

**IPPC Permit BJ 7336
Variation SP3736SJ**

**Aylesford Newsprint
Sludge Combustor Annual
Performance Report 2008**

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1. Introduction

Aylesford Newsprint Limited (ANL) operates a sludge combustor at its Aylesford site and this combustor is subject to monitoring and reporting requirements dictated by the Waste Incineration Directive (WID) 2000/76/EC. Consequently, ANL has to submit to the Environment Agency an annual report summarising the performance of the sludge combustor for the previous year of operation, including an assessment of its emissions against Emission Limit Values (ELVs) detailed in the WID Directive.

This report constitutes ANL's Performance Summary report for its sludge combustor during 2008.

2. Summary of Operator & PPC Permit Details

Table 2.1 below summarises the operator details (Aylesford Newsprint Limited) as well as contact details and the PPC permit which applies to the sludge combustor.

Table 2.1 Summary of Operator & PPC Permit Details

Name of Company	Aylesford Newsprint Limited
Name of Plant	Sludge Combustor
Permit & Variation Number	Permit No.: BJ7336 Variation No.: SP3736SJ
Address	Aylesford Newsprint Limited Newsprint House Bellingham Way Aylesford Kent ME20 7DL
Phone	01622 76 6000
Contact Name	Emily Boram
Position	Environmental Scientist
Description of Waste Burnt	Paper making waste (sludge and effluent treatment plant sludges)

3. Plant Description

The main purpose of the activities at the installation is the production of newsprint from recycled newspapers and magazines. A directly associated activity within the installation includes the treatment of aqueous effluent by means of an on-site biological effluent treatment plant. Both the paper production process and the on-site biological treatment of aqueous effluent give rise to sludge and these sludges are incinerated in an on-site sludge combustor.

Dewatered sludge is transferred to a storage silo from which it is fed to the sludge combustor. The combustion of sludge generates heat and this heat is recovered in an integral boiler system, which in turn generates steam. The steam generated is fed to a turbine for power generation.

The gases that are generated by the combustion process are cleaned and discharged through a dedicated stack. There are no releases to water or sewer from the air pollution abatement system.

The ash that is produced in the sludge combustor is collected and sent off-site for re-use or disposal.

4. Overall Performance

For 2008, the performance of ANL's sludge combustor is summarised in Table 4.1 below. The information has also been presented in the Environment Agency's proforma (See Appendix C).

It should be noted that the sludge combustor has been running intermittently through out 2008 due to permitting issues at Margetts Pit. It has resulted in the suspension of sludge burning when the ash disposal routes are unavailable.

Table 4.1 Overall Performance of ANL's Sludge Combustor (2008)

Performance Indicator	Value	Unit
Maximum sludge throughput Permitted	150,000	Tonnes per annum
Total waste incinerated	79,412	Tonnes
Type of waste incinerated	Paper making waste (sludge and effluent treatment plant sludges)	EWC Code 03 03 05
Total Plant Operating Hours	6,631	Hours
Steam Generated	131,738	Tonnes
Natural gas	30.165	Kg / tonne of waste incinerated
Mass of bottom ash produced	9.618	Kg / tonne of waste incinerated
Mass of APC residues (fly ash) produced	643.859	Kg/ tonne of waste incinerated

Table 4.2 Fate of ash from sludge combustor

Type of Ash	Fate	%
Bottom Ash	Landfill	100%
APC Residues (fly ash)	Landfill	43.28%
	Recycled	56.72%

5. Summary of Plant Monitoring

To ensure efficient operation and to safeguard the environment, the following monitoring is undertaken.

Table 5.1 Details of Sludge Combustor Monitoring Performed

Pollutants measured	Continuously	Periodically
Particulates	✓	✓
Oxides of Nitrogen	✓	✓
Total Organic Carbon (TOC)	✓	✓
Carbon Monoxide	✓	✓
Hydrogen Chloride		✓
Hydrogen Fluoride		✓
Sulphur dioxide		✓
Mercury		✓
Cadmium and Thallium		✓
Arsenic, Lead, Chromium, Cobalt, Copper, Manganese, Nickel and Vanadium		✓
Dioxins/ Furans		✓

With regard to the pollutants that are monitored continuously, ANL keeps a log of any downtime associated with the individual continuous emission monitoring systems. Table 5.2 summarises the downtime and operational time for each Continuous Emissions Monitor (CEM).

Table 5.2 Sludge Combustor CEM Downtime (excluding calibration)

Continuous Emissions Monitor (CEM)	CEM Hours downtime	CEM % Operational time (based on total operating hours)
Oxides of Nitrogen (NO _x) meter	3 hours 30 minutes	99.96%
Carbon Monoxide (CO) meter	3 hours 30 minutes	99.96%
Particulates meter	3 hours 30 minutes	99.96%
Total Organic Carbon (TOC) meter	3 hours 30 minutes	99.96%

6. Summary of Emissions to Air

Oxides of Nitrogen (as NO_x), Particulates and Carbon Monoxide (CO)

Emissions from the sludge combustor associated with NO_x (NO & NO₂), particulates and CO are summarised in Charts A1 to A6 (Appendix A). It can be seen from these charts that the average half-hourly emissions of NO_x, particulates and CO are all below the Emission Limit Values (ELVs), both for the ½ hourly and daily average ELV. Since the sludge combustor is classed as an existing incinerator in terms of the WID Directive, the limits specified in Table 6.1 below apply.

Table 6.1 WID Emission Limit Values for ANL's Sludge Combustor

Substance	Emission Limit Value (mg/m ³)	
	½ Hourly Average	Daily Average
Oxides of Nitrogen	400	350
Particulates	30	10
Carbon Monoxide	100	50
Total Organic Carbon (TOC)	20	10

Source: ANL's PPC Permit BJ7336/ Variation SP3736SJ

These limits are applicable until 1 January 2010 and apply to existing incineration plants.

Total Organic Carbon

The sludge combustor is classed as an existing incinerator in terms of the WID Directive, the TOC limits specified in Table 6.1 apply.

Emissions from the sludge combustor associated with TOC are summarised in Charts A7 and A8 (Appendix A). It can be seen from these charts that the average half-hourly emissions of TOC are all below the Emission Limit Values (ELVs), both for the ½ hourly and daily average ELV.

The 6-monthly spot sample indicates that volatile organic compounds (VOCs) expressed as TOC did not breach this limit (see table B2, Appendix B).

VOCs, Gaseous chloride and fluorides, Dioxins, Furans, PCBs and Metals

Emissions from the sludge associated with VOCs, Gaseous chloride and fluorides, Dioxins, Furans, PCBs and metals are sampled every 6 months. Table B1 (Appendix B) summarises the sample results

obtained for 2008 whilst Table B2 (Appendix B) summarises the WID Emission Limit Values. From Table B2, it can be seen that the sludge combustor at ANL's Installation is compliant with the ELVs stated in WID.

7. Emissions to Water

There are no emissions to water attributable to the operation of the sludge combustor.

8. Summary of Plant Compliance

Compliance with Permit Conditions

There was one non-compliance event that required reporting to the Environment Agency. This is summarised below whilst Appendix D provides more detail of each event and the actions taken.

- ❑ 5 May 2008: Whilst the sludge combustor was being re-started, a Total Organic Carbon and Carbon Monoxide emission was recorded.

For all other times, operation of the sludge combustor was in compliance with the limits specified in the PPC permit and associated variations.

Summary of Enforcement Actions

There was no enforcement actions for the year 2008 associated with the sludge combustor.

9. Summary of Plant Improvements

Future Improvements

To ensure that the revised oxides of nitrogen (NOx) emission limits that come into force in the year 2010 are met, a study has been conducted which investigates the methods that ANL will adopt to meet the revised 2010 NOx emission to air limits. The study was summarised in a report which was issued to the Environment Agency on 15th December 2008.

10. Summary of Information made available to the Public

In furtherance of its objective for social responsibility, Aylesford Newsprint Limited publishes an annual report that summarises its Safety, Health, Environmental and Fire Prevention (SHEF) policy and performance for the previous year. These SHEF reports provide a summary of the following aspects of Aylesford Newsprint's business:

- Environmental Performance,
- Safety Performance
- Operation performance
- Community/ Stakeholder Issues
- Targets for the forthcoming year.

The SHEF report is available from Aylesford Newsprint's website (www.aylesford-newsprint.co.uk)

In addition, as part of its Permit obligations, reports are submitted to the Environment Agency on a regular basis and these reports summarise the emissions to the environment as well operational performance. These reports are held by the Environment Agency.

This report is held by the Environment Agency as well as being available from Aylesford Newsprint's website.

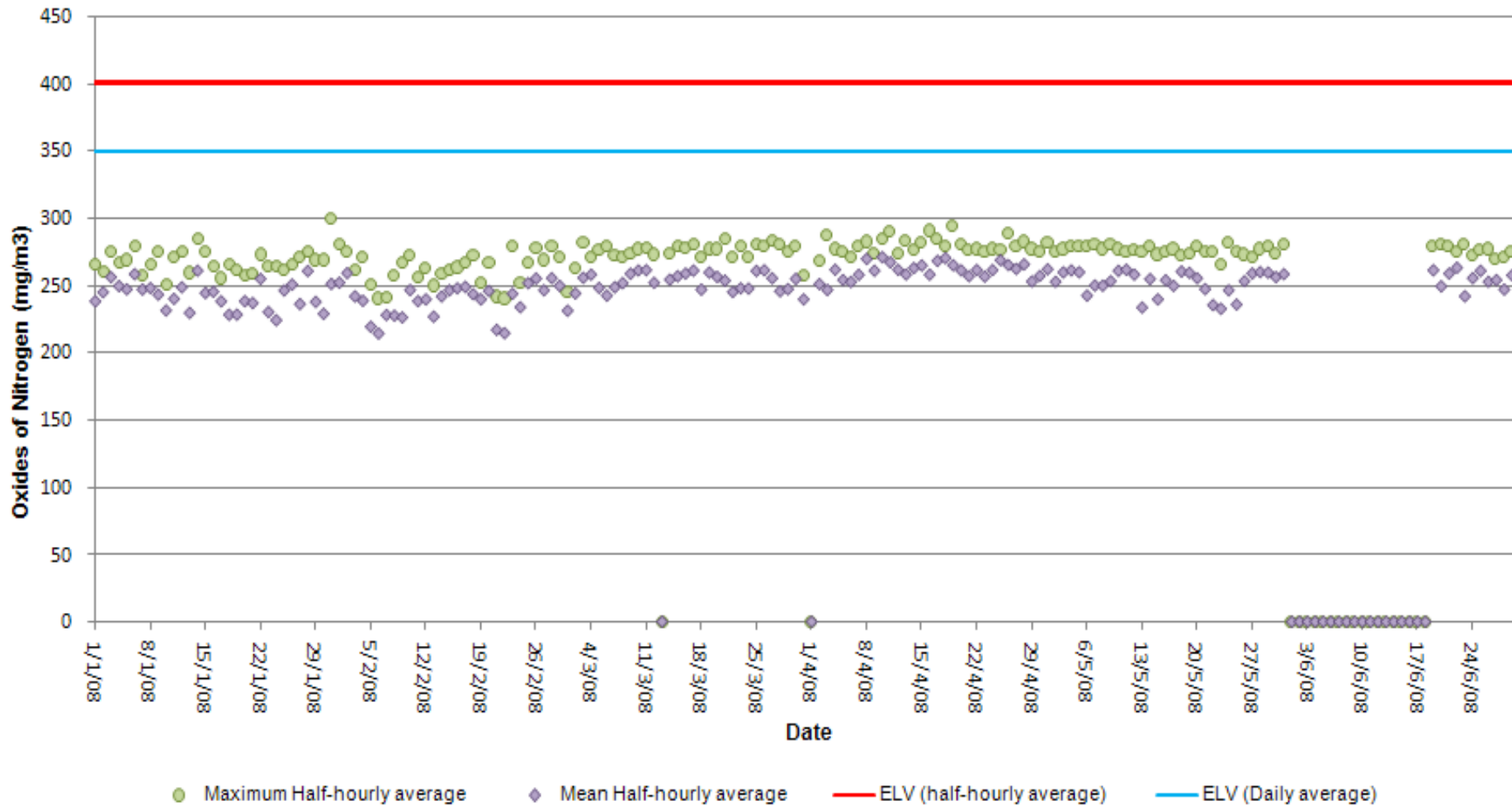
Appendix A

Summary of Sludge Combustor Emissions (Oxides of Nitrogen, Carbon Monoxide, Particulates and TOC)

Sludge Combustor Annual Performance Report 2008

Chart A1 Oxides of Nitrogen (January – June 2008)

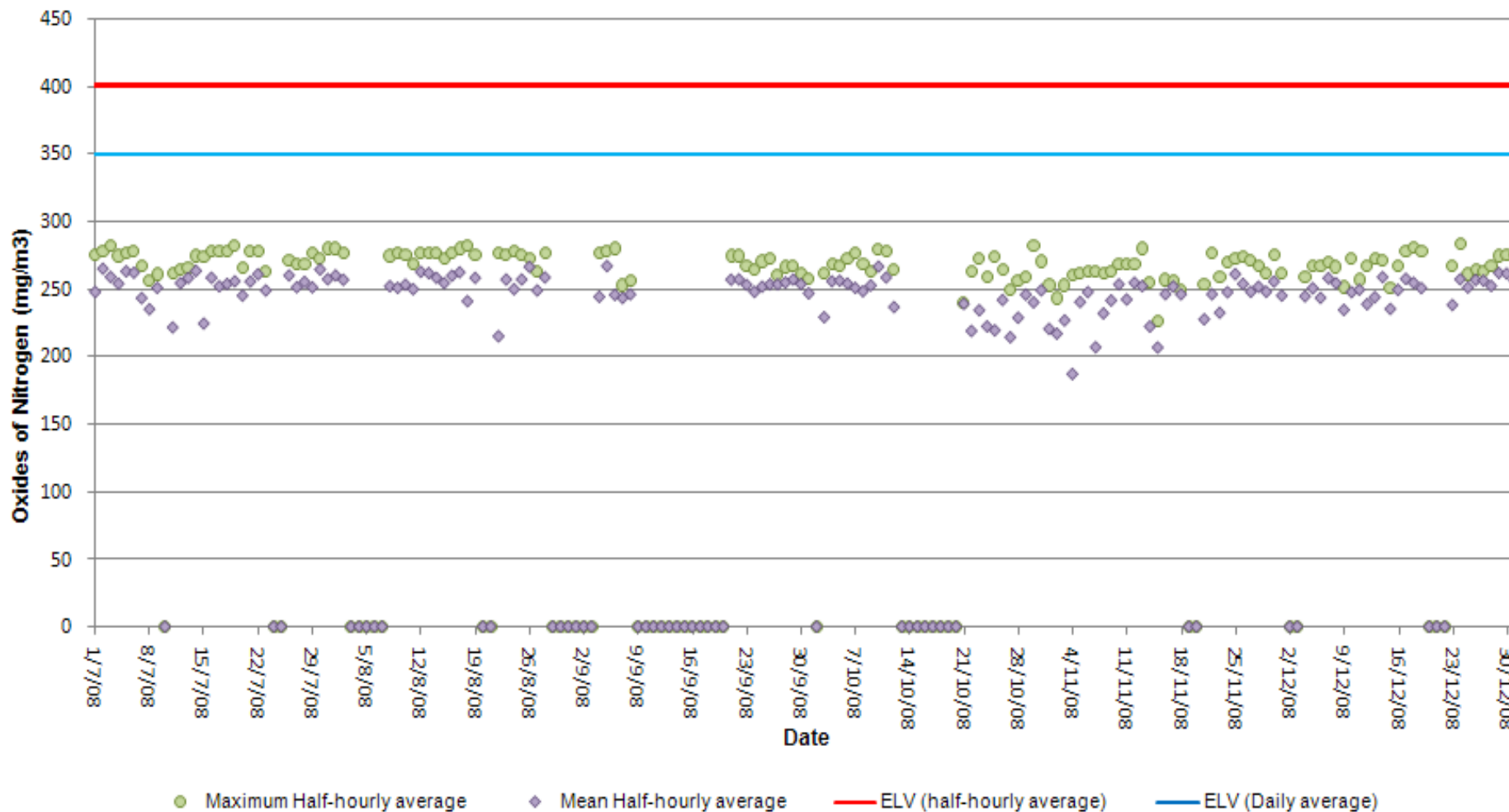
Oxides of Nitrogen (January - June 2008 Summary)



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Chart A2 Oxides of Nitrogen (July – December 2008)

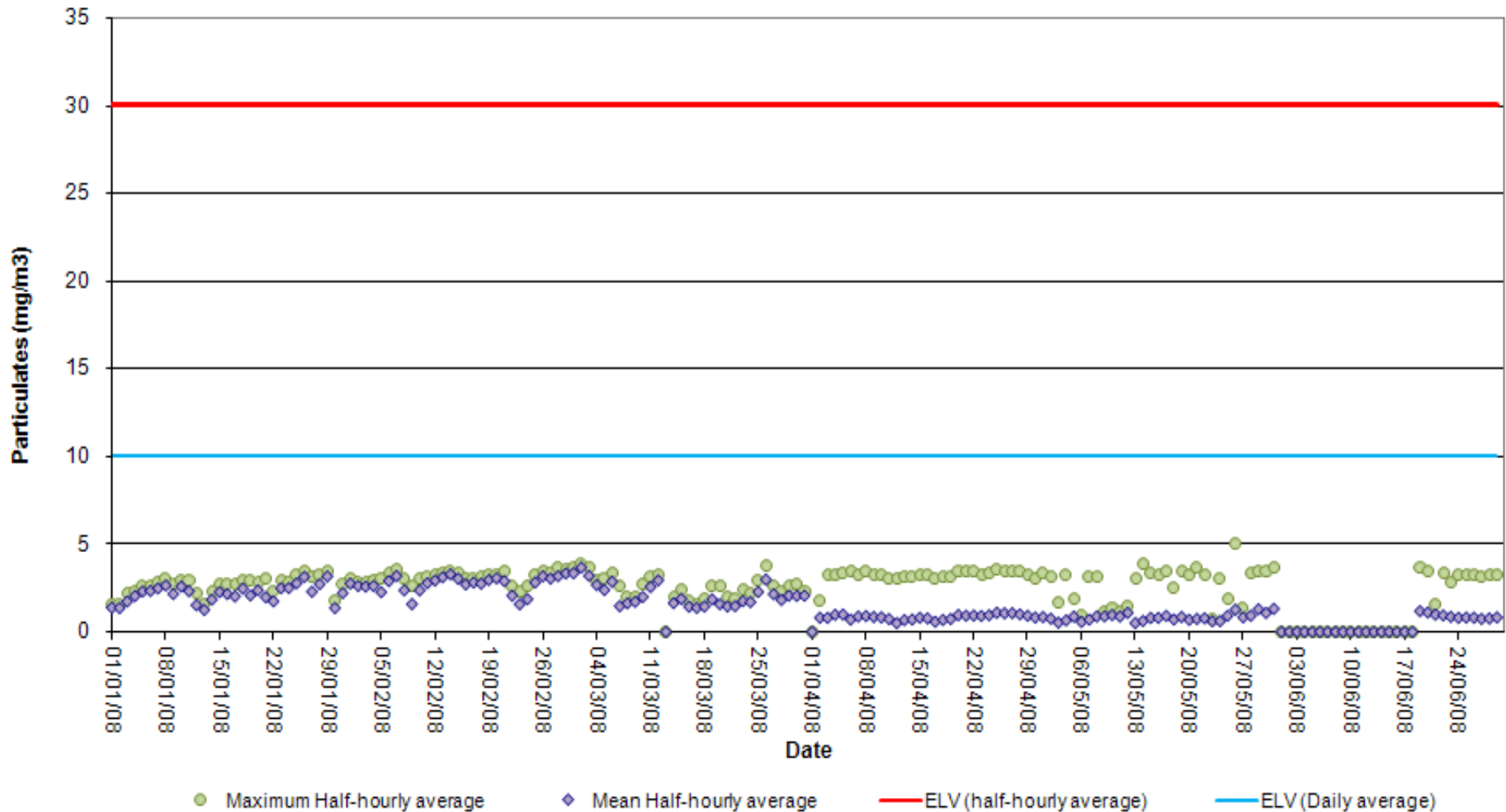
Oxides of Nitrogen (July - December 2008 Summary)



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Chart A3 Particulates (January – June 2008)

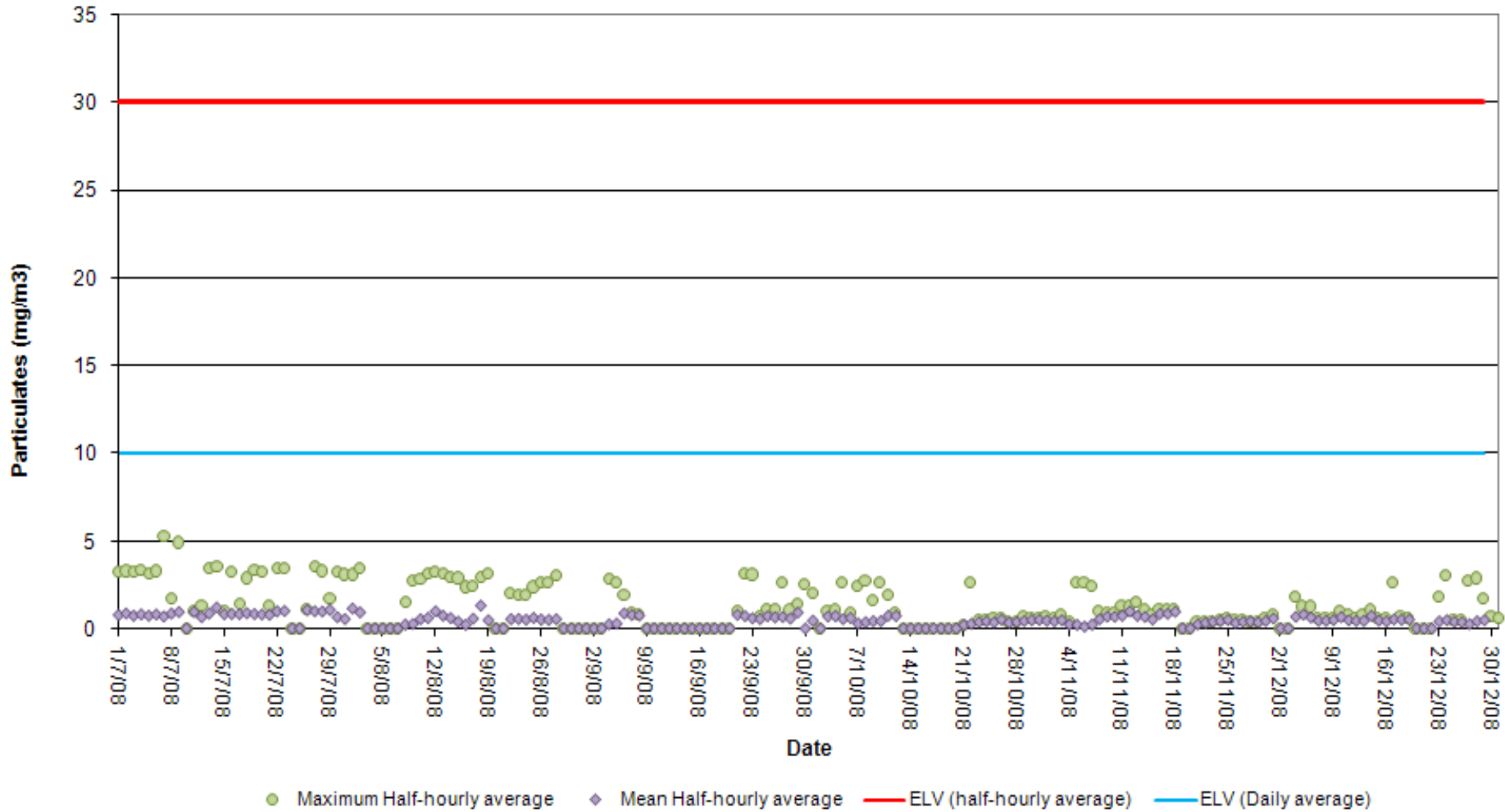
Particulates (January - June 2008 Summary)



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Chart A4 Particulates (July – December 2008)

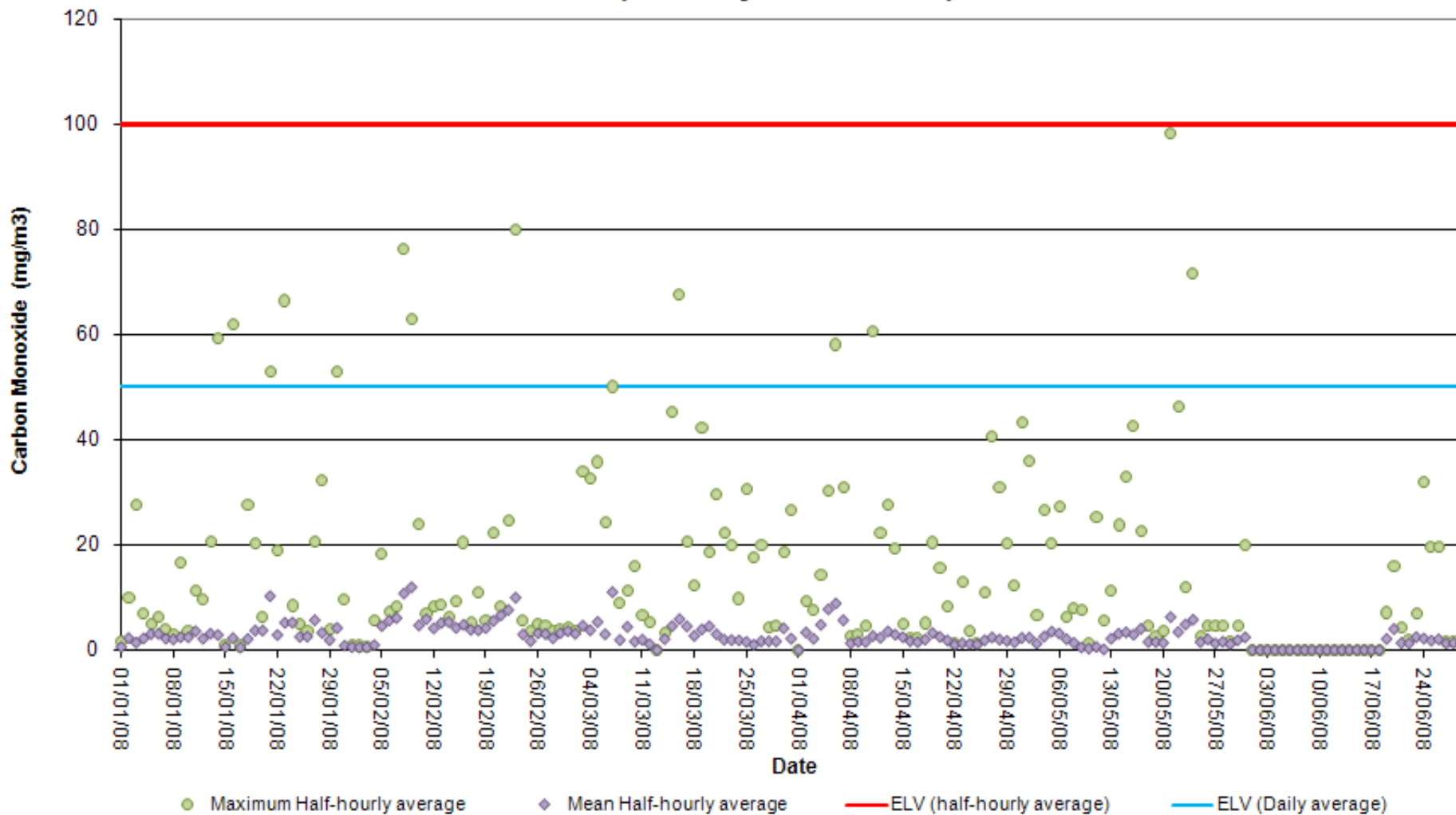
Particulates (July - December 2008 Summary)



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Chart A5 Carbon Monoxide (January – June 2008)

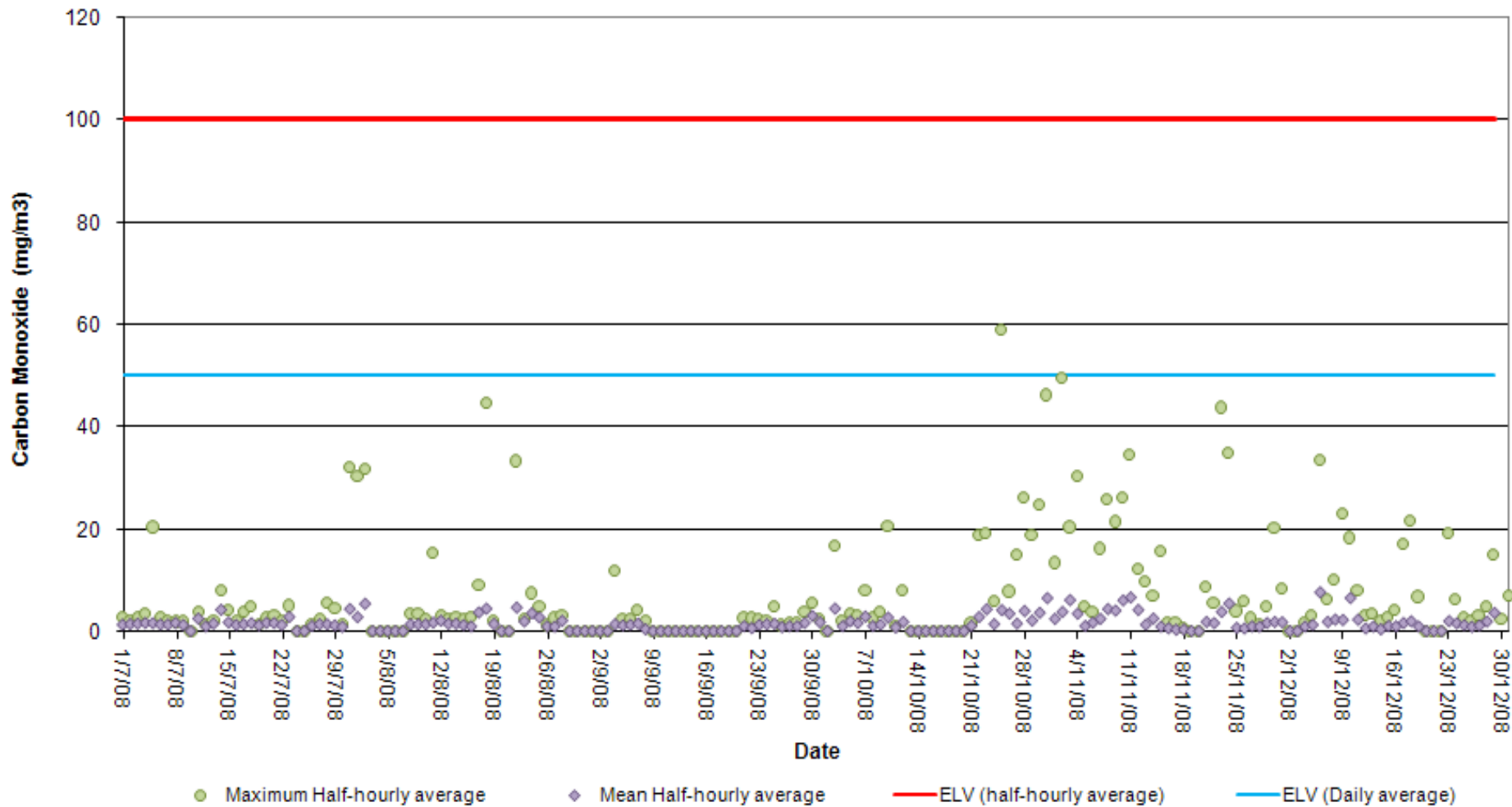
Carbon Monoxide (January - June 2008)



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Chart A6 Carbon Monoxide (July – December 2008)

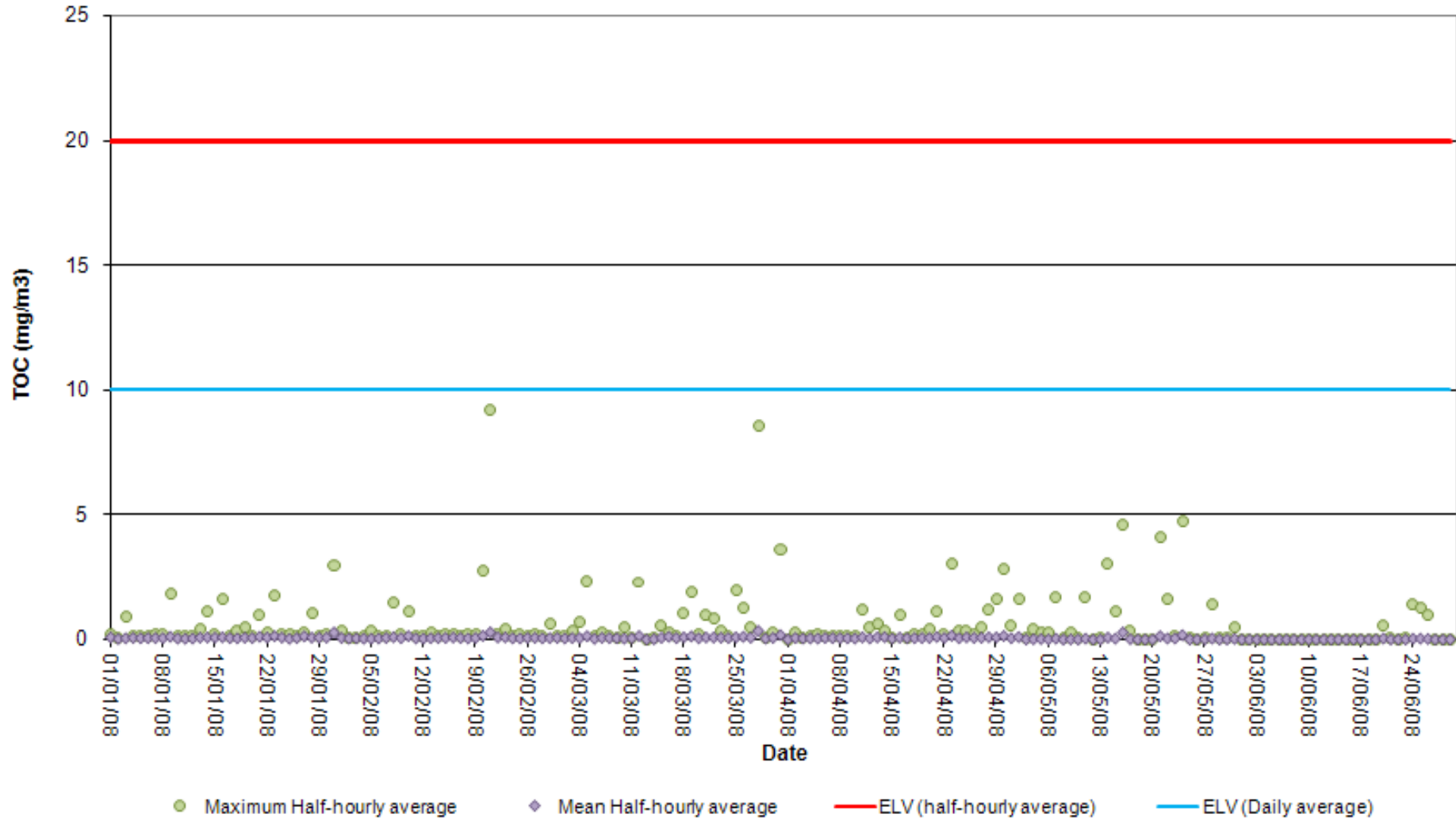
Carbon Monoxide (July - December 2008)



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Chart A7 Total Organic Carbon (January – June 2008)

Total Organic Carbon, TOC (January - June 2008)

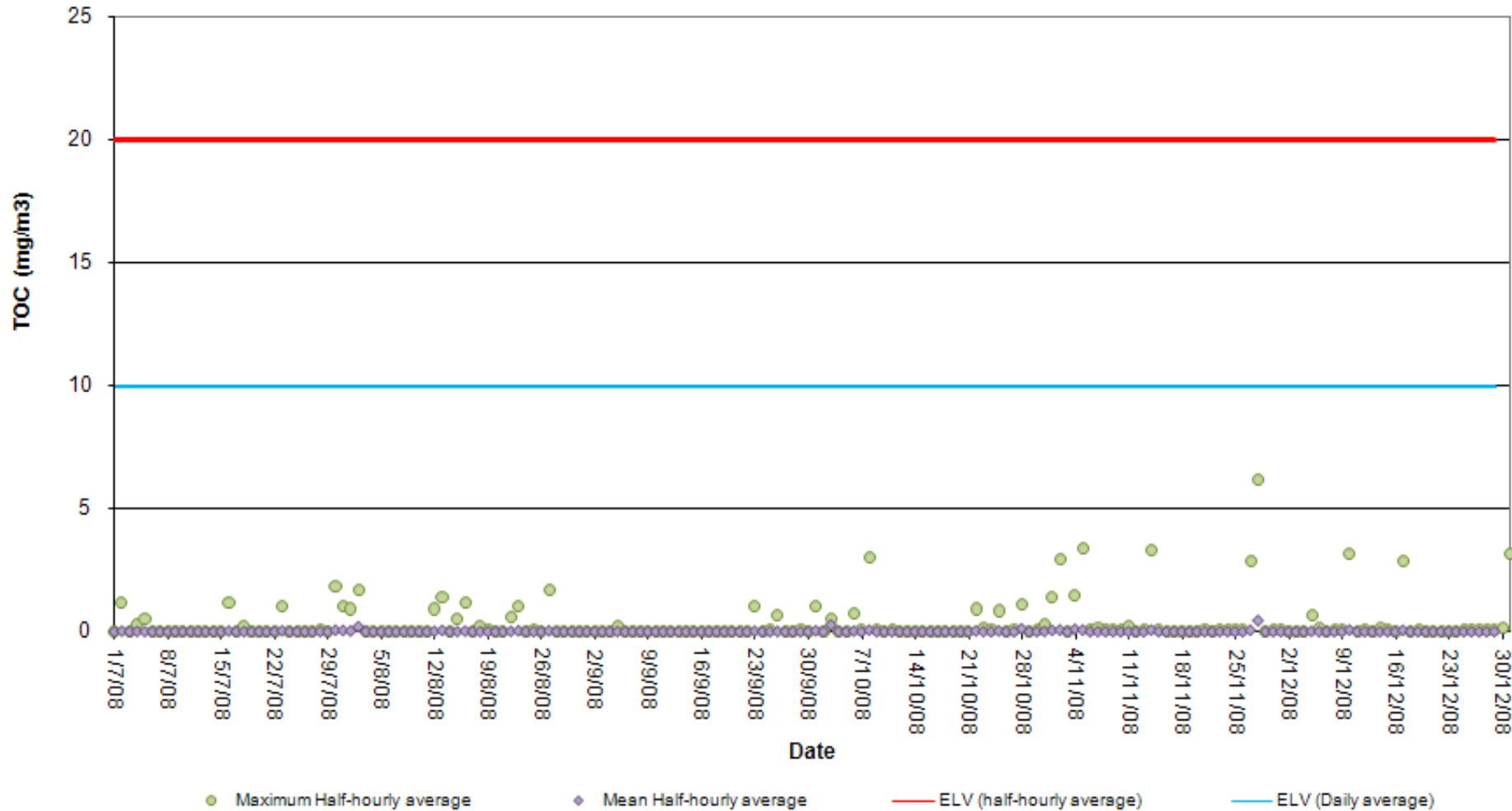


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Chart A8 Total Organic Carbon (July – December 2008)

Total Organic Carbon, TOC (July - December 2008)

Chart Area



Appendix B

Summary of 6-monthly sample Results & Compliance with WID Emission Limit Value (ELVs)

Sludge Combustor Annual Performance Report 2008

Table B1 6-monthly Gaseous Emission Test Results for ANL's Sludge Combustor

Substance	Units	Jun-08	Dec-08	Annual Average
		Average	Average	
VOC's (as TOC)	mg/m3	0.06	0.02	0.04
Gaseous chlorides (as HCl)	mg/m3	0.63	0.21	0.42
Gaseous fluorides (as HF)	mg/m3	-	-	-
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (mammals) (ng/m3)	ng/m3	0.0015	0.0003	0.0009
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (birds) (ng/m3)	ng/m3	0.0026	0.0001	0.0014
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (fish) (ng/m3)	ng/m3	0.0015	0.0017	0.0016
Polychlorinated Aromatic Hydrocarbons (PAHs)	mg/m3	2.3	-	1.2
Polychlorinated biphenyls (PCBs) (Human) TEQ	ng/m3	0.00011	0.00410	0.00211
Polychlorinated biphenyls (PCBs) (Birds) TEQ	ng/m3	0.00015	0.00560	0.00288
Polychlorinated biphenyls (PCBs) (Fish) TEQ	ng/m3	0.00004	0.00430	0.00217
Cadmium (mg/m3)	mg/m3	0.0057	0.0043	0.0050
Mercury (mg/m3)	mg/m3	0.003	0.004	0.003
Arsenic and compounds (as As)	mg/m3	0.001	0.089	0.045
Lead and compounds (as Pb)			Grouped with Arsenic	
Chromium and compounds (Cr)			Grouped with Arsenic	
Cobalt and compounds (as Co)			Grouped with Arsenic	
Copper and compounds (as Cu)			Grouped with Arsenic	
Manganese and compounds (as Mn)			Grouped with Arsenic	
Vanadium and compounds (as V)			Grouped with Arsenic	
Nickel and compounds (as Ni)			Grouped with Arsenic	
Antimony and compounds (as Sb)			Grouped with Arsenic	
Particulates (Run 1)	mg/m3	0.82	-	0.41
Particulates (Run 2)	mg/m3	0.87	-	0.44
NO and NO2 expressed as NO2	mg/m3	249.5	266.4	258.0
Carbon Monoxide (CO)	mg/m3	3.05	7.47	5.26
Sulphur Dioxide	mg/m3	7.60	0.44	4.02

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Table B2 Comparison of Emissions from ANL's Sludge Combustor and Waste Incineration Directive (WID) Limits

Substance	Concentration	Units	WID Directive Limits					Compliant with WID?	
			Daily Average Values (mg/m3)	Half-hourly Average values (mg/m3)		Heavy Metals Average values (mg/m3)			Dioxin Limits ng I-TEQ/Nm3
				100% Compliance	97% Compliance	30 minutes	8 hours		
VOC's (as TOC)	0.04	mg/m3	10	-	-	-	-	0	Yes
Gaseous chlorides (as HCl)	0.42	mg/m3	10	-	-	-	-	0	Yes
Gaseous fluorides (as HF)	-	mg/m3	1	4	2	-	-	0	Yes
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (mammals) (ng/m3)	0.0009	ng/m3	-	-	-	-	-	0.1	Yes
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (birds) (ng/m3)	0.0014	ng/m3	-	-	-	-	-	0.1	Yes
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (fish) (ng/m3)	0.0016	ng/m3	-	-	-	-	-	0.1	Yes
Polychlorinated Aromatic Hydrocarbons (PAHs)	1.2	µg/m3	-	-	-	-	-	Non-specified	Yes
Polychlorinated biphenyls (PCBs) (Human) TEQ	0.00211	ng/m3	-	-	-	-	-	Non-specified	Yes
Polychlorinated biphenyls (PCBs) (Birds) TEQ	0.00288	ng/m3	-	-	-	-	-	Non-specified	Yes
Polychlorinated biphenyls (PCBs) (Fish) TEQ	0.00217	ng/m3	-	-	-	-	-	Non-specified	Yes
Cadmium (mg/m3)	0.005	mg/m3	-	-	-	0.05	0.10	0	Yes
Mercury (mg/m3)	0.003	mg/m3	-	-	-	0.05	0.10	0	Yes
Heavy metals (Arsenic and compounds (as As), etc.)	0.045	mg/m3	-	-	-	0.50	1.00	0	Yes
Particulates (Run 1)	0.41	mg/m3	10	30	10	-	-	0	Yes
Particulates (Run 2)	0.44	mg/m3	10	30	10	-	-	0	Yes
NO and NO2 expressed as NO2	258	mg/m3	-	600	400	-	-	0	Yes
Carbon Monoxide (CO)	5.26	mg/m3	50	-	-	-	-	0	Yes
Sulphur Dioxide	4.02	mg/m3	50	-	-	-	-	-	Yes

Appendix C

Reporting of Performance Indicators for the period

1 January 2008 to 31 December 2008

Sludge Combustor Annual Performance Report 2008

Permit Reference Number: SP3736SJ

Operator: Operator name Aylesford Newsprint Ltd

Installation: Aylesford Paper Mills

Form Number: Agency Form /SP3736SJ/ P11 / 01/11/2005

Reporting of Performance Indicators for the period 1 January 2008 to 31 December 2008

Annual Production/Treatment		
Total Waste Incinerated	79,412	tonnes
Steam Generated	131,738	tonnes

Environmental Performance Indicators

Parameter	Quarterly Average	Units
Natural Gas	30.165	kg/tonne of waste incinerated
Mass of bottom ash produced	9.618	kg/tonne of waste incinerated
Mass of APC residues produced	643.859	kg/tonne of waste incinerated

Trends in Environmental Performance		
Year	Parameter	
	Supplementary Fuel Oil used	Waste Hazard Score
2006	Not Applicable	Awaiting clarification from the Environment Agency as to what is required for this parameter.
2007	Not applicable	

Operator's comments : The sludge combustor operated as intended and described by the PPC Permit (BJ 7336/SP3736SJ) associated with this unit.

Signed
(authorised to sign as representative of Operator)

Date.....

Appendix D

Details of Non-compliances

1 January 2008 to 31 December 2008

Appendix D1

Notification to the Environment Agency (7 May 2008)

7 May 2008

Roger Kidd
Environment Agency
Orchard House
Endeavour Park
London Road
Addington
West Malling
Kent
ME19 5SH

Dear Roger,

Subject: BJ7336 Part A & B Notification under Condition 5.1.1

Name of Operator:	Aylesford Newsprint Services Ltd
Permit Number:	BJ7336
Location of Installation:	Bellingham Way, Aylesford ME20 7DL
Date Info Provided:	7 May 2008
Time of the emission:	23:00 – 00:00
Date of the emission:	5 May 2008
Location of the emission:	Sludge Combustor
Identity of substance:	TOC & Carbon Monoxide
Estimate of quantity released:	4.5 kg/hr (TOC); 8.7 kg/hr (CO)
Rate of Emission:	14 m ³ /s (flue gas flowrate)
Concentration of emission:	88 mg/m ³ (TOC); 172 mg/m ³ (CO)
Environmental Medium:	To Air

When re-starting the sludge combustor on 5 May it was necessary to warm the fluidized bed with supplementary gas firing before introducing the sludge feed to the combustor. During this of supplementary firing the TOC and carbon monoxide (CO) results exceeded the limits prescribed in ANL's PPC permit. However, it should be noted that these values have been standardized for 11% oxygen and under normal operating conditions (~ 10% oxygen) the TOC and CO levels are within the prescribed limits.

Nevertheless, when using supplementary gas firing whilst the sludge feed is isolated the oxygen levels in the combustor flue gas is typically 15 – 18%. In this case the oxygen level was 17% and it is the adjustment calculation (for 11% oxygen) that has created the 'artificially' high result. This is a consequence of the calculation and adjustments required under WID and ANL are currently seeking guidance from the Environment Agency on this issue (see letter 25 April 2008 dated that was issued to Roger Kidd).

An internal incident report has been raised (IHSM 9873) and if there are any queries relating to the above, please do not hesitate to contact me.

Yours sincerely

Andrew Younge
Environmental Scientist