



**CONNAUGHT QUAY POWER STATION & GAS TREATMENT PLANT : END OF YEAR
ENVIRONMENTAL REVIEW. 2013**

Overview

The plant has undergone a notably reduced period of operation in comparison to many previous years. This is mostly due to market influences and a reduction in general demand of electricity generation from Combined Cycle Gas Turbine plant. Therefore the review period has seen concentrated efforts upon advancement of plant technology through the installation and commissioning of a Chlorine Dioxide cooling water dosing plant, and the upgrading of Unit 4 Gas Turbine combustion systems to latest GE Technology (DLN2.6). These upgrades will allow the plant to meet the requirements of the Industrial Emissions Directive in years to come.

This document is submitted in line with the requirements of clauses 4.2.2 (a) and 4.2.2 (d) of the Environmental Permit MP3337SH which regulates the installation.

1, Occurrence of Notifiable Incident

One fully reportable incident has occurred during the relevant reporting period. This involved a failure in the Water Treatment Plant allowing a regeneration of a resin bed to occur despite the stream being placed in isolation. Due to the isolation, water passed back into the Hydrochloric Acid and Sodium hydroxide bulk tanks, resulting in tank level rises and the displacement of HCl into the tank bund (via breather pipework). Some displaced acid found its way to the bund floor, where it then proceeded to eat through the bund floor, and enter into the site chemical drains system.

A full root cause analysis and external investigation has been completed, alongside investigation and removal of contaminated soil before repairs to the bund floor were made. Investigative works are now continuing into the no return valve failure and water treatment plant PLC logic amendments (to prevent re-occurrence).

This incident was assigned a CCS score 3.

2, Emissions to Air

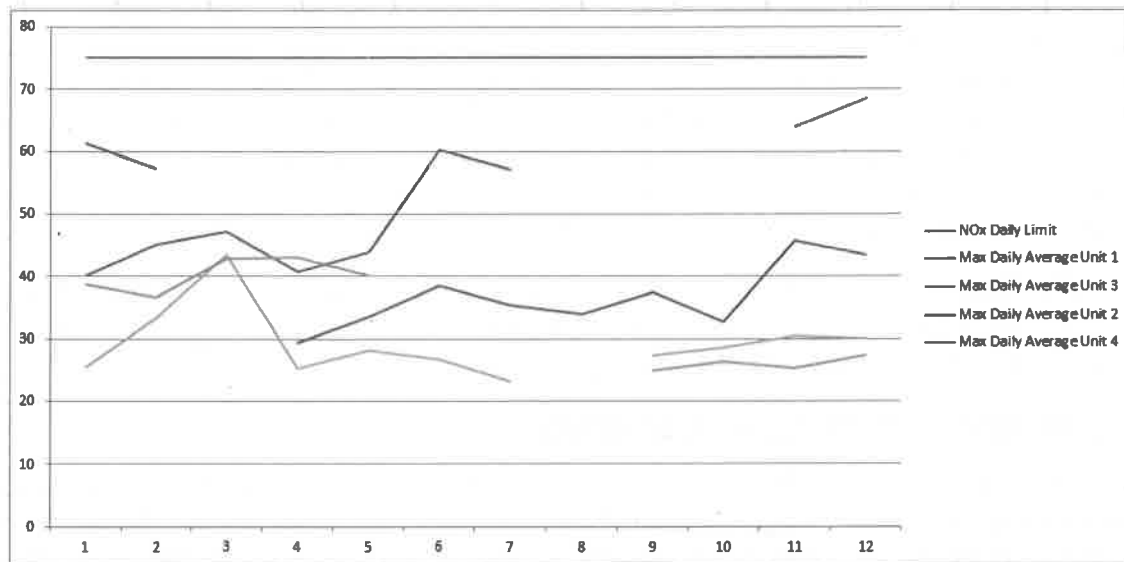
NOx

All emissions from the units have remained within emission limit boundaries. The benefits in reduced NO_x emission concentrations (a result from newly installed DLN2.6 equipment upon Unit 4) can be seen. Due to the extended time period from last outage, the trend in rising NO_x emissions (whilst within limits) from Unit 2 can be clearly observed. The trend will be halted by the forthcoming Unit 2 outage in May 2014 which will see the apparatus undergo a full strip

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down, installation of DLN2.6 burner technology installation and complete replacement of steam turbine. This new turbine will result in re-installation of the last two rows of LP steam turbine blades, lost in a plant failure in 2008, thus returning plant efficiency to above levels experiences in 2007 (prior to turbine blade loss).

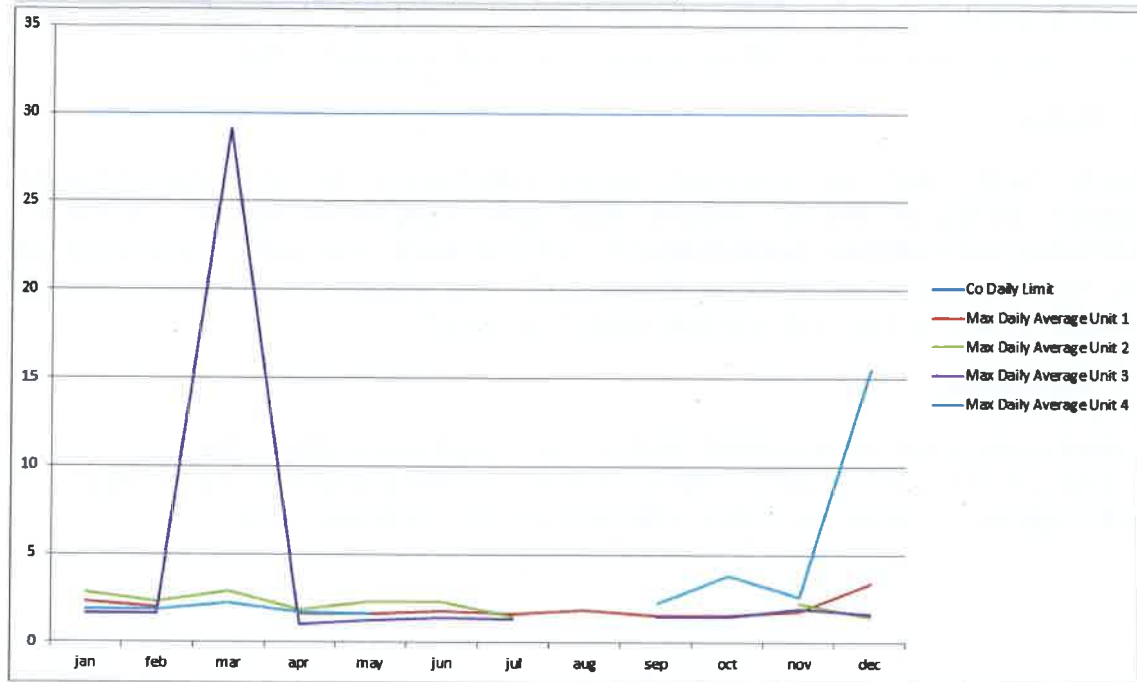
NOx Emissions : Units 1,2,3,4 across 2013.



CO

This graph indicates spikes in CO reporting, the Q1 Unit 2 CO spike was due incorrect settings within the Envirosoft software allowing start up and shut down emissions to be taken into consideration within reporting data. The q4 spike for Unit 4, does indicate the higher CO levels initially being experience during Unit 4 operation under DLN2.6. This is in part to the self adaptive nature of the engine management system software, and is under review as part of the DLN2.6 commissioning program. Lessons learnt from this will then be employed in the future 3 unit upgrades.

CO Emissions : Units 1,2,3,4 across 2013



3, Emissions to Water

The Chlorine Dioxide project continues to advance. A full report upon operation, management and monitoring of the ClO₂ generation and supply system will shortly be submitted to Natural Resources Wales as per the requirements of Permit MP3337SH IC20. There have been no changes to river or towns mains extraction / discharge processes.

3.1 Towns Mains Consumption

Full details of annual towns mains usage will be provided with forthcoming Pollution Inventory reporting.

3.2 River Water Consumption

Full details of annual river water usage will be provided with forthcoming Pollution Inventory reporting.

4, Emissions to Land

There have no deliberate emissions to land from the installation.

5, Waste

For the first time since IPPC permit granting, all waste management issues have been overseen by SITA the waste contractor, which should see an increase in recycling rates for wastes arising from the installation.

6, Odour

There have been no external odour complaints made regarding the installation during 2013. There are no reasons why the plant may anticipate to pose an Odour concern at the current time.

7, Noise

There have been no external noise complaints to the installation within 2013. A BS4142 report has been completed by an external, suitable accredited Environmental Consultancy and will be submitted to the regulator as soon as completed. The report is believed to not identify any potential issues with the plant.

8, Vibration

There have been no external vibration complaints from the installation within 2013. There are no reasons why the plant may anticipate to pose an Odour concern at the current time.

9, Plant Modifications / Upgrade Projects

9.1 Chlorine Dioxide Project

The dosing project is now fully installed and operating to Stage 1 of the commissioning process, allowing Chlorine Dioxide to be generated and dosed to all four cooling towers. The site chemist is maintaining a four week project to monitor the effectiveness of the dosing system with the aim of developing an all-encompassing dosing strategy for the four main cooling towers. Following completion of this program, IC20 will be submitted to Natural Resources Wales for review. Whilst the dosing pipework and tank to allow stage 2 of the commissioning plan has now been installed, there will be no work upon stage 2 until IC20 has been accepted by the regulator.

9.2 DLN2.6

This project continues to uprate each of the gas turbines in turn with the latest burner technology from the Original Equipment Manufacturer (General Electric) to DLN 2.6 standard. The project involves replacement of the burner equipment, fuel supply and engine management systems to each turbine in turn. Unit 4 was the first unit to undergo the modification, and the program will continue with a full outage and modification to Unit 2 in 2014. Finally Units 1 and 3 will both benefit from the plant upgrade in 2015.

Unit 4 has now fully returned to service and whilst commissioning program and trials have been completed, fine tuning of the unit

continues as the plant learns to utilise the new burner technology to minimise start up and shut down times. All further Units will then benefit from the lessons learnt during Unit 4 commissioning.

10. Contamination / Decontamination of Site.

Previous to power station construction, a full contaminated land investigation and remediation project was completed upon the installation footprint, in conjunction and subsequent full approval from the Environment Agency (the regulator of the site in 1995 - 1997). Following plant commissioning, Powergen / E.ON have maintained a preventative approach to land contamination.

The Hydrochloric Acid leak incident (see section 1 of this document) showed the first potential land contamination issue since plant build. However, as a part of the investigative / remediation process for the incident, a full decontamination of the incident was completed.

Following the spill, the bund floor, walling and outer perimeter were excavated to reveal the full extent of contamination. Continued monitoring and analysis was then performed whilst all areas of contaminated soil and hard-core was removed from the incident area until soil of a neutral pH was reached. Then following additional investigations to confirm pH / soil contamination levels the land was retro filled with clean hard-core and subsequent repairs to the bund floors and walling completed. E.ON is confident there is no further potential contamination within the incident area.

11. 2014 Preview

Connahs Quay anticipates that 2014 will see further development of the chlorine dioxide dosing project, installation of DLn2.6 technology into Unit 2 and additional modifications to the plant to increase efficiency / sustainability and reduce environmental impact.

