



**Connah's Quay Power Station
Environmental Reporting Form to NRW
PART A**

Permit Number	EA/EPR/MP3337SH
Name of Operator	E.ON UK
Location of Installation	Connah's Quay Power Station Kelsterton Road Connah's Quay Deeside CH5 4BP
Time and date of the detection	22 nd July 2014

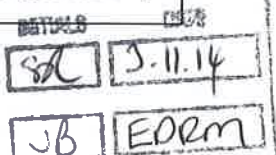
(a) Notification requirements for any malfunction , breakdown or failure of equipment or techniques, accident or fugitive emission which has caused , is causing or may cause significant pollution

To be notified within 24 hours of detection

Date and time of Incident	00:08 - 02:05 22 nd July 2014
Reference or description of the location of the event	Connah's Quay Power Station discharges Purge waters into the River Dee via emission point W1. Clause 2.3.3 of EPR/MP3337SH specifies that the discharge from the purge storage pond shall take place between one hour after the predicted time of high water and 4 hours after the predicted time of high water.
Description of where any release into the environment took place	High tide was predicted for 20:07pm (21 st July). Allowable purge window : 21.07pm (21 st July) to 00.07pm (22 nd July) Actual Purge occurrence : 21.18pm (21 st July) to 02.05am (22 nd July) Due to a failure in the computer logic systems, a warning alarm for the end of purge time period failed to sound, therefore plant operators were unaware until 2am when it was realised that the purge pond valve was not shut and had remained open since the end of the permissible purge time window.
Substance(s) potentially released	Water (meeting all current discharge parameters).
Best estimate of the quantity or rate of release of substance	Estimated maximum 1600 tonnes.
Measures taken, or intended to be taken, to stop any emission	Investigations into the logic systems have revealed a software fault. The permissible purge period ended at 00:07 with an in-built warning alarm to sound seven minutes beforehand. The current software control systems fail to recognise 00:00 as a permissible time code, and therefore the alarm failed to sound. Measures are now being made to amend plant control systems and prevent any potential re-occurrence.

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Description of the failure of the accident	Failure of logic systems to sound purge closure alarm resulted in extended purge discharge window by two hours.
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(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/source	W1
Parameter(s)	Water
Limit	Multiple (none exceeded)
Measured value and uncertainty	N/A
Date and time of monitoring	00:07 to 02:05am
Measures taken or intended to be taken to stop the emission	Purge discharge ended immediately upon discovery. Review of occurrence completed, software logic issue has been identified and will be examined and amended to prevent re-occurrence.

(c) Notification requirements for the detection of any significant adverse effect	
To be notified within 24 hours	
Description of where the effect on the environment was detected	W1
Substance(s) detected	Water
Concentration(s) of substance(s) detected	N/A
Date of monitoring /sampling	N/A

Name*	Andy Black
Post	Environmental Advisor
Signature	A D Black
Date	22/07/2014

*authorised to sign on behalf of E.ON UK plc

E.ON Connah's Quay Powerstation. PART B NOTIF.



Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.

E.ON have completed an internal investigation into this incident and identified a number of additional pieces of information regarding the incident.

At 02.00 on the 22nd July 2014, it was noticed by the operator that the purge system was still open despite being past the purge window closure time limit (00:07am).

Therefore the power station had exceeded the permissible three hour purge waters discharge window as defined by Environment Permit MP3337SH.

High tide on 21st July 2014 was at 20:07pm.

Purge discharge initiation was at 21:07pm

However, due to an unusually complicated period of operation, the operators did not apply a manual shutdown, instead relying on the automatic backup shutdown process built into the power station computer management systems.

This process should automatically activate closure of the purge discharge valves at 7 minutes prior to the end of the purge window period (00:00 for a 00:07am end). A flaw in the automated backup process resulted in a failure to initiate valve closure and therefore the purge continued beyond its allotted time. Manual operator intervention resulted in the ending of purge discharge two hours later (02:07am).

A revised calculation of discharge volumes has identified a reduction in actual purge water emission outside of the time window from three of the four units (unit 2 was inoperative and under outage conditions). This has confirmed a total purge discharge of 1,136 Tonnes during the breach period (00:08am to 02:07am).

Unit 1 - 120 minutes at 180 tonnes / hr = 360 tonnes

Unit 3 - 72 minutes at 193 tonnes / hr = 232 tonnes

Unit 3 - 120 minutes at 150 tonnes / hr = 300 tonnes

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	Unit 4 - 120 minutes at 122 tonnes / hr = 244 tonnes The investigation shows that there were two main factors in this event 1, The operators on duty had relied upon the backup system to shut down the purge, and failed to ensure that the system had been effective for almost two hours. 2, The backup system for ensuring that the purge system shut itself down did not operate. Therefore a number of measures have been applied to ensure that this incident cannot re-occur, and these are detailed below.
Measures taken, or intended to be taken, to prevent a recurrence of the incident	Immediate measures applied were applied as follows : 1, Installation of an additional timer process for verification of correct purge discharge window timings (independent timing system). 2, Application of a further procedure to ensure this process is effective when a purge window rolls over midnight. 3, Completion of a full Investigation into the failure of the backup valve shutting process, highlighting the identification of a flaw in plant computer logic systems which subsequently resulted in a failure to successfully activate purge discharge closure process as intended. 4, Modification of the plant computer logic systems to apply a complete and permanent amendment, involving the generation of a separately triggered alarm as a 'catch for all' for the purge window. This modification ensures no further incidents may re-occur. 5, Installation of a third, separately triggered alarm to signify when the purge system is approaching 3 hours of running as a further backup trigger to plant operators. 6, Additional longer term measures involve revisiting the Plant operator training packages for production team members to remind of the need to avoid reliance upon working to alarms as part of a 'normal' approach to plant operation.

Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	The penstocks were closed as soon as the exceedance of the purge window was identified. Whilst discharge occurred outside the purge window, the continuous analysers on site were able to confirm that during the two hours of additional discharge, no other monitoring parameters were exceeded, and emissions remained within relevant permit limits.
The dates of any unauthorised emissions from the installation in the preceding 24 months.	Current Transformer Fire : 18 th July 2012 Hydrochloric Acid Leak : 16 th Sep 2013

Name*	Andy Black
Post	Environmental Advisor
Signature	
Date	28 th August 2014

* authorised to sign on behalf of E.ON UK plc

