

Compliance Assessment Report CAR_NRW0039434

Permit being assessed: YP3930EX.

For: Pembroke Refinery, held by Valero Energy Ltd

At: Valero Energy Ltd , Pembroke Refinery, Pembroke, Pembrokeshire, SA71 5SJ.

Type of assessment carried out: Check Monitoring/Sampling, Reason: Routine.

On 31/12/2021.

Parts of permit assessed: Monitoring Information

NRW Lead Officer: Gary Evans, accompanied by Ieuan Davies.

Report sent to: Andrew Waterman, Manager Environmental Engineering on 18/02/2022.

1. Summary of our findings (full details in section 4)

Part of permitted activity assessed (criteria)	Assessment result	Permit condition
A1 - Specified by permit	Assessed (A)	
G1 - Monitoring and Records, Maintenance and Reporting - Monitoring of emissions and environment	Assessed (A)	
G4 - Monitoring and Records, Maintenance and Reporting - Reporting and notification to Natural Resources Wales	Assessed (A)	
E1 - Emissions - Air	C3 Minor	3.1.2

Result types are explained in more detail in the 'Important Information' section below.

Total number of non-compliances recorded	Total non-compliance score
1	4

How we use the non-compliance score to calculate your annual fee is explained in the 'Important Information' section below.

2. What action is required?

Criteria	Action needed	Complete by
E1	Investigation plan and improvement plan on FCCU Dust releases.	30/04/2022

Action criteria codes are listed in the 'Important information' section below.

3. What will happen next?

Any non-compliance we have identified and recorded on this form is an offence. It can result in criminal prosecution and/or suspension or revocation of your permit.

You are non-compliant with your permit.

At this time, we are issuing you with a warning for the non-compliance recorded above. Warnings may influence future enforcement response for continued or further non-compliance.

This statement does not stop us from taking additional enforcement action if further relevant information comes to light or offences continue.

4. Details of our assessment

Introduction

This Compliance Assessment Report (CAR) is a written record of permit notifications in 2021 (Part A and Part B Notifications). Natural Resources Wales (NRW) were formally notified (Part A notification as required by permit conditions) of the following permit breaches.

Permit Notification October 2021

Date and time of monitoring - 01 October 2021 – 31 October 2021

Emission point reference/ source – A5A (FCCU Catalyst Regenerator)

Limits - Dust - 50mg/m³ (monthly average) continuous monitoring

Results - Dust – 52.8mg/m³ **CCS Score 3**

- Measures taken, or intended to be taken, to stop the emission: -

Valero Energy Limited are investigating the issue as detailed below:

1. Investigations by Process Engineering and Operations are on-going and involve the following
 - In June 2021, the catalyst for the FCCU changed formulation. The impacts of this change on the FCCU dust are being reviewed with the catalyst vendor and Valero subject matter expert.
 - Samples of Spent Catalyst and FCCU slurry have been sent to the vendor and independent laboratories for analysis.
 - Aeration points and steam purges into the FCCU catalyst circuit are being reviewed to understand any potential catalyst attrition concerns.
 - Pressure gauge surveys will be undertaken to understand other potential sources of catalyst attrition (e.g., air grid maldistribution in the FCCU regenerator).
 - A survey of the FCCU using Isokinetic sampling techniques is planned in Q1 2022. Isokinetic sampling can assist the understanding of particle size distribution in the FCCU and potential sources of dust entering the FCCU stack. Isokinetic sampling can also assist in the understanding of separation efficiency for catalyst recovery equipment on the FCCU flue gas system. A specialist U.S. based resource will be required to complete such sampling and are subject to a 5-6 week lead time in order to design, fabricate and install site specific equipment.
2. A review of the CEMS analyser A5A performance and set up.
 - The recommended action was to complete a QAL2 calibration of the analyser.

- The QAL2 was completed on the 12th – 21st October 2021.
- Filter samples of the stack dust were also taken during the QAL2 and have been sent to the catalyst vendor for analysis.

Permit Notification November 2021

Date and time of monitoring - 01 November 2021 – 30 November 2021

Emission point reference/ source – A5A (FCCU Catalyst Regenerator)

Limits - Dust - 50mg/m³ (monthly average) continuous monitoring

Results - Dust – 61.6mg/m³ **(CCS 3 Consolidated)**

Permit Notification December 2021

Date and time of monitoring - 01 December 2021 – 31 December 2021

Emission point reference/ source – A5A (FCCU Catalyst Regenerator)

Limits - Dust - 50mg/m³ (monthly average) continuous monitoring

Results - Dust – 52.6mg/m³ **(CCS 3 Consolidated)**

- Measures taken, or intended to be taken, to stop the emission: -

Valero Energy Limited are investigating the issue as detailed below:

Further to the information provided in the Part B form dated 22.12.2021:

- FCCU Dust levels observed via CEMS A5A appeared to reduce in early December and there were periods during December where FCCU Dust levels were within the permit limit of 50 mg/Nm³.
- The root cause for the elevated dusted levels remains unknown and at this point in time, it is not known whether the lower dust levels such as those in December can be sustained.

Efforts have been made to investigate this issue in 2 main parts. These include:

1. Investigations by Process Engineering and Operations are on-going and have so far comprised:
 - In June 2021, the catalyst for the FCCU changed formulation. The impacts of this change on FCCU Dust are being reviewed with the catalyst vendor and Valero
 - Samples of Spent catalyst have been sent to the catalyst vendor for imaging. Initial results would indicate that some attrition is evident within the Catalyst circuit, although inconclusive to whether all or part attrition is occurring within the catalyst circuit. We continue to send samples for imaging on a weekly basis to assist with our investigations.
 - Air distribution and air flows within the FCCU catalyst circuit continue to be reviewed to understand any potential catalyst attrition concerns, with a target completion of Q1 2022.
 - A review of steam sources into the FCCU catalyst circuit has been completed. Steam sources such as reactor stripping steams continue to be optimised on a

daily basis.

- We continue to manipulate a number of other operational variables within their allowable operating envelope (e.g. Regenerator Excess Oxygen, regenerator bed level, Reactor stripper bed level) to understand their effect on overall dust levels.
 - A survey of the FCCU using Isokinetic sampling techniques will be executed in Q12022. Whilst this presents a significant cost to Valero, Isokinetic sampling can assist the understanding of particle size distribution in the FCCU and potential sources of dust entering the FCCU stack. Isokinetic sampling can also assist the understanding of separation efficiency for catalyst recovery equipment on the FCCU flue gas system. A The results/ report for the Isokinetic sampling are anticipated in Q2 2022.
2. A review of the CEMS analyser A5A performance and set-up.
- The recommended action was to complete a QAL2 calibration of the analyser, which was completed 12th – 21st October 2021.
 - Filter samples of the stack were taken during the QAL2 in October and were sent to the catalyst vendor for analysis. The sample results will be reviewed in conjunction with the Isokinetic sampling in Q2 2022.

Classification of the permit breach according to the NRW Compliance Classification Scheme (CCS) and EPR compliance.

Section 3 (3.1) of the environmental permit states:

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1(a), S3.1(b), S3.1(c) and S3.2.

3.1.2 The limits given in schedule 3 shall not be exceeded.

NRW considers that permit condition 3.1.2 was breached in respect of the above sections and have been scored in accordance with the NRW Compliance Classification Scheme.

It is concluded that as a result of the above permit breaches the operator has received a Compliance Classification Score of 3 (minor environmental breach). NRW have reviewed the monthly breaches over the last quarter and consolidated to 1 CCS 3 entry.

The above permit breach results in an NRW warning which is recorded on this CAR form. The resultant enforcement action of this warning reflects on the scale and potential environmental impact of the permit exceedances and importantly other factors such as no-intent, operator response / co-operation, and the corrective actions taken to prevent a reoccurrence.

Any further exceedances will have to continue to be reported to NRW in line with permitted requirements.

If you have any queries about this report, or to discuss completion of any actions, please contact the NRW Officer named above.

Important information

Legal status of this report

Your permit is issued to you under the Environmental Permitting Regulations. You have a responsibility to comply with the conditions of your permit and prevent pollution/harm of the environment. You must also ensure that you comply with any other relevant legislation that may apply to your site's operations.

This report explains the findings of our assessment and any action you are required to take. We categorise non-compliance using our guidance for assessing non-compliance at regulated sites.

When we find potential non-compliance/s we will normally give you advice on how to maintain compliance.

To correct non-compliance, we may:

- require you to take specific actions
- issue a notice
- review the conditions of your permit.

Any advice and guidance we give will be without prejudice to any other enforcement response that we consider may be required.

Assessment results and non-compliance categories (used in section 1):

Assessment result	Description
Assessed (A)	Assessed or assessed in part, no evidence of non-compliance found
Action only (X)	Action only relating to the activity assessment
Ongoing (O)	Ongoing non-compliance, not scored

Non-compliance category	Description	Score
C1 Major	Potential to have a major, serious, persistent and/or extensive impact or effect on the environment, people and/or property	60
C2 Significant	Potential to have a significant impact or effect on the environment, people and/or property	31
C3 Minor	Potential to have a minor or minimal impact or effect on the environment, people and/or property	4
C4 No environmental impact	Non-compliance at a regulated site that cannot foreseeably have any impact on the environment, people and/or property	0.1

How we use assessment scores

The number and severity of non-compliances recorded in a year will affect your annual subsistence fee the following year. A non-compliance factor is added to your site's Operator

Performance Risk Appraisal (OPRA) score when we calculate your fee to reflect the additional resource we use to assess permit compliance.

What are suspended scores?

In line with our guidance, we may suspend scores for up to six months to allow time for remedial action to be taken. Suspended scores will be re-instated if the action is not completed.

Full list of Industry and Waste action criteria (used in section 1 and 2):

A: Permitted activities

- A1 Specified by permit

B: Infrastructure

- B1 Infrastructure – Engineering for prevention and control of emissions
- B2 Infrastructure – Closure and decommissioning
- B3 Infrastructure – Site drainage engineering (clean and foul)
- B4 Infrastructure – Containment of stored materials
- B5 Infrastructure – Plant and equipment

C: General management

- C1 General management – Staff competency/training
- C2 General management – Management system and operating procedures
- C3 General management – Materials acceptance
- C4 General management – Storage, handling, labelling and segregation

D: Incident management

- D1 Incident management – Site security
- D2 Incident management – Accidents, emergency and incident planning

E: Emissions

- E1 Emissions – Air
- E2 Emissions – Land and groundwater
- E3 Emissions – Surface water
- E4 Emissions – Sewer
- E5 Emissions – Waste

F: Amenity

- F1 Amenity – Odour
- F2 Amenity – Noise
- F3 Amenity – Dust/fibres/particulates and litter
- F4 Amenity – Pests/birds and scavengers
- F5 Amenity – Deposits on road

G: Monitoring and records, maintenance and reporting

- G1 Monitoring and records, maintenance and reporting – Monitoring of emissions and environment
- G2 Monitoring and records, maintenance and reporting – Records of activity, site diary/journal/events
- G3 Monitoring and records, maintenance and reporting – Maintenance records
- G4 Monitoring and records, maintenance and reporting – Reporting and notification to Natural Resources Wales

H: Resources efficiency

- H1 Resource efficiency – Efficient use of raw materials
- H2 Resource efficiency – Energy efficiency

Enforcement response

Any permit condition non-compliance is an offence and we may take legal action against you. Action we take can include prosecution, serving a notice on you and/or suspension or revocation of your permit. See our Enforcement and Sanctions Guidance for further information.

Data protection notice

You should make sure that anyone named in this report knows that the information it contains will be processed by Natural Resources Wales to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s).

We may also use and/or disclose the report in connection with:

- offering or providing you with our literature or services relating to environmental matters
- consulting with the public, public bodies and other organisations (e.g. Health and Safety Executive, local authorities) on environmental issues
- carrying out statistical analysis, research and development on environmental issues
- providing public register information to enquirers
- investigating possible breaches of environmental law
- assessing customer service satisfaction and improving our service
- Freedom of Information Act or Environmental Information Regulations requests.

We may also pass it on to our agents or representatives to do these things on our behalf.

Disclosure of information – this report will be available to view on-line

If you think this report contains commercially confidential information that should not be placed on our public register, you must contact your local Natural Resources Wales office within **fifteen working days** of receiving this report, using the contact details in the accompanying email or letter. You must give a full explanation of why it should not be added to our public register, including specifying which information is commercially confidential. We will assess your request and respond to you within 20 working days to let you know if we agree to your request.

What do I do if I disagree with the report or have a complaint?

If you disagree with this compliance assessment report, you should contact the lead officer without delay to discuss your concerns.

If you are unable to resolve the issue with the lead officer or their line manager you should contact our Customer Contact team on 0300 065 3000 (Monday to Friday 08:00 – 18:00), or email enquiries@naturalresourceswales.gov.uk for details of how to raise your dispute further through our Complaints and Commendations procedure.

If you are dissatisfied with our response, you can contact the Public Services Ombudsman for Wales by phone on 0300 7900203 or by email at ask@ombudsman.wales

Welsh Language Standards

We are committed to establishing Natural Resources Wales as a naturally bilingual organisation. We will provide compliance reports in your preferred language.