M/600/0251	COMMUNICATIONS FOR ENGINEERING TECHNICIANS	10.0 3	DISTINCTION
T/600/0252	ENGINEERING PROJECT	20.0 3	DISTINCTION
Y/600/0339	INDUSTRIAL PROCESS CONTROLLERS	10.0 3	DISTINCTION
R/600/0341	ELECTRICAL TECHNOLOGY	10.0 3	DISTINCTION
Y/600/0373	ELECTRONIC MEASUREMENT AND TESTING	10.0 3	DISTINCTION

THE LEARNER HAS QUALIFIED FOR THE ABOVE AWARD WITH
THE DOUBLE GRADE DISTINCTION* DISTINCTION* IN OCTOBER 2019

68239 : KN117 : 01:09:98 : ISSUED 19-OCT-2019 : QN 500/73151

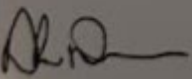
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register.ofqual.gov.uk

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Recognised awarding body

 CEA
Regulation






Derek Richardson
Responsible Officer
Pearson Education Ltd

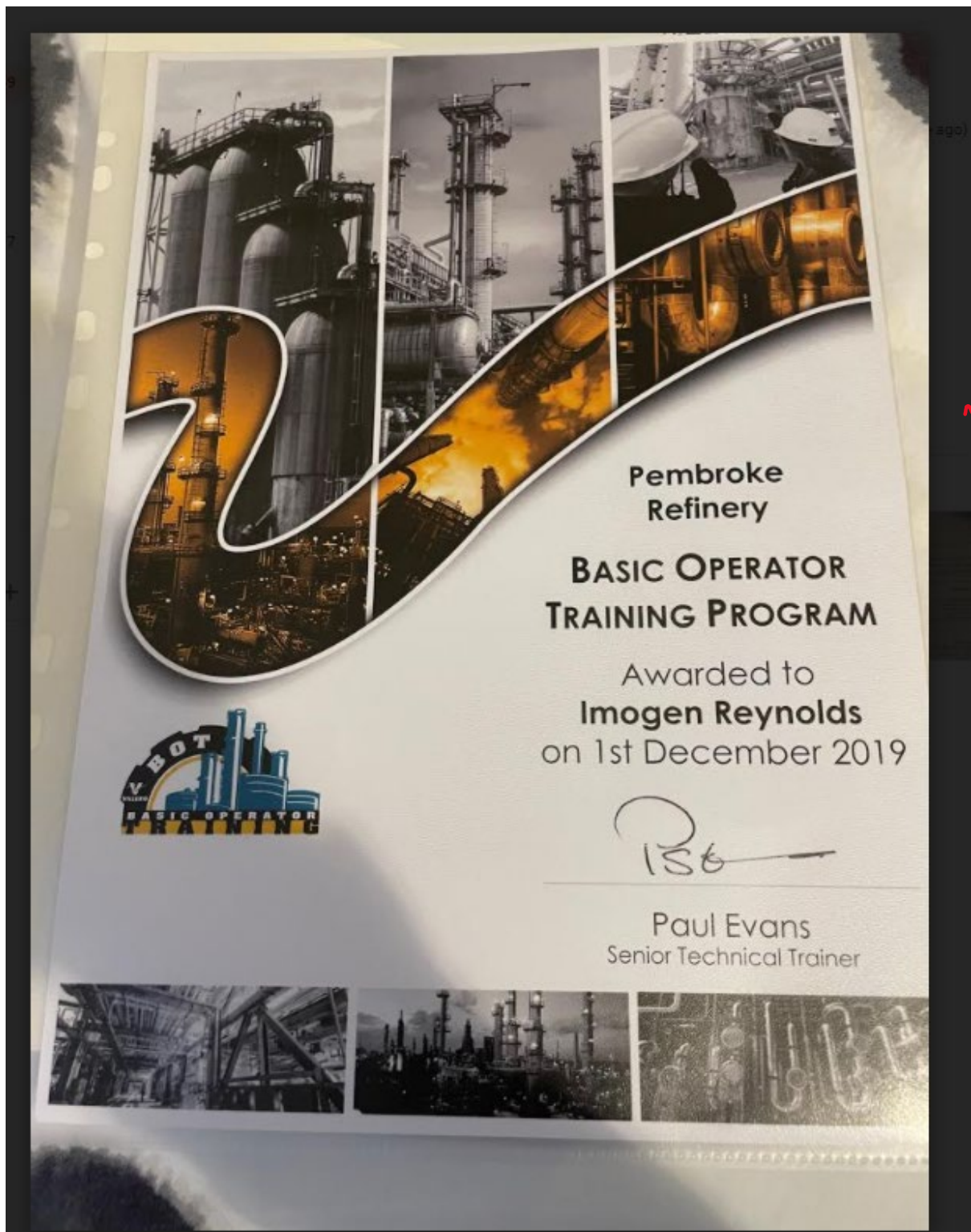
Appendix 5: Outstanding Achievement Award from Pembrokeshire College



Appendix 5: NVQ Certificate



Appendix 6: Basic Operator Training Certificate



Appendix 7: CRU/LPRGU Certificate

		
Hereby certifies that		
Imogen Paris Reynolds		
Has satisfactorily completed the training and testing requirements for compliance.		
Plant operator - CRU / LPRGU Class Title	PM-PLT-Q-000-080 Course Code	
Instructor	Training Location	04/09/2020 06:14 Training Date
Valero Energy Corporation • One Valero Way • San Antonio, TX 78249-1616		

Appendix 8: Level 1 Operation Switching



Appendix 9: LOTO Refresher Training



Appendix 10: Completion of Operations Apprenticeship



Appendix 11: Unifiner/HTU1 Competency

Plant Operator –HTU 1 & Unifiner

PEMBROKE PLANT

Specification of Competence Document

Refining Business Unit

HTU 1 & Unifiner (Plants 3, 4 & 09)

PLANT OPERATOR

Originator: Operations T&D	Revision : Nov 2018
Approved: P. Burnett	Approval Date: 16/11/18

	Printed Name	Signature
Trainee :	Imogen Reynolds	Imogen Reynolds
Assigned Shift:	B	
Mentor (nominated by STL)	W James	W James
Date Started:	16/10/20	
Date Completed:	16/11/20	

The mentor & assessor must be nominated and deemed competent by the STL in the specific business area.
The assessor signature denotes the trainee has demonstrated competence in each aspect required, and has been checked to a satisfactory standard required by the performance/knowledge criteria.

Assessed by:	M Haywood	M Haywood
Assessed by:	W James	W James
Written Test Score	% 95	
Walkabout Test Score	% 95	
Competence Acceptance Approval Lead operator	W James	W James
Operations superintendent / Delegate	G. HARRIES	OS signature G. HARRIES
Period of "loose cover" required	sets	
Period of consolidation required	6 months (1st role) 3 months (2nd / subsequent role)	STL signature M Haywood
Approved by (S.T.L.): PCR request complete / N/A	M Haywood	
Approved by (C.M. Refining):	A. SMITH	A. SMITH

Technical trainer: _____ Date: _____

HTU 1 & Unifiner	Page 2 of 42.
------------------	---------------

Appendix 12: Unifiner/HTU1 Certificate

 Valero		
Hereby certifies that		
Imogen Paris Reynolds		
Has satisfactorily completed the training and testing requirements for compliance.		
Plant operator - Unifiner / HTU 1 Class Title	PM-PLT-Q-000-01O Course Code	
Instructor	Training Location	12/16/2020 11:03 Training Date
Valero Energy Corporation • One Valero Way • San Antonio, TX 78249-1616		

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Appendix 14: Competing for the College and Company at Big Bang Fair Year 1

College students win EESW challenge

Friday, 27 April 2018 - [Education](#)



by **Observer Reporter**

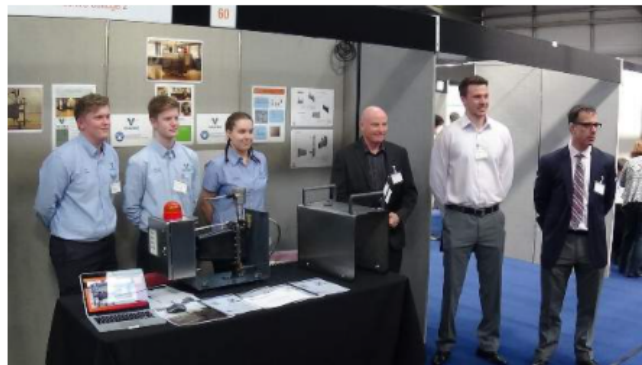
reporters@tenby-today.co.uk



[Post a comment](#)

Pembrokeshire College Engineering Apprentices have proved they have the skills needed for their chosen career after winning the Commercial Potential category at the recent Big Bang Fair.

Last week, the Engineering Education Scheme Wales (EESW) brought the Big Bang Fair - one of the largest events in STEM - to the Parc Y Scarlets, Llanelli. An established event in the calendar of schools and colleges, over 80 teams from across south Wales took part in the competition, showcasing their solutions to a wide range of engineering challenges.



Pembroke College Team 2, Ben Brickle and Ieuan Davies, both of Tenby, and Imogen Reynolds, of Pembroke, with the EESW judges.



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Success for Valero apprentices at Big Bang Fair

Monday, 7 May 2018 - [Community News](#)



by **Observer Reporter**

reporters@tenby-today.co.uk



[Post a comment](#)

A TEAM of first year Valero apprentices attending Pembrokeshire College had much to celebrate recently when they took home a prize at the Engineering Education Scheme Wales (EESW) awards, part of 'The Big Bang Fair South Wales' at Parc y Scarlets.

The team won the 'Most Commercial Potential' category for their project to design a device to detect hydrocarbons when in water, with real world applications for operations at Pembroke Refinery. The project team members Morgan Davies, Imogen Reynolds and Ben Brickle worked on



Appendix 15: Participation in WorldSkills UK National Final 2018 Year 2



Appendix 16: Employee Performance Review September 2020



Employee Performance Review

Name: Imogen Paris Reynolds	Employee ID: 00159131
Reporting to: Christopher (Chris) J Cole	Review Period:
Job Title: Plant Operator	Jan 1, 2020 - Oct 31, 2020

Next Line Supervisor Comments

Well done on completing your Apprenticeship and successfully gaining an Operator Role in Refining.
Stay focused on keeping safe and gaining knowledge in the coming year, hopefully progressing into a second Operator position.

Signatures

Imogen Paris Reynolds	Electronically Signed: September 26, 2020
Christopher (Chris) J Cole	Electronically Signed: September 26, 2020
Andrew (Andy) Leslie Smith	Electronically Signed: September 29, 2020

