

Compliance Assessment Report

Report ID:
CAR_NRW0025273

This form will report compliance with your permit as determined by an NRW officer

Site	Port Talbot Steel Works EPR/BL7108IM		Permit Ref	BL7108IM	
Operator/Permit holder	Tata Steel UK Limited				
Regime	Installations				
Date of assessment	20/06/2016	Time in	13:00	Out	16:00
Assessment type	Audit				
Parts of the permit assessed	2 Operations; 3 Emissions and monitoring				
Lead officer's name	Cowie, Douglas				
Accompanied by	Broom, Mark,Baskerville, Guy				
Recipient's name/position	Fiona Abbott/ Environment Manager	Date issued	25/11/2016		

Section 1 – Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation is captured in "Compliance Assessment Report Detail" (Section 2) and any actions you may need to take are given in the "Action(s)" (section 4). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS Scores can be consolidated or suspended where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

Permit conditions and compliance summary	CCS Category	Condition(s) breached
B1 - Infrastructure - Engineering for prevention and control of emissions	A	
B5 - Infrastructure - Plant and equipment	A	
C2 - General Management - Management system and operating procedures	A	
E1 - Emissions - Air	X	
G1 - Monitoring and Records, Maintenance and Reporting - Monitoring of emissions and environment	A	
G3 - Monitoring and Records, Maintenance and Reporting - Maintenance records	A	
G4 - Monitoring and Records, Maintenance and Reporting - Reporting and notification to Natural Resources Wales	A	

KEY: See Section 5 for breach categories, suspended scores will be indicated as such.

A = Assessed or assessed in part (no evidence of non-compliance), **X** = Action only,

O = Ongoing non-compliance, not scored.

Number of breaches recorded	0	Total compliance score (see section 5 for scoring scheme)	0
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If the Number of breaches recorded is greater than zero, please see Section 3 for our proposed enforcement response

Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- The part(s) of the permit that were assessed (eg. Maintenance, training, combustion plant, etc)
- Where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- Any non-compliances identified
- Any non-compliances with directly applicable legislation
- Details of any multiple non-compliances
- Information on the compliance score accrued inc.
- Details of advice given
- Any other areas of concern
- Any actions requested
- Any examples of good practice
- A reference to photos taken

Person(s) present

Fiona Abbott (All)	Doug Cowie
Jason Heatman (All)	Guy Baskerville
Jason Massey (All)	Mark Broom
Dean Vincent (CO)	
Andrew Townsend (CO)	
Charlotte Barlow (CO)	
George Govan (BOS)	
Jerry Elward (BOS)	
Stuart Soultter (BOS)	
Dean Gibbs (BOS)	
Peter Jones (BOS)	

Coke ovens fugitive emissions

NRW has previously agreed in CAR 6103 that Tata is able to halt the use of British Coke Research Association (BCRA) assessment methods for doors, tops and charging. Tata's new modified US EPA method for assessing fugitive emissions has been in use since March 2016. This new method is tighter than the BCRA methods and is also directly comparable to the Iron & Steel BAT Conclusions and BAT Associated Environmental Performance Limits (BAT-AEPLs). During this visit we reviewed coke ovens fugitive emissions performance using the new modified US EPA method.

BAT-AEPL compliance – charging

The BAT-AEPL for charging is 30 seconds and a monthly mean now that the previous BRCA method has stopped being used and has been replaced by the BATc time of visible release. For April and May 2016, the visible charging time averaged around 70 seconds but dropped to 40 seconds during June with a week to go. This drop has been attributed to having a dedicated maintenance team in place and better alignment of the caps and the screw feeder. The 'telescopes' (telescopic connections) that make the seal between the bottom of the charge car and the oven charge holes are being realigned and 'gunned'.

The battery top is to be resurveyed and further realignment and gunning of the charge holes may be required. Tata is also focusing its maintenance efforts on the charging machine which has the most performance issues. It appears that Tata is on the right track, but the easy actions have been taken and meeting the 30 seconds BAT-AEPL may be a challenge as it becomes potentially more difficult to realise the benefits.

BAT-AEPL compliance – tops

The coke oven tops BAT-AEPL is 99% not leaking as a monthly mean for all tops sources – caps, spigots, ascension pipes etc. This is a very challenging target because of the number and length of ascension pipe seals that are required to be leak free. Tata has already replaced around 15% of the spigots, but at one spigot per week the task is large and not all spigot replacements are completely successful. There are around 164 spigots to replace in total. Current performance is at 93% leak free (7% leakage rate).

The rate of renewal is difficult to change because of the complex lifts required and the need to sequence the renewals with continued battery operations without affecting the integrity of individual ovens. The work is being carried out during daytime by a permanent, dedicated engineering team to ensure that consistent work is carried out to tackle the tops fugitive releases. Battery 1 is in slightly better condition than Battery 2, which may be a reflection of each battery's stability as there is tie-in between the areas of greatest fugitive release and the areas with greatest movement on the Coke Oven Gas (COG) collector main.

It is unlikely that Tata will be able to comply with the BAT-AEPL for tops for a significant number of months.

BAT-AEPL compliance – doors

The BAT-AEPL for doors is 10% leakage rate or 90% non-leaking doors. Tata have got close to this limit and have indeed met the 10% leakage rate on Battery 2, but are not yet in full compliance. A problem solving exercise has been carried out which has led to a number of additional interventions, including an analysis of cleaning equipment and resources, a review of shift practices and a focus on small issues which cumulatively have a bigger impact across both batteries. A new contractor now undertakes the door cleaning work for Tata. By changing and standardising the cleaning methods and practices used by all shifts across both batteries, there does seem to have been a step change in fugitive emissions performance which was shown in the leakage results presented to NRW.

Based on current performance, Tata may come into compliance with the BAT-AEPL for doors during Quarter 3 (Jul – Sep) of 2016.

Next steps

The measures taken by Tata thus far to comply with the BAT-AEPLs for coke ovens fugitive emissions are encouraging. Tata has notified NRW of exceedances of the BAT-AEPL for tops and doors during Quarter 2 (Apr – Jun) 2016 and these will be assessed in accordance with our Compliance Classification Scheme (CCS) in a separate quarterly CAR for notifiable releases.

NRW now requires a compliance plan from Tata which explains the progress made so far and outlines the measures that will be taken to bring the coke ovens into compliance with the BAT-AEPLs. NRW can potentially suspend CCS scores for exceedances that occur after a compliance plan has been submitted and approved. As the BAT-AEPL for tops is more difficult to achieve than that for doors, NRW expects the compliance plan for tops to contain a higher level of detail.

Further information is required regarding charging performance before NRW can fully assess compliance. NRW will return to the steelworks to review progress with the charging BAT-AEPL during a future compliance inspection.

BOS plant FEP releases

Tata has notified NRW about a number of exceedances of the daily emission limit values (ELVs) for the BOS Secondary FEP since March 2016. NRW will assess these in accordance with our Compliance Classification Scheme (CCS) in separate quarterly CARs for notifiable releases. During this visit we examined the monitoring arrangements in place at the BOS Secondary FEP and investigated the root causes of these exceedances.

Monitoring and sampling

Applying the CEMS QA standard to the dust monitoring across the site is proving to be a challenge for Tata's sampling teams due to the number of Continuous Emissions Monitoring systems (CEMS) installed and work required to meet BS EN 14181 in full. NRW is currently drafting a position that means that not all the requirements of BS EN 14181 will be required for CEMS fitted to non-Waste Incineration Directive (WID) and non-Large Combustion Plant (LCP) industrial processes. The inspecting officers will share this position with Tata when it is published.

NRW's draft position for non-WID and non-LCP CEMS is that we would expect the following parts of BS EN 14181 to be applied as a minimum:

- Annual Functional Tests (including linearity, response time & system integrity, all prior to CEM calibration)
- Verify CEM reads zero at zero emissions
- Parallel Tests with CEM using Standard Reference Method [SRM] (to generate a valid calibration function).

Three repetitions of the SRM over 1 day would be acceptable for low-level cluster emissions (not more than 30% of the daily mean ELV)

There would be no specific requirements to carry out a QAL3 procedure (i.e. ongoing routine zero and span checks) for non-WID and non-LCP CEMS. Also, there would be no requirement to produce a fully compliant BS EN 14181 report.

Based on this position, Tata should be able to apply the principles of BS EN 14181 to help ensure the quality assurance of the current range of particulate and other monitors for their iron and steel plant releases. Obviously this position does not apply to the

steelworks LCP that will need to continue to meet the requirements of BS EN 14181 in full.

Once NRW has shared its position, Tata should submit a plan outlining its monitoring strategy for non-WID and non-LCP CEMS which explains how it proposes to meet the principles of BS EN 14181.

ELV compliance (particulates)

The BOS Plant Secondary FEP has three fans (4, 5 & 6) each with its own bag filters and associated set of bags. Tata has notified NRW about a series of ELV failures for two permitted emission points associated with these fans (A14 and A16).

The aim of this brief review was to highlight the remediation work carried out by Tata so far and its plan going forward. Tata has found a few problems with the bags in some parts of the fan/bag filter network. For example, Fan 6 had a problem with chamber 4's bags so this needs to be isolated and fixed. Fan 4 has suffered from problems with its bag house (~90 bags replaced) and Fan 5's bag house needed an extensive bag change due to heat surges from slop events (see below) affecting the front bags.

Currently the BOS Plant Secondary FEP is running on two sets of fans. Fan 5 and its bags are offline as the bags are being changed. Fan 5 is due back on 25/6/2016 and its emissions should return to compliance. Fan 6 can then be taken offline to deal with the isolated chamber 4 issue. Fan 4 has already had a partial bag change due to hot material affecting the first 90 (of 240) bags in each of the six bag filter chambers on this fan. In total, Tata have replaced 540 out of 1440 bags or just under 40% of the bags serving this fan. Fan 4 is now back in compliance and this fan and associated bag filter system will be re-inspected once Fans 5 and 6 are fully operational again.

Kevlar-infused bags are being trialled at Fan 5 to combat the degradation from slop heat surges. If successful, these should reduce the number of bag failures and also reduce the number of times that bags have to be changed which requires significant effort and downtime to address.

NRW now requires a compliance plan from Tata which explains the progress made so far and outlines the measures that will be taken to bring the BOS Plant FEP into compliance with the permit ELVs. NRW can potentially suspend CCS scores for exceedances that occur after a compliance plan has been submitted and approved.

Fans 3 and 3A

During 2015 there was a problem with one of the Hot Metal Pouring (HMP) Bay fume transfer fans. Fan 3 failed catastrophically causing the fan blades – also known as impellers – to be thrown several tens of metres away from the fan housing. NRW examined this incident in CAR 6051.

Tata and their fan suppliers found that there was a fatigue failure on Fan 3 due to the use of a variable speed drive (VSD). The VSD was installed to reduce power consumption but this in turn meant the fan speed changed more frequently depending on duty and load. The cyclical nature of the changing fan speeds caused fatigue within the fan blades and damage to the fan housing and elsewhere when the fan blades failed.

As a result of this failure and the identification of the failure mode, Tata put in place a planned preventative maintenance (PPM) programme involving fan blade inspections for systems fitted with VSDs across the steelworks. One of these routine inspections at Fan 3A found cracks on some blade tips. Tata's PPM programme has allowed early identification of this potential failure and the good news is that it has been caught before Fan 3A failed catastrophically. Tata are now waiting for a repair plan from their fan supplier and contractors.

The lessons from the Fan 3 failure appear to have been learnt and NRW commends Tata for adopting an effective PPM

programme for its remaining fans with VSDs. We encourage Tata to retain and promote effective PPM across its operations at Port Talbot steelworks.

BOS Plant slops

Slops – where molten metal, slag and gases rapidly escape and spill from the BOS converter vessel – can cause a number of problems besides complaints about fume and smoke from the BOS Plant. The hot metal and slag spillages reduce steel yield, affects process control, converter shell integrity and life expectancy. Slops also contribute to damage of the electrical and hydraulic connections around the converter and the hot gases and particulates attack the integrity of the FEP bags (see above).

Tata has invested in a system to record the level of fume and associated slop risk from its converters. A slop camera is used to correlate the fume/slop risk over time against the various operations that happen during the steel production cycle. Providing the cameras are working, every heat (or blow) is recorded and when a slop is reported from outside the works, the status and cause can be reviewed. This approach has already led to modifications in oxygen lance height and sub-lance control. NRW viewed example camera footage showing a certain lance position leading to a heavy slop.

Newer modifications arising from this approach concern the use of lump iron ore at the start of the process. Lump ore has been replaced by coarse sinter as this offers better and cheaper control of the desired steel properties. The slop camera also helps the control operators make more informed choices when faced with a developing slop situation. The camera footage is supported by live data feeds to provide as much information as possible to assist decision making.

Further work is being carried out to reduce the oxygen flow at the riskiest part of the heat to avoid overblowing oxygen and generating a slop. Also Tata have found that fine residual materials in the scrap can lead to a slop as the fine material provides increased surface area for a slop to form and generate gases.

The Steel and Slab engineers and operators at Port Talbot are being supported by Tata's central environment support team together with input from Ijmuiden steelworks in Holland. The next phase of this work is to move towards developing a slop prediction model or tool based on the various input parameters and the output of the slop cameras. Tata has introduced several slop Key Performance Indicators (KPIs) already and is conducting data analysis to check performance. There remains a proportion of unknown factors in terms of slop formation but it is hoped that Tata's work will eventually reduce these and minimise slops at Port Talbot. NRW will return later in 2016/early 2017 to review progress with this work.

Conclusions

The measures taken by Tata thus far to comply with the BAT-AEPLs for coke ovens fugitive emissions are encouraging, although the steelworks has recorded exceedances for tops and doors. NRW now requires a compliance plan from Tata which explains the progress made so far and outlines the measures that will be taken to bring the coke ovens into compliance with the BAT-AEPLs. NRW can potentially suspend CCS scores for exceedances that occur after a compliance plan has been submitted and approved. As the BAT-AEPL for tops is more difficult to achieve than that for doors, NRW expects the compliance plan for tops to contain a higher level of detail.

Further information is required regarding charging performance before NRW can fully assess compliance. NRW will return to the steelworks to review progress with the charging BAT-AEPL during a future compliance inspection.

Once NRW has shared its position regarding monitoring arrangements for non-WID and non-LCP CEMS, Tata should submit a plan outlining its monitoring strategy for non-WID and non-LCP CEMS which explains how it proposes to meet the principles of BS EN 14181.

NRW requires a compliance plan from Tata which explains the progress made so far and outlines the measures that will be taken to bring the BOS Plant FEP into compliance with the permit ELVs. NRW can potentially suspend CCS scores for exceedances that occur after a compliance plan has been submitted and approved.

NRW commends Tata for adopting an effective PPM programme for its remaining fans with VSDs. We encourage Tata to retain and promote effective PPM across its operations at Port Talbot steelworks.

Much useful work has been done to analyse, control and predict slop formation at the BOS Plant. The next phase is to move towards developing a slop prediction model or tool based on the various input parameters and the output of the slop cameras. NRW will return later in 2016/early 2017 to review progress with this work.

EPR Compliance Assessment Report

**Report ID:
CAR_NRW0025273**

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Site	Port Talbot Steel Works EPR/BL7108IM	Permit Ref	BL7108IM
Operator/Permit holder	Tata Steel UK Limited	Date	20/06/2016

Section 3 – Enforcement Response

You must take immediate action to rectify any non-compliance and prevent repetition. Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

Section 4 – Action(s)

This section summarises the actions identified during the assessment along with the timescales for when they will need to be completed.

Criteria Ref.	CCS Category	Action required/advised	Due Date
See Section 1 above			
E1	X	NRW requires compliance plans from Tata Steel in relation to: a) coke oven tops; b) coke oven doors; and c) BOS Plant FEP emissions which explains how Tata proposes to bring emissions from these sources back into compliance with the permit ELVs.	30/09/2016

Section 5 – Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- Advise on corrective actions verbally or in writing
- Require you to take specific actions verbally or in writing
- Issue a notice
- Require you to review your procedures or management system
- Change some of the conditions of your permit
- Decide to undertake a full review of your permit

Any breach of a permit condition is an offence and we may take legal action against you

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and/or suspension or revocation of the permit.

See our Enforcement and Civil Sanctions guidance for further information

This report does not relieve the site operator of the responsibility to

- Ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- Ensure you comply with other legislative provisions which may apply

Non-compliance scores and categories

CCS category	Description	Score
C1	A non-compliance that could have a major environmental effect	60
C2	A non-compliance which could have a significant environmental effect	31
C3	A non-compliance which could have a minor environmental effect	4
C4	A non-compliance which has no potential environmental effect	0.1

Operational Risk Appraisal (Opra) - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

Section 6 – General information

Data protection notice

The information on this form will be processed by the Natural Resources Wales (NRW) to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s). The NRW may also use and/or disclose it in connection with:

- Offering/providing you with its literature/services relating to environmental matters
- Consulting with the public, public bodies and other organisations (eg. 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 its service
- Freedom of Information Act/Environmental Regulations request

The NRW may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

Disclosure of information

The NRW will provide a copy of this report to the public register(s). However, if you consider that any information contained in this reports should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within twenty working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

Customer charter

What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with officer's line managers using the informal appeals procedure. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00 – 18.00) and ask for the Customer Contact team or send an email to enquiries@naturalresourceswales.gov.uk. If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on 0845 607 0987.

Welsh Language

If you would like this form in Welsh please contact your Regulatory Officer.