

Compliance Assessment Report

Report ID:
CAR_NRW0026307

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	10/06/2016	Time in	09:30	Out	13:30
Assessment type	Audit				
Parts of the permit assessed	1 Management; 2 Operations; 3 Emissions & Monitoring; 4 Information				
Lead officer's name	Broom, Mark				
Accompanied by	Cowie, Douglas,Alan Strawbridge HSE				
Recipient's name/position	Fiona Abbott/ Environment Manager	Date issued	23/11/2016		

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
A1 - Specified by permit	A	
B1 - Infrastructure - Engineering for prevention and control of emissions	A	
B5 - Infrastructure - Plant and equipment	X	
C1 - General Management - Staff competency/training	A	
C2 - General Management - Management system and operating procedures	A	
D2 - Incident Management - accidents, emergency and incident planning	X	
E1 - Emissions - Air	A	
G1 - Monitoring and Records, Maintenance and Reporting - Monitoring of emissions and environment	A	
G2 - Monitoring and Records, Maintenance and Reporting - Records of activity, site diary/journal/events	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

Scott McKinnon	Head of Health, Safety and Environment
Martyn Duggan	Director Engineering
Steve Maynard	Works Manager Energy
Ian Gofton	Programme Manager Heavy End
Fiona Abbott	Environment Manager
Steve Chilcott	Process Safety Manager
John Dennis	Occupational Safety Manager
Huub Schulte	Works Production Manager Coke ovens
Steve Harvey	Contracts Manager
Peter Toms	Senior Engineering Manager
Douglas Cowie	NRW
Alan Strawbridge	HSE
Mark Broom	NRW

To carry out a joint initial investigation into the events, causes and investigation into the power loss experienced at Tata Steel on 11/2/16 and to decide if the event is a major accident and COMAH and if there are implications under EPR.

Both IED and COMAH directives require regulators to work together and our Regulators code also requires this approach to be taken to avoid duplication of regulation. This joint initial investigation aims to decide who should lead on this issue.

Background

On the 11 February 2016, there was a loss of power to the Port Talbot steelworks which initiated a shutdown of the works and flaring of raw coke oven gas at the coke ovens. The Tata Steel investigation reached a number of conclusions and findings. The Internal emergency plan was enacted. During the afternoon of 11/2/16 11 insulators were changed at the two substations. Full power and all operations were restored within 24 hours of the power loss. There were no reported injuries and all staff and contractors were accounted for. EPR and Riddor notifications were made to the relevant authorities.

Tata's investigation concluded that there was a partial power loss caused by two separate flash overs at the Grange and Cefn Gwrgam substations. Heavy rain a few days earlier caused salt to build up on the substation insulators and the damp weather on the day then helped make the 'connection' across the insulators and then led to the flashovers.

The first flashover caused a partial power loss on site which became progressively wider as steam and power was lost across the site. The first flash over happened at 7.47 followed by loss of the steam power exhauster that needed the bleeders opening at 7.53. The coke ovens exhauster tripped a minute later. Records at the coke ovens showed that by 8.12 all battery two bleeders were lit and by 8.20 six of the eight bleeders on battery 1 were lit. A second flashover happened at 9.23. The records then show that the remaining bleeders were lit by 9.45 am. It is not clear when the last two bleeders were actually lit nor the reason why there was an apparent delay to these bleeders being lit.

The left hand photo shows the substation and the insulators and the right hand photo is of same substation showing the flashover



The Internal emergency plan (Major emergency plan {MEP}) was initiated at 8.15 and closed out at 12.00. Following confirmation of safe shutdown of the works area, operations were gradually restarted as power and steam were restored across the site. Within 24 hours production was restarted across the site. Status meetings were held over the next few days to review the situation and to confirm the successful and safe restarting of operations within the works.

Following stable production, Tata initiated a review of events and to investigate the power loss. This review can be split into several different work streams covering the (electrical) Power failure, the power generation and distribution failures (Energy works area review), the emergency response and the effect of the incident and recovery from the incident across the works by works areas. This last work stream separated out the coke ovens as a separate review.

Flashover

The cause of the flashover has been attributed to a sea salt build up on the insulators, then drying onto the ceramics followed by mist leading to formation of a conductive pathway across the insulators. Western Power use a three yearly maintenance of their insulators and Tata carry out annual washing and inspection of their insulators. A total of eleven insulators were replaced (by Western Power), six Western Power 'owned' ones and the remaindered inside the Tata Steel areas of responsibility and some others were cleaned. There were reports that similar flashovers happened elsewhere along the coast near Swansea.

The left hand photo shows the insulators and the right hand photo shows an insulator after a flashover.



Tata are looking at two things to avoid this problem. Firstly they are replacing the insulators with new insulators with coatings to minimise the risk of salt build up. Secondly they are funding a University project to attempt to predict when a flash over could occur based on insulator leakage, and voltage loss across the insulator with on-line monitoring. Tata need to, if they are not already in the maintenance system, a replacement plan for the insulators.

Emergency plan activation and review

The Internal Emergency plan (MEP) was initialised with the tactical control being set up on the visitors centre. The external services (Fire, Police etc) were informed and came to site. The power loss affected the communications systems and the site security barriers. Staff were allowed on site to avoid cars being stacked up on the approach road. The access barriers had to be jacked up by hand due to the loss of power. Due to the communications problems, mobile phones were used but some areas had little or no reception. As a result of these findings, Tata are changing their informer system, they are updating their corporate communications plan and also reviewing and updating their Internal Emergency plan (MEP) and lastly they are installing equipment to overcome the mobile phone black spots on site. It was clear that despite the problems, the plan was effective in dealing with this event not just the incident but also the recovery of the works back to production.

Energy generation and distribution

The two substations receive 66KV power and distribute it to the works and for Grange to the works and also the Llynfi valley. So loss of Grange would affect not only the works but other users as well. Energy Control manage the power (66KV) supplies into the works, the works generation but also the distribution of power at 11KV across the works. The first flashover affected Grange sections 1 and 3 and Cefn Gwrgan sections 2 and 3. The loss of power then tripped Boilers 5, 7 and the Mitchell boilers and then a number of turbo alternators, turbo blowers and fuel supplies to some boilers. At 9.23 a second flashover happen to lose Cefn Gwrgan Section 1.

Western Power Distribution (WPD) inspected the 66KV substations and replaced 6 WPD insulators and 5 others. Energy control stabilised the 11 KV system within an hours of the first flashover and started power plant recovery with Margam A&B. The power plant restoration was complete within 24 hours. Tate are now planning to replace the insulators across these substations with new coated ones.

Coke ovens response

There are 84 coke ovens split into two batteries at Port Talbot. The raw coke oven gas production is between 35 and 45 km³/hour/battery. Raw gas is collected using two collection

mains on each battery that combine before being treated in a single stream by-products plant. Steam driven exhausters draw raw gas from the two batteries and into the by-products plant under pressure control at each ovens. Each battery has 8 pressure relief systems – known as bleeders - of which four are automated and four are manual. Four bleeders are sufficient to relieve the pressure and gas produced by that battery. The flashover happened at 7.47, all the bleeders were opened at 7.53 followed by the exhausters tripping a minute later. All battery 2 bleeders were confirmed lit at 8.12 followed by six of the eight on battery 1 by 8.20. The remaining two bleeders were formally confirmed lit by 9.45.

To light the bleeders the coke oven battery top has to be evacuated to minimise the number of staff on the battery before the lighting systems are initiated. This operation typically takes around 15 to 20 minutes to complete. Part of the safety system is that when the bleeders are in use, nitrogen is used to purge the raw coke oven gas main to prevent air ingress. Once power had been restored to the coke ovens area, the bleeders were sequentially sealed and raw gas gradually reintroduced to the by-products plant and coal charging and gas production restarted by 18.35.

Reporting under COMAH Regulations 2015

Tata submitted the following EPR Schedule 5 Part B notification to NRW on 24 June 2016 an extract is shown below.

Any more accurate information on the matters notified under Part A	Please refer to information presented on 10/06/16. Un-ignited COG was released from the bleeders between 7:53 and 9.45am on the 11th February 2016. The calculated gas released is 8.7t, which contained 1.9t CO, 1.25t H₂ and 3.7t CH₄. It is not reportable under the COMAH 2015 Regulations due to the incident not meeting all three requirements specified within the Regulations (page 12, paragraph 34). <i>An occurrence will be a major accident if it meets the following three conditions:</i> <i>(a) it results from uncontrolled developments at an establishment to which the Regulations apply; and</i> The operations within Morfa Coke Ovens were in control following the first flashover and loss of power as all the bleeders opened to relieve pressure from the battery as designed. Across the site, all manufacturing operations were safely brought offline in a controlled manner. <i>(b) it leads to serious danger to human health or to the environment, inside or outside the establishment; and</i> There was no danger to human health as the autobleeders are ignited without intervention and the manual bleeders are ignited after 15mins of first opening in order to allow the battery top to be cleared prior to ignition. This procedure ensures that there is no one (Tata employees or contractors) in the vicinity. There was limited risk to the environment due to the rapid dispersion of the unignited gas in the atmosphere. There was no loss of material to either land or water courses. <i>(c) it involves one or more dangerous substances defined in the Regulations, irrespective of the quantity involved.</i> The substances released are noted above however condition (a) and (b) were not met.
Measures taken, or intended to be taken, to prevent a recurrence of the incident	A comprehensive management investigation has been undertaken and the output shared with NRW & HSE. Regarding the flashover, Tata is already undertaking maintenance (cleaning, review etc) of the insulators at a more frequent occurrence than other parties (1yr v 3yr) and since the incidence a number of workstreams have been

	implemented related to upgrading the Tata-owned insulators.
Measures to be taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment or harm which has been or may be caused by the emission	No further measures can be taken to address the unignited gas released to atmosphere. Bleeder maintenance/checks were reviewed as part of the management investigation and improvements have been identified (clarity of checks).

In this notification, Tata maintains that this event is not reportable under COMAH due to the incident not meeting all three requirements with the Regulations (page 12, paragraph 34).

An occurrence will be a Major Accident if it meets the following three conditions:

a) it results from uncontrolled developments at an establishment to which the Regulations apply;
and The operations within Morfa Coke Ovens were in control following the first flashover and loss of power as all the bleeders opened to relieve pressure from the battery as designed. Across the site, all manufacturing operations were safely brought offline in a controlled manner.

b) it leads to serious danger to human health or to the environment, inside or outside the establishment; and

There was no danger to human health as the autobleeders are ignited without intervention and the manual bleeders are ignited after 15mins of first opening in order to allow the battery top to be cleared prior to ignition. This procedure ensures that there is no one (Tata employees or contractors) in the vicinity. There was limited risk to the environment due to the rapid dispersion of the unignited gas in the atmosphere. There was no loss of material to either land or water courses.

c) it involves one or more dangerous substances defined in the Regulations, irrespective of the quantity involved.

The substances released are noted above however condition (a) and (b) were not met.

Following discussion between the COMAH CA and Tata, it was agreed that this incident did not meet the definition of a major accident.

Conclusions

The events on the morning of 11 February 2016 were due to a series of flashovers at the two main substations serving the works which partially disrupted the power supply. The main consequence of this partial loss of power was to progressively cause there to be a site wide power 'dip' and loss of steam pressure that affected the production across the site. Tata notified NRW about this event in accordance with its environmental permit requirements.

Two examples of this were the loss of the exhausters at the coke ovens and the blowers at the furnaces. The bleeders at the coke ovens had to be lit to minimise the release of raw coke oven gas and the furnaces had to be taken off wind so stopping gas production. This in turn caused there to be wide spread power failures across the site.

After enacting the on-site emergency plan, Tata restored power and steam supplies and the site returned to production within one day. The emergency plan worked

despite operational problems, for example with communications systems, and lessons have already been learned and implemented to reduce the risk of recurrences and mitigate the impact of similar future events.

NRW recognises that Tata's electrical insulator cleaning and maintenance checks are more frequent than those that appear to be routinely applied in the power industry. Hydrophilic coatings will be applied to all electrical insulators at Tata's substations. Further research is needed to understand the circumstances leading to this type of flashover event. Tata needs to produce a replacement plan for its electrical insulators at both substations if these components are not already programmed into Tata's maintenance system.

Tata should consider including this type of event in its MEP even if it is not a COMAH event (sub-COMAH), so that the company and the relevant emergency services and authorities are better prepared for any similar future event – especially if the weather conditions were such as to draw any steelworks emissions over the neighbouring populated areas.

NRW is satisfied that no environmental (EPR) permit conditions have been breached as a result of this event. This event was not reportable under COMAH, but it does have implications for the major accident scenarios and the response to such scenarios. We have therefore determined with HSE and Tata that COMAH is the most appropriate regime to take any actions forward.

EPR Compliance Assessment Report

**Report ID:
CAR_NRW0026307**

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	Date	10/06/2016

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			
D2	X	Tata should consider including this type of flashover event in its Major Emergency Plan (MEP) even if it is not a COMAH event (sub-COMAH), so that the company and the relevant emergency services and authorities are better prepared for any similar future event.	30/12/2016
B5	X	Tata needs to produce a replacement plan for its electrical insulators at both substations if these components are not already programmed into Tata's maintenance system.	30/12/2016

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.