

LEVEL 4 ASSESSMENT SPECIFICATION

Student name:	Thomas Aldred	Student ID number:	120224
Programme:	HNC Process Operations Engineering		
Module:	Environmental Protection and Sustainable Manufacturing Systems		
Module code:	PCPO4003	Contribution to Overall Module Assessment (%):	100%
Lecturer:	Richard Wray	Internal Verifier:	Lance Rutherford
Assignment Title:	Research Report	Word count (or equivalent):	2000
Submission deadline:	15/05/19	Return date of provisional marks & written feedback:	29/05/19
Submission method:	All written assessments, where practical and possible, must be submitted via Turnitin unless otherwise instructed by the Lecturer. (Please DO NOT put this assessment specification into Turnitin or it will match many similarities with other students' submissions.) Alternative submission method (if applicable): Late submission of the assessment will result in a late penalty mark. Penalties for late submission: Up to one week late, maximum mark of 40%. Over one week late, 0%. Only the Extenuating Circumstances Panel may approve a change to submission dates.		
Academic honesty / referencing:	Academic honesty is required. In the main body of your submission you must give credit to authors on whose research and ideas your work is based. Append to your submission a reference list that indicates the books, articles, etc. that you have used, cited or quoted in order to complete this assessment.		

Module Learning Outcomes (from module syllabus)

LO1, LO2.

TASK DESCRIPTION

Investigative report

There are many examples of industrial manufacturing plant, equipment and process that pose a potential risk to the environment and/or where operations may meet or fall short of the requirements for sustainable manufacturing.

For this assignment you are required to analyse a chosen industrial process at your place of work with respect to environmental protection and sustainable manufacturing systems.

Research Guidance

- Fully research the industrial plant, equipment and manufacturing process design and operation
- Evaluate specific aspects associated with meeting environmental protection, legal requirements and best practice
- Evaluate specific aspects associated with ensuring sustainable manufacture can be achieved through efficient equipment, plant and process operation
- Develop conclusions and recommendations on how the process could be improved with respect to environmental protection and manufacturing sustainability

Note: When choosing a work based plant, equipment or process please ensure you have your employers permission to use relevant information in your assignment. Do not include names of personnel or commercially sensitive information.

Research evaluation

You will produce the written report in a clearly structured and professional manner. The report should evaluate the findings of your research and present logical arguments and conclusions. It is expected that you will organize your report following a pattern to that suggested below:

- A brief abstract
- An introductory section outlining the background, the scope and intended readership
- A clear statement of the aim and objectives of the report
- Central sections, explaining any findings, arguments and outcomes
- A suitably structured conclusion that draws together the findings of your research and any recommendations you are making

When writing your report make sure that you:

- Use acceptable academic language and tone
- Check spelling and grammar
- Show that you can evaluate evidence from reference sources and use this material to make a logical and consistent argument
- Make sure that you analyse and evaluate arguments and evidence in a way that meets your stated outcomes and objectives

Report structure

The report document must be constructed in a formal and professional manner using an appropriate word-processed program. The completed report should contain the following sections:

- A cover page or document title page
- A table of contents page
- Sections or paragraph headings related to each aspect of the report
- Headers on each page with the title of your report
- Paragraphs should be spaced using '1.5 line spacing'
- Footers on each page with the author's name on the right hand side and 'Page ... of ...' on the left
- A references page and bibliography as appropriate
- Appendices where appropriate for larger quantities of data
- Diagrams, charts or tables, suitably incorporated and labelled
- The text format should be Times New Roman or Ariel with a font size of 12
- A word count of 2000 words ($\pm 10\%$)

GUIDANCE FOR STUDENTS IN THE COMPLETION OF TASKS

NOTE: The guidance offered below is linked to the five generic assessment criteria overleaf.

1. Engagement with Literature Skills

Your work must be informed and supported by scholarly material that is *relevant* to and *focused* on the task(s) set. You should provide evidence that you have accessed an appropriate *range* of sources, which may be academic, governmental and industrial; these sources may include academic journal articles, textbooks, current news articles, organisational documents, and websites. You should consider the *credibility* of your sources; academic journals are normally highly credible sources while websites require careful consideration/selection and should be used sparingly. Any sources you use should be current and up-to-date, mostly published within the last five years or so, though seminal/important works in the field may be older. You must provide *evidence* of your research/own reading throughout your work, using a suitable referencing system, including in-text citations in the main body of your work and a reference list at the end of your work.

Guidance specific to this assessment: You must provide evidence of individual research with respect to the area of study and provide relevant referencing.

2. Knowledge and Understanding Skills

At level 4, you should be able to demonstrate knowledge of the underlying concepts and principles associated with your area(s) of study. *Knowledge* relates to the facts, information and skills you have acquired through your learning. You demonstrate your *understanding* by interpreting the meaning of the facts and information (knowledge). This means that you need to select and include in your work the concepts, techniques, models, theories, etc. appropriate to the task(s) set. You should be able to explain the theories, concepts, etc. to show your understanding. Your mark/grade will also depend upon the *extent* to which you demonstrate your knowledge and understanding.

Guidance specific to this assessment: Your report should show you gained knowledge of the subject area.

3. Cognitive and Intellectual Skills

You should be able to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of your subject(s) of study. You should be able to evaluate the appropriateness of different approaches to solving problems related to your area(s) of study and/or work. Your work must contain evidence of logical, analytical thinking. For example, to examine and break information down into parts, make inferences, compile, compare and contrast information. This means not just describing what! But also justifying: Why? How? When? Who? Where? At what cost? You should provide justification for your arguments and judgements using evidence that you have reflected upon the ideas of others within the subject area and that you are able to make sound judgements and arguments using data and concepts. Where relevant, alternative solutions and recommendations may be proposed.

Guidance specific to this assessment: The report should show analysis of the research.

4. Practical Skills

At level 4, you should be able to apply the basic underlying concepts and principles to evaluate and interpret these within the context of your area of study. You should be able to demonstrate how the subject-related concepts and ideas relate to real world situations and/or a particular context. How do they work in practice? You will deploy models, methods, techniques, and/or theories, in that context, to assess current situations, perhaps to formulate plans or solutions to solve problems, or to create artefacts. This is likely to involve, for

STUDENT FEEDBACK FORM

This section details the *extent* to which the assessment criteria are demonstrated by you, which in turn determines your mark. The marks available for each category of skill are shown. Lecturers will use the space provided to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Name: Thomas Aldred

Generic Assessment Criteria	Marks available	Marks awarded
1. Engagement with Literature Skills		
Good: Engagement with an appropriate range of literature, including sources retrieved independently. Some over-reliance on texts rather than other sources. Referencing may show minor inaccuracies or inconsistencies.	25	14
2. Knowledge and Understanding Skills		
Very good: Competent knowledge of the basic underlying concepts and principles. Exhibits very good understanding.	25	15
3. Cognitive and Intellectual Skills		
Very good: Sound evaluation of the underlying concepts and principles. Can interpret qualitative and quantitative data accurately. Ability to devise arguments using evidence to make mostly appropriate and valid judgements.	30	18
4. Practical Application Skills		
Very good: A very good application of a range of basic methods, materials, tools and/or techniques. Very good consideration of the context of the application. Very good evidence of different approaches to problem-solving in particular contexts and proposes appropriate solutions.	10	6
5. Transferable Skills for Life and Professional Practice		
Very good: Work is accurate, coherent, fluent, well-structured and organised. Can work effectively independently and/or as part of a team, with very good contribution to group activities. Demonstrates very good skills for employment requiring the exercise of some personal responsibility, with just occasional minor weakness. Please see additional comments in assignment text.	10	6

Assessment Mark (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)	Late Submission Penalties (tick if appropriate)		59%
	Up to 1 week late (40% Max)		
	Over 1 week late (0%)		

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Late Submission Penalties (tick if appropriate)

Up to 1 week late (40% Max)

Over 1 week late (0%)

59 %

instance, the use of real world artefacts, examples and cases, the application of a model within an organisation and/or benchmarking one theory or organisation against others based on stated criteria.

Guidance specific to this assessment: The report indicates a level of research with respect to the application and deployment of the equipment, materials or processes that form the basis of the area of study.

5. Transferable Skills for Life and Professional Practice

Your work must provide evidence of the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility. This includes demonstrating: that you can communicate the results of your study/work accurately and reliably, and with structured and coherent arguments; that you can initiate and complete tasks and procedures, whether individually and/or collaboratively; fluency of expression; clarity and effectiveness in presentation and organisation. Work should be coherent and well-structured in presentation and organisation.

Guidance specific to this assessment: Your work should be well organised and presented in a professional manner.

GENERIC ASSESSMENT CRITERIA

Level 4

In accordance with the Framework for Higher Education Qualifications, at the end of Level 4 students will be expected to have demonstrated knowledge of the basic underlying concepts and principles of a subject, and an ability to evaluate and interpret these within the context of that area of study. They should be able to present, evaluate and interpret qualitative and quantitative data in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of their subject(s) of study. They will have learned how to evaluate different approaches to solving problems, and will be able to communicate the results of their study/work accurately and reliably, and with structured and coherent arguments. They will be able to undertake further training and develop new skills within a structured and managed environment and will have the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility.

Level 4	Category	FAIL 0-29%	MARGINAL FAIL 30-39%	SATISFACTORY (3 rd / Pass) 40-49%	GOOD (2.2 / Pass) 50-59%	VERY GOOD (2.1 / Merit) 60-69%	EXCELLENT (1 st / Distinction) 70-84%	EXCEPTIONAL (1 st / Distinction) 85-100%
	Engagement with literature (including reading, referencing, academic conventions and academic honesty)	Little or no evidence of reading and/or reliance on inappropriate sources. Views and findings mostly unsupported and non-authoritative. Referencing conventions used incoherently or largely absent.	Poor engagement with essential reading. No evidence of wider reading. Reliance on inappropriate sources, and/or indiscriminate use of sources. Heavily reliant on information gained through class contact. Inconsistent and weak use of referencing.	Engagement with a limited range of mostly relevant and credible sources but with some reliance on information gained through class contact. Some omissions and minor errors. Referencing conventions evident though not always applied accurately or consistently.	Engagement with an appropriate range of literature, including sources retrieved independently. Some over-reliance on texts rather than other sources. Referencing may show minor inaccuracies or inconsistencies.	Engagement with a wide range of literature, including sources retrieved independently. Selection of relevant and credible sources. Generally sound referencing, with no/very few inaccuracies or inconsistencies.	Engagement with an extensive range of relevant and credible literature. Consistently accurate application of referencing.	Exceptional engagement with an extensive range of relevant and credible literature. High-level referencing skills consistently applied.

Level 4	FAIL	MARGINAL FAIL	SATISFACTORY (3 rd / Pass)	GOOD (2.2 / Pass)	VERY GOOD (2.1 / Merit)	EXCELLENT (1 st / Distinction)	EXCEPTIONAL (1 st / Distinction)
Category	0-29%	30-39%	40-49%	50-59%	60-69%	70-84%	85-100%
Knowledge and understanding (Knowledge of the basic underlying concepts and principles of a subject.)	Major gaps in knowledge and understanding of the basic underlying concepts and principles of the subject matter. Inclusion of irrelevant material. Substantial inaccuracies.	Gaps in knowledge of the basic underlying concepts and principles, with flawed or superficial understanding. Some significant inaccuracies and/or irrelevant material.	Limited knowledge and understanding of the basic underlying concepts and principles within the subject area. Some elements may be missing.	Knowledge of the basic underlying concepts and principles is accurate with a good understanding of the field of study but lacks depth and/or breadth.	Competent knowledge of the basic underlying concepts and principles. Exhibits very good understanding.	Excellent knowledge and understanding of the basic underlying concepts and principles of the subject.	Exceptional, detailed knowledge and understanding of the basic underlying concepts and principles
Cognitive and intellectual skills (Evaluate underlying concepts and principles of a subject and interpret qualitative and quantitative data in order to develop lines of argument and make sound judgements.)	Wholly or almost wholly descriptive work. Little or no evaluation of the underlying concepts and principles. Failure to develop arguments, leading to illogical or invalid judgements. Minimal or no use of evidence to back up views.	Largely descriptive work, with superficial evaluation of the underlying concepts and principles. Weak interpretation of data, flawed development of arguments and judgements. Information accepted uncritically, uses generalised statements made with scant evidence and unsubstantiated opinions. Ideas sometimes illogical and contradictory.	Limited attempt at evaluation of the underlying concepts and principles, tending towards description. Can interpret qualitative and quantitative data but with some errors. Some evidence to support emerging arguments and judgements but these may be underdeveloped or with a little inconsistency / mis-interpretation.	Good evaluation of the underlying concepts and principles. Can interpret qualitative and quantitative data, with minor errors. An emerging ability to use evidence to support the argument. Mostly valid logical judgements.	Sound evaluation of the underlying concepts and principles. Can interpret qualitative and quantitative data accurately. Ability to devise arguments using evidence to make mostly appropriate and valid judgements.	Excellent evaluation of the underlying concepts and principles. Can interpret qualitative and quantitative data accurately and with some insight. Excellent ability to devise arguments using evidence and make appropriate and valid judgements.	Exceptional evaluation of the underlying concepts and principles based evidence. Outstanding interpretation of qualitative and quantitative data. Exceptional ability to devise arguments using evidence and make wholly appropriate and valid judgements.

Level 4	FAIL	MARGINAL FAIL	SATISFACTORY	GOOD	VERY GOOD	EXCELLENT	EXCEPTIONAL
Category	0-29%	30-39%	40-49%	50-59%	60-69%	70-84%	85-100%
Practical skills (Different approaches to solving problems in particular contexts.)	Limited or no use of taught, basic methods, materials, tools and/or techniques. Little or no appreciation of the context of the application. Very weak evidence of different approaches to problem-solving in particular contexts.	Rudimentary application of taught, basic methods, materials, tools and/or techniques but without consideration and competence. Flawed appreciation of the context of the application. Weak evidence of different approaches to problem-solving in particular contexts.	An adequate awareness and mostly appropriate application of basic methods, materials, tools and/or techniques. Basic appreciation of the context of the application. Can identify problems in particular contexts and propose basic alternative approaches or solutions though there may be errors.	A good and appropriate application of basic methods, materials, tools and/or techniques. Clear appreciation of the context of the application. Good evidence of different approaches to problem-solving in particular contexts and proposes mostly appropriate solutions.	A very good application of a range of basic methods, materials, tools and/or techniques. Very good consideration of the context of the application. Very good evidence of different approaches to problem-solving in particular contexts and proposes appropriate solutions.	An advanced application of a range of taught, basic methods, materials, tools and/or techniques. The context of the application is well considered, and insightful. Excellent evidence of different approaches to problem-solving in particular contexts and proposes appropriate solutions.	Exceptional levels of application and deployment skills in particular practical contexts. Outstanding identification of problems in particular contexts and formulation of wholly appropriate, thoughtful solutions / different approaches.

Level 4		FAIL	MARGINAL FAIL	SATISFACTORY (3 rd / Pass)	GOOD (2.2 / Pass)	VERY GOOD (2.1 / Merit)	EXCELLENT (1 st / Distinction)	EXCEPTIONAL (1 st / Distinction)
Category	0-29%	30-39%	40-49%	50-59%	60-69%	70-84%	85-100%	
Transferable skills for life and professional practice (Communicate the results of their study/work accurately and reliably, and with structured and coherent arguments; the qualities needed for employment requiring the exercise of some personal responsibility within a structured and managed environment.)	Work is poorly structured, disorganised, inaccurate and/or confusingly expressed. Very weak use of language and/or very inappropriate style. Failure to work effectively individual or as part of a group. Little or no evidence of the skills for employment requiring the exercise of some personal responsibility.	Work is poorly presented in a disjointed manner. It is loosely, and at times incoherently, structured, with information and ideas often poorly expressed. Weak use of language and/or inappropriate style. Flawed approach to individual or group work, meeting only partial obligations to others. Limited evidence of the skills for employment requiring the exercise of some personal responsibility.	Mostly ordered presentation and structure in which relevant ideas / concepts are reasonably expressed. Work may lack coherence and/or accuracy in places. Can work as part of a group, meeting most obligations to others but perhaps with limited involvement in group activities. Demonstrates the basic skills for employment requiring the exercise of some personal responsibility, with some areas of minor weakness.	Mostly coherent, organised and accurate work, in a suitable structure and is for the most part clearly expressed. Can work effectively independently and/or as part of a team, with clear contribution to group activities. Demonstrates the skills for employment requiring the exercise of some personal responsibility, with some areas of strength and some of minor weakness.	Work is accurate, coherent, fluent, well-structured and organised. Can work effectively independently and/or as part of a team, with very good contribution to group activities. Demonstrates very good skills for employment requiring the exercise of some personal responsibility, with just occasional minor weakness.	Work is coherent, very fluent and is presented professionally. Can work effectively independently and/or as part of a team, with an excellent contribution to group activities. Demonstrates excellent skills for employment requiring the exercise of some personal responsibility with an appetite for further development.	Work is accurate, exceptionally coherent, very fluent and presented well. Can work effectively independently and/or as part of a team, with an exceptional contribution to group activities. Demonstrates exceptional skills for employment requiring the exercise of some personal responsibility with an appetite for further development.	

THIS DOCUMENT IS ALSO AVAILABLE IN WELSH

HNC Process Operations Engineering

Environmental Protection and Sustainable Manufacturing Systems

Research Report

Assignment 1 of 1

Thomas Aldred - 120224



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

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Abstract

In this report research was carried out within Milford Haven Terminal regarding the environmental protection and sustainable manufacturing systems related to the operation of Rail loading and transport within the terminal. Research and note taking was carried out to investigate and analyse specific aspects within the operation of rail loading and transport which meet and comply with environmental protection, legal requirements and best practice.

Introduction

This report is an assignment for an HNC course in Process Engineering. The purpose of this report is to investigate and analyse the Rail Loading operation within Milford Haven Terminal and research the design and operation of the activity, evaluate the specific aspects associated with meeting environmental protection, legal requirements and best practice. I will then gather all my findings and research to develop a conclusion identifying future recommendations and how the operation may be improved with respect to environmental protection and manufacturing sustainability.

Aims & Objectives

The aim of this report is to accurately investigate and analyse the Rail Loading operation and Transport within Milford Haven Terminal and identify all the environmental and legal requirements it must abide to, and investigate the improvements which could be made in respect to environmental protection and manufacturing sustainability.

The overall objective of this report is to research and investigate the rail loading operation transport within Milford Haven Terminal. My objectives are to evaluate all the associated aspects associated with meeting environmental protection, legal requirements and best practice. I will also evaluate the specific aspects associated with ensuring sustainable manufacturing through the rail loading process and operation of transport. I will then develop a concise conclusion underlining all the advantages/ disadvantages of the operation and any future recommendations which could be made to improve the impact of environmental protection, and best practice.

Research & Findings

For this individual report I have chosen Rail Loading & Transportation within Milford Haven Terminal to discuss and research. I have fully investigated the operation and process precisely to underline all the specific aspects relating to environmental protection, legal requirements and best practice.

When carrying out my research on Rail Loading & Transportation, I had to consider a few things which have impact on the environment. This could be things such as Overfill Protection (ESD System). It is crucial that the Terminal installs and has an overfill protection system installed in the rail loading arms to prevent and stop any overfills occurring which could lead to loss of contamination. It has been found that the loading arms which deliver the specific product have a level probe fitted to the body which will detect either a low level alarm, or a high level alarm which will then indicate the panel in the rail stand if a high or low level has been detected. As it stands this is referred to as a SIS (Safety Instrumented System) which means it is a mandatory requirement for the Terminal to follow and adhere to. During the start and end of each working shift it is a requirement enforced by the HSE that the SIS (Safety Instrumented System) is checked to ensure it is operating efficiently and effectively. The activity will include the operator manually tripping all the ESD (Emergency Shutdown Valves) to the closed position, then the reverse order to ensure that the safety system is working and functioning correctly as it should be. The operator will then all the ESD valves in the closed position, then he will toggle the associated valves for the specific loading arms which are going to be used.



Figure 1 – illustrates the SIS (Safety Instrumented System) shutdown valve and actuator.

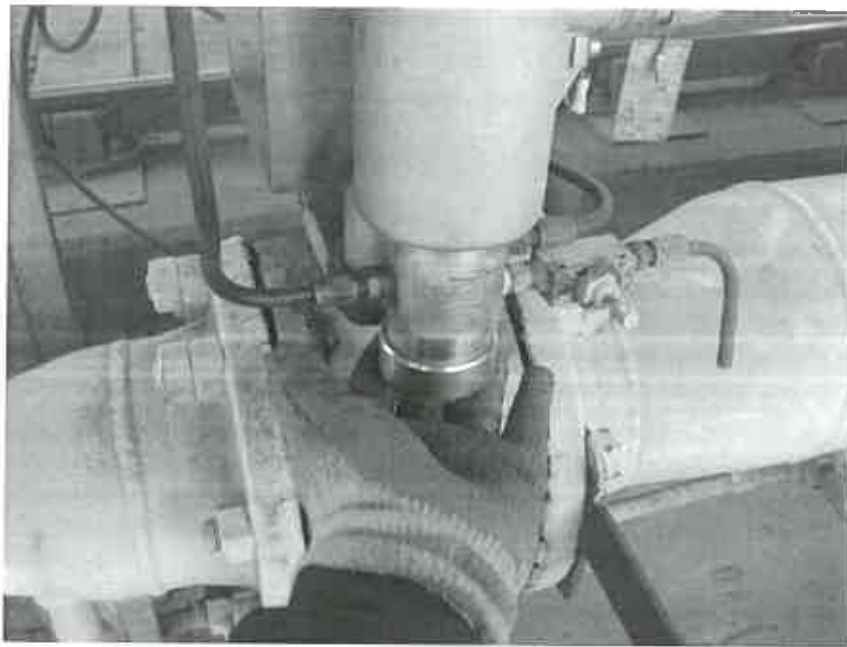


Figure 2 – Indicates me manually tripping the shutdown valves as a daily routine test to ensure they trip successfully and reset accordingly.

Operations Management System
MHT-OP-RL-FOR-014 Daily Rail SIS Testing Checklist

Date of Issue: 27/07/2018 Current Revision No: 1.00 Page 1 of 1

Date: 10-04-19 Shift: A

Following the Duty Shifts completion of Rail Loading, the Panel Controller is to turn SIS Valve switch 53-HS-3096 to the closed position.

Prior to the on-coming Duty Shift loading, testing of the SIS System will be as follows

1. Reset switch 53-HS-3107B. (Main Control Room)
2. Switch valves to the open position (53-HS-3096), toggle all valves at the rail stand in order to reset.
A visual inspection of the SIS valve is required to confirm valves are 100% open
3. Switch valves to the closed position (53-HS-3096)
A visual inspection of the SIS valve is required to confirm valves are 100% closed
4. Reset switch 53-HS-3107B. (Main Control Room)
5. Switch valves to open position (53-HS-3096), toggle open and reset only the valves required for loading.
6. Commence loading
7. On completion of loading or prior to Shift Change, Panel Controller to ensure system is in Closed Position.

INITIAL CHECK OF SIS VALVES

SIS VALVE	RA.1 53-SOV- 3079	RA.2 53-SOV- 3080	RA.3 53-SOV- 3081	RA.4 53-SOV- 3082	RA.5 53-SOV- 3083	RA.7 53-SOV- 3085	RA.8 53-SOV- 3086	RA.9 53-SOV- 3087
SIS TRIP/RESET OK?	✓	✓	✓	✓	✓	✓	✓	✓

COMMENTS _____

WORK ORDER NO (IF REQUIRED) _____

LOADING ARMS USED

SIS VALVE	RA.1 53-SOV- 3079	RA.2 53-SOV- 3080	RA.3 53-SOV- 3081	RA.4 53-SOV- 3082	RA.5 53-SOV- 3083	RA.7 53-SOV- 3085	RA.8 53-SOV- 3086	RA.9 53-SOV- 3087
ARMS USED FOR LOADING	✓		✓		✓			✓

CONFIRM ESD HAS BEEN ACTIVATED ON COMPLETION OF LOADING OR AT THE END OF EACH SHIFT

OPERATOR'S NAME: THOMAS ALDRED SIGNATURE: _____

PANELMAN NAME: _____ SIGNATURE: _____

Names and Signatures redacted. RSW

Figure 3 – Identifies the following procedure and documentation supporting the daily routine trip test of the ESD system.

Also, when undergoing research on the Rail Loading & Transportation it is a legal requirement that Milford Haven Terminal has to comply and have a noise management plan in place. This is put into action to control and minimise the noise output level to a reasonably practicable level. Due to the location of Milford Haven Terminal it has a few nearby neighbours which is referred to as receptors, it is a legal requirement that the Terminal control the noise level output to a specified level depending on the location of the receptor.

The noise management plan will outline the continual improvement in environmental performance, also it will outline the exposure noise at sensitive receptors below the level at which it would give reasonable cause for annoyance, the noise management plan will also specify noise and use effective treatment techniques or other means of minimising emissions, where prevention is not possible and to promote the use of good practices for the control of noise, including adequate maintenance, silencing and screening where necessary.

When investigating the Rail Loading Operation within Milford Haven Terminal it was also noticed that the control of VOC's (Volatile Organic Compounds) produced should be closely monitored and adhere to the relevant specifications & regulations. As it stands all the rail carts which are loaded at the Terminal all contain tank vent systems which are used to minimise breathing losses, these will be things such as Pressure Safety Relief Valve / Vacuum Valves. Within the rail loading operation there will be a specific vapour hose which will be attached to the loading arm which is designed to capture and contain any releases of excess vapour when rail loading, this vapour is then exhausted to the designated North Stack Primary Flue by the use of an air inductor which is designed and installed to withdraw all the excess vapour which is being released when carrying out the rail loading operation. The control of VOC's is then monitored by the use of a fixed analyser which is located at the top of the stack to accurately indicate the release of emissions, it is crucial that when dealing with VOC's you adhere and follow the correct procedures in regards to the meeting the emission limits.

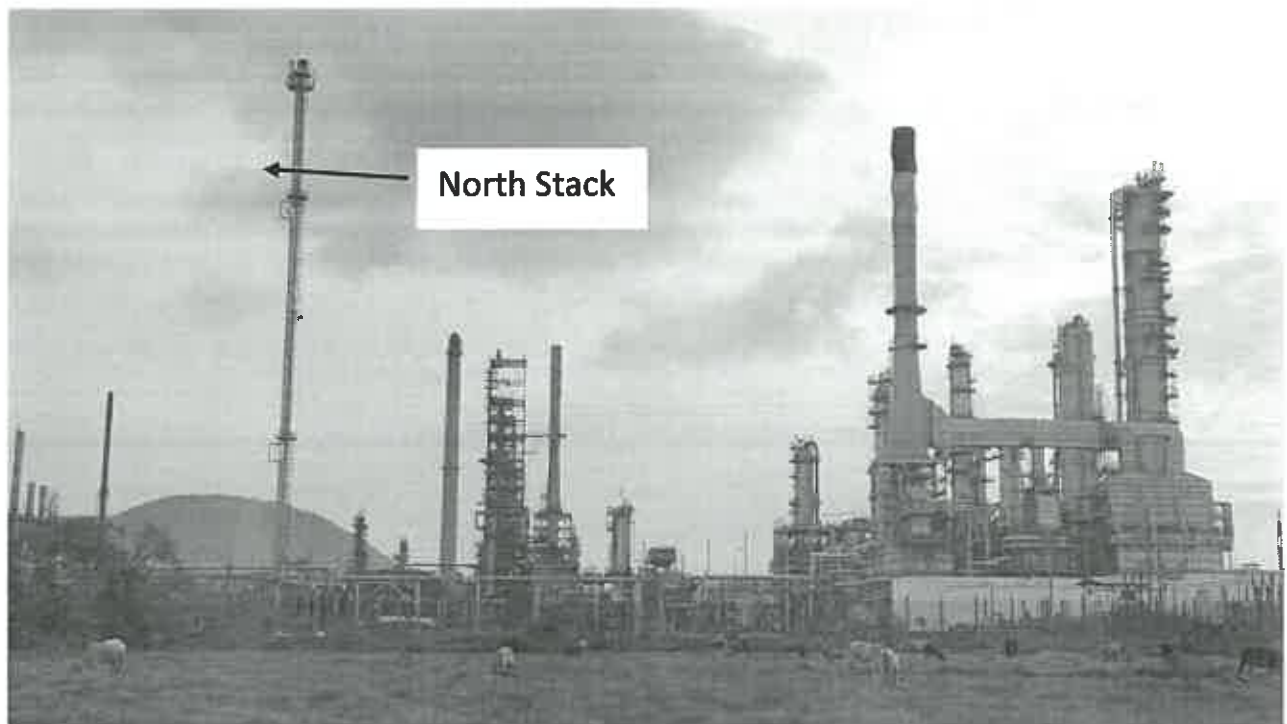


Figure 4 – Indicates the Flu stack which is used to vent all the VOC'S from the rail loading stand.

To fully ensure that the Rail loading Operation is efficient and in a safe working condition at all times it is a legal requirement which states planned maintenance and inspection must be carried out on the associated rail cars being loaded and transported, the loading arms which are delivering the specific fuel product, and then also the rail track being used to transport the loaded product to its desired destination. It is crucial that firstly the rail cars being used for the loading and transporting operation are fit for purpose and maintained on a regular basis, this is done to minimise any incidents occurring such as a spill due to poor integrity of the tank. To fully ensure safety levels of the plant, personnel and environment are controlled and at a safe condition when loading rail cars it is a requirement by Puma Energy that the loading arms delivering the specific fuel are regularly tested, inspected and maintained. This will be done to ensure that the system is operating correctly by delivering the required amount of fuel specified, the loading arms will be frequently tested to ensure that the high level probes on the body are working and activate the ESD system in the case of an emergency and also meter proving will be routinely carried out to ensure that the loading arms are delivering the specified and required amount of fuel to the rail car. When the loading operation is complete, the rake of rail cars must then be transported to its required destination, so in doing so it is mandatory that the rail track from Milford Haven Terminal to the specified destination is regularly maintained and kept to a safe working condition. This will consist of a specialist company who come to Milford Haven Terminal on a 2-week basis to inspect and replace or repair any existing damage within the rail track. ✓



Figure 5 – Indicates the handbrake on the dedicated rail car being loaded or transported.

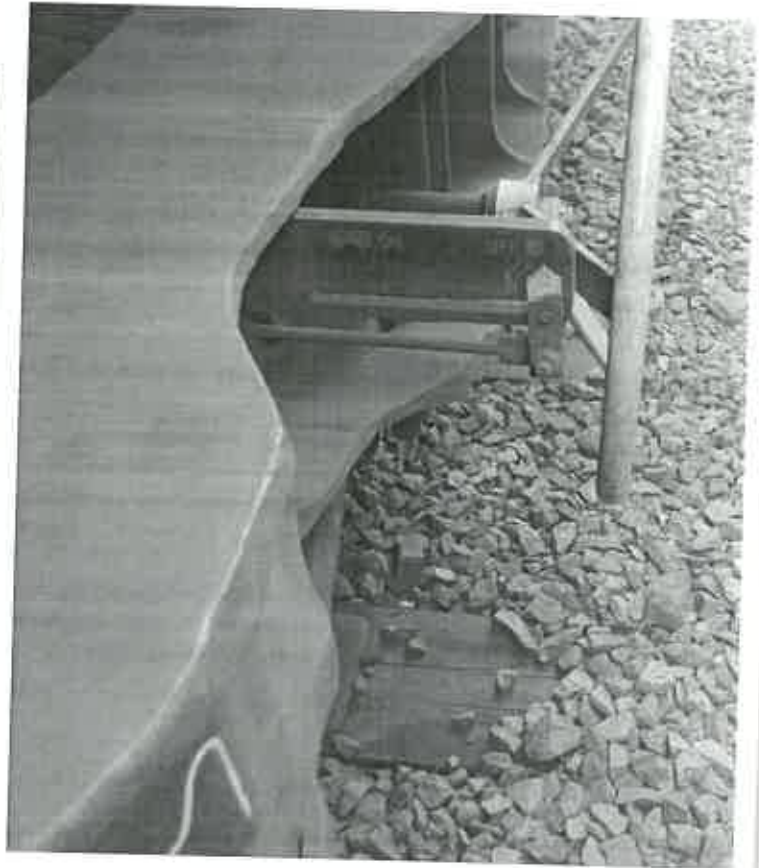


Figure 6 – Indicates one of the foot valves associated on the railcar. ✓

Signature
deducted
R56

PUMA
Operations Management Systems
MHT-OP-RL-FOR-012 Locomotive Drivers Checklist

Date of Issue: 18/07/2017 | Current Revision No: 1.02 | Page 1 of 2

To be completed at the start of each working shift or when a loco is handed over after maintenance

Time: 06.00 Date: 10-04-19

Shift: A

Signed: [Signature]

Print Name: THOMAS ALDRED

		Tick Box	Action Taken
1.	Check parking brake applied	☒	
2.	Buffers not damaged (visual check)	☒	
3.	Draw gear, hook, chain not damaged (visual check)	☒	
4.	Train pipe cocks closed / check train break (where fitted)	☒	
5.	Hand rails intact, all guards and covers secured	☒	
6.	Check all brake hangers for damage or wear (visual check) Check brake shoes for damage or wear (visual check)	☒	
7.	Visually check side rod and pins for damage	☒	
8.	Drain water from air reservoirs	☒	
9.	Locomotive needs to be cold to perform check of engine oil level	☒	
10.	Check engine etc for oil leaks	☒	
11.	Visually check belts for damage	☒	
12.	Locomotive needs to be cold to perform check of coolant level in the radiator, top up with 50% antifreeze mixture if required.	☒	
13.	Check fuel level, top up if required	☒	
14.	Ensure radio on correct channel	☒	
15.	Check all gauges operating	☒	

Figure 7 – illustrates the daily routine checklist to be carried on the Locomotive at the start of each working shift (06.00am)

Sustainable Manufacture

When evaluating specific aspects associated with ensuring sustainable manufacture within the Rail loading Operation and Transport at Milford Haven it was distinguished that compared to Road transport and pipeline it is far more cost effective and safer in doing so. Due to the high volumes of fuel that can be transported via rail it was almost certain that it would be the process used to load and transport the specified product to the specified destination, Milford Haven Terminal currently supply and feed two trains a day at morning and midnight to Westerleigh Terminal, Theale Terminal and also Immingham Interterminal.

In comparison to the fuel efficiency which is consumed to transport fuel via the use of a road tanker it is adamant that Rail transport would be by far the most efficient option. It can be demonstrated that due to the less amount of Locomotive Trains used to transport high volumes of fuel compared to the road tankers being used it is therefore going to be far more efficient and effective and also as it is a fossil fuel it will produce Co2 emissions but a lot less in comparison to road transport.

As the Rail Loading operation at Milford Haven is in operation 24 hours a day 365 days a year loading multi-products through various rail loading arms and various pipelines occasionally there may be a build of excess waste or mix contaminated fuels, so in order to manage and process this excess waste which is referred to as "slops" it will need to be transferred to our designated area which is known as the CPI (Corrugated Plate Interceptor) to be processed.

*More improvements could
have been included in your
assessment*

Conclusion

As a whole compared to the other modes of transporting and loading multi-product fuel it is adamant that rail transport is by far the most efficient and cost effective for the Terminal, I believe that also by transporting fuel via rail it minimises all the potential risks which may occur when transporting via road.

However, in order to maintain and always sustain a safe operation it is crucial that Milford Haven Terminal abide and adhere to all the associated regulations and standards within the Rail operation and Transportation.

From my research and findings of the Rail Loading and Transportation in Milford Haven Terminal it was found that overall the Terminal is complying and meeting all the right standards and regulations in regard to environmental protection, this could be by installing an ESD (Emergency Shutdown System) etc.

Recommendations

As a summary of the Rail Loading Operation and Transport it can be identified that some improvements to the system could be made to, this could be by installing a VRU (Vapour Recovery Unit) to capture all the released vapour which is being released when carrying out the rail loading operation, this will then process the excess vapour to be condensed into a liquid and then be transferred to a designated tank. This will massively reduce the release of VOC emissions being released from Milford Haven Terminal and allow the Terminal to earn revenue on the vapour which is being turned to liquid which is classed as on grade product.

References

Milford Haven refinery permit number ap3830 - pollution prevention and control (England & Wales) regulations 2000

HSE.GOV.UK