

Aylesford Newsprint

An SCA Forest Products
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Sludge Combustor Annual Performance Report 2006

**IPPC Permit BJ 7336
Variation SP3736SJ**

**Aylesford Newsprint
Sludge Combustor Annual
Performance Report 2006**

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1. Introduction

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 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 2006.

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	Andy Younge
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 at 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 2006, 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).

Table 4.1 Overall Performance of ANL's Sludge Combustor (2006)

Performance Indicator	Value	Unit
Maximum sludge throughput Permitted	150,000	Tonnes per annum
Total waste incinerated	118,321	Tonnes
Type of waste incinerated	Paper making waste (sludge and effluent treatment plant sludges)	EWC Code 03 03 05
Total Plant Operating Hours	7,980.38	Hours
Steam Generated	177,456	Tonnes
Natural gas	8.735	Kg / tonne of waste incinerated
Mass of bottom ash produced	4.432	Kg / tonne of waste incinerated
Mass of APC residues produced	573	Kg/ tonne of waste incinerated

Table 4.2 Fate of ash from sludge combustor

Type of Ash	Fate	% (based on 2006 Figures)
Bottom Ash	Landfill	100.00%
APC Residues	Landfill	71.26%
	Recycled	28.74%

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	11.43 hours	99.86%
Carbon Monoxide (CO) meter	9.98 hours	99.87%
Particulates meter	3.70 hours	99.95%
Total Organic Carbon (TOC) meter	13.45 hours	99.83%

6. Summary of Emissions to Air

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

Emissions from the sludge combustor associated with NOx (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 NOx, 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/m3)	
	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 daily average PPC limit for Total Organic Carbon (TOC) is 10 mg/m3 and the data results obtained from the TOC Continuous Emission Monitor (CEM) demonstrate that the TOC limit was not breached during 2006. Likewise, the 6-monthly spot sample indicates that volatile organic compounds (VOCs) expressed as TOC did not breach this limit (see table B2, Appendix B).

The reporting forms used in 2006 did not facilitate the logging and plotting of Total Organic Carbon (TOC) results. Consequently, there are no charts to accompany this report which summarise TOC emissions for 2006. However, ANL have retained paper copies of the TOC results for 2006 and are available for inspection by the Environment Agency upon request.

For 2007, new reporting forms for the Environment Agency have been adopted and these forms do require the plotting of TOC data for each month. Therefore, the TOC data will be entered manually for the forthcoming year.

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 2006 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

The sludge combustor was in compliance with permit conditions for oxides of nitrogen (NO_x), carbon monoxide (CO), particulates and Total Organic carbon for 100% of the time.

Summary of Non-Compliances

There were no non-compliances for the year 2006 associated with the sludge combustor.

Summary of Enforcement Actions

There were no non-compliances for the year 2006 associated with the sludge combustor.

9. Summary of Plant Improvements

Current Improvements

To ensure efficient operation and to safe guard the environment, the following improvements have been implemented:

- ❑ The Continuous Emission Monitors (CEM's) for the sludge combustor have been calibrated and verified to British Standard BS EN 14181. A report summarising this work has been submitted to the Environment Agency.
- ❑ PM10, PM2.5 and PM1.0 particulates monitoring has been conducted and particulate material of these sizes were not detected. It was highlighted by the certified monitoring company that it was considered unlikely that particles smaller than PM10 would be present in ANL's stack emissions due to the low level of particulates present in the stack emissions stream.

In addition, Technical Guidance Note (TGN) 15 states that for stacks that have low particulate emissions (typically less than 3 mg/m³) testing is appropriate for PM10 and PM2.5 particles because of the length of time it would take to obtain measurable fractions. It has also been noted that the Source Testing Association, STA (a UK Trade Association representing manual stack emission monitoring) has a technical working party currently investigating issues related to particulate emissions monitoring.

Therefore no further PM10, PM2.5 and PM1.0 particulate emissions monitoring will be conducted by ANL until it receives advice indicating that a suitable method has been developed.

Future Improvements

To ensure that the revised oxides of nitrogen (NO_x) emission limits that come into force in the year 2010 are met, a study is to be conducted that will investigate the methods that ANL will adopt to meet the revised 2010 NO_x emission to air limits. This study will be summarised in a report, which will be issued to the Environment Agency.

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.

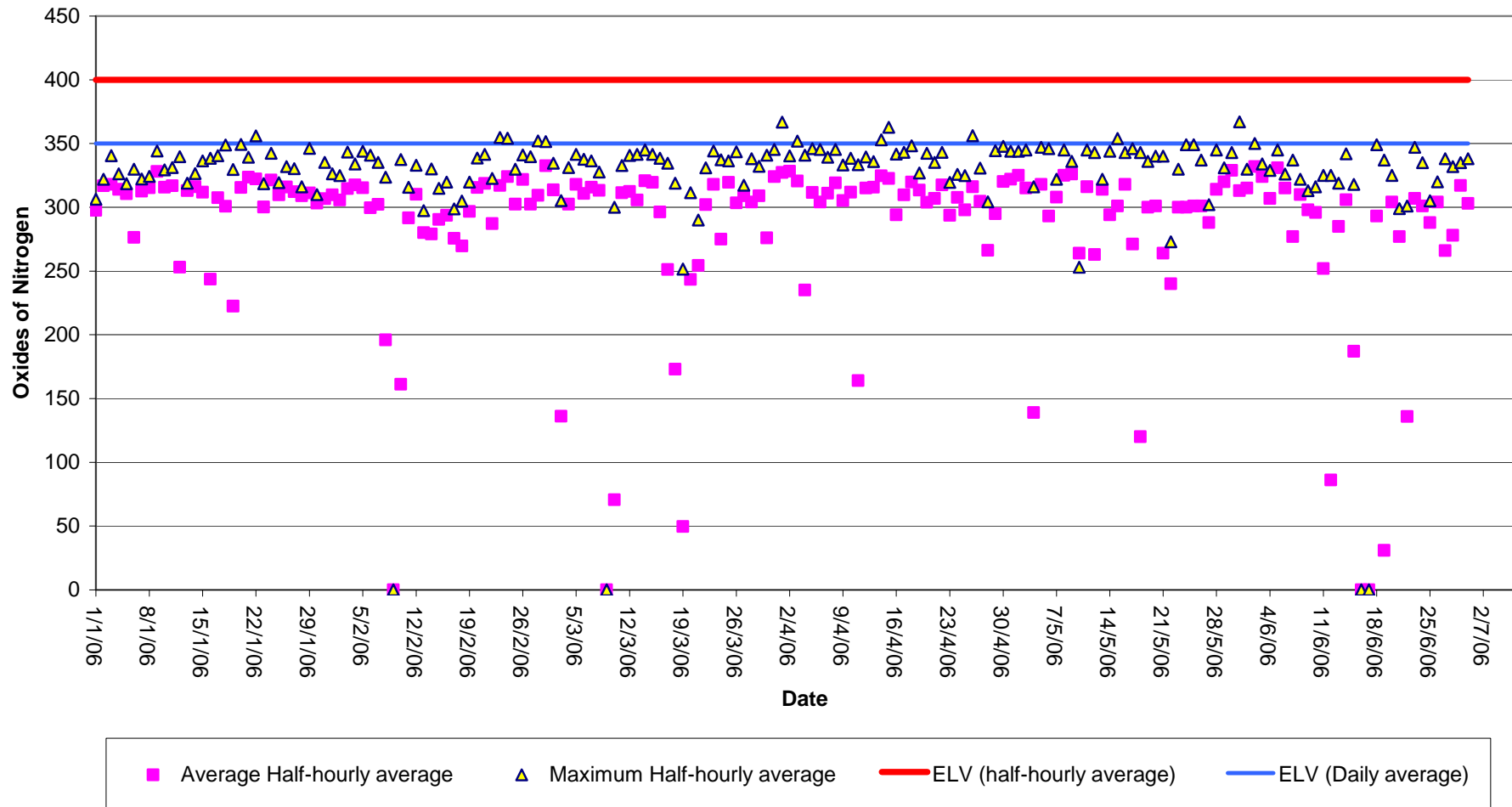
Appendix A

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

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Chart A1 Oxides of Nitrogen (January – June 2006)

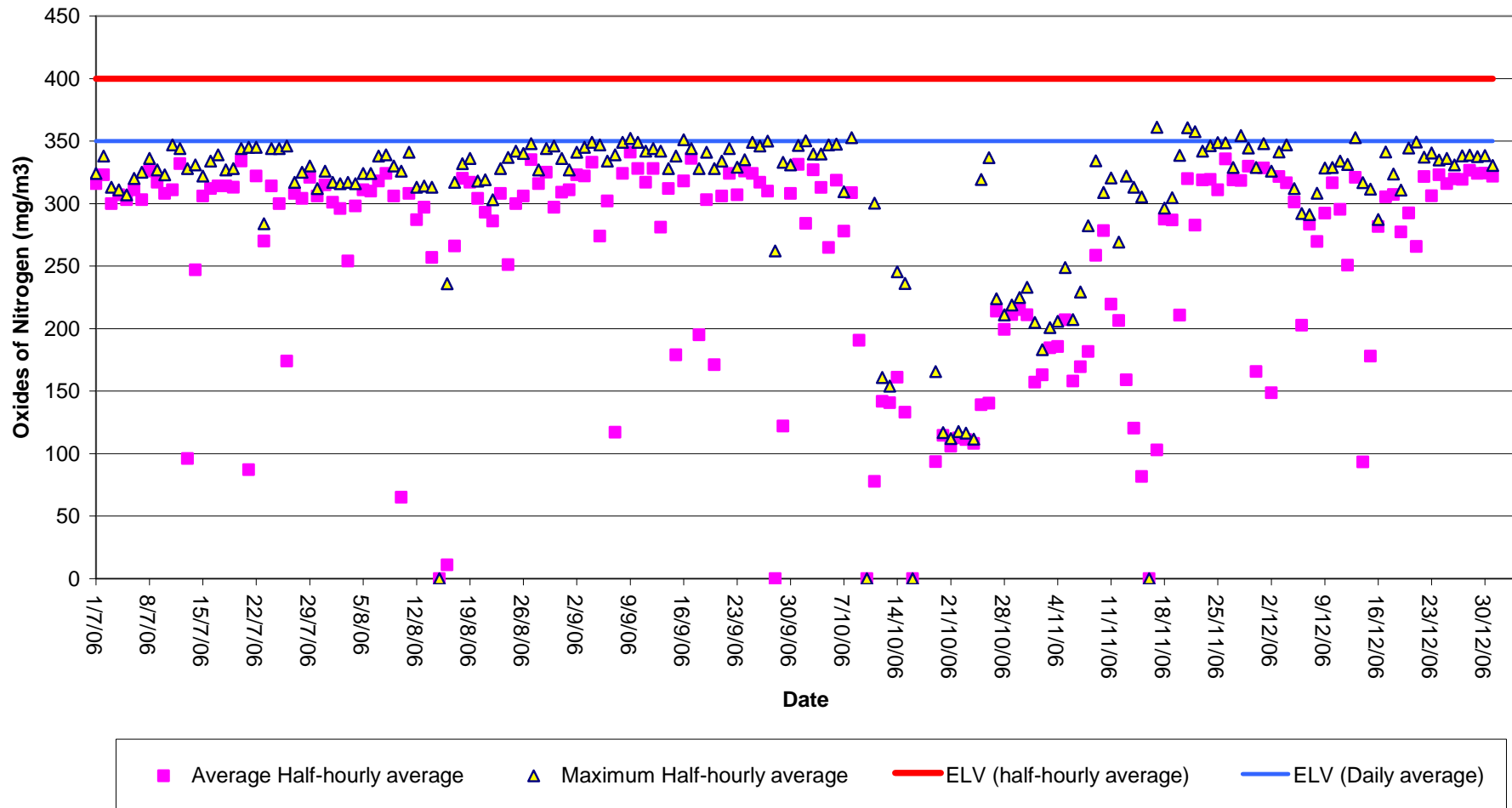
Oxides of Nitrogen (January - June 2006 Summary)



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Chart A2 Oxides of Nitrogen (July – December 2006)

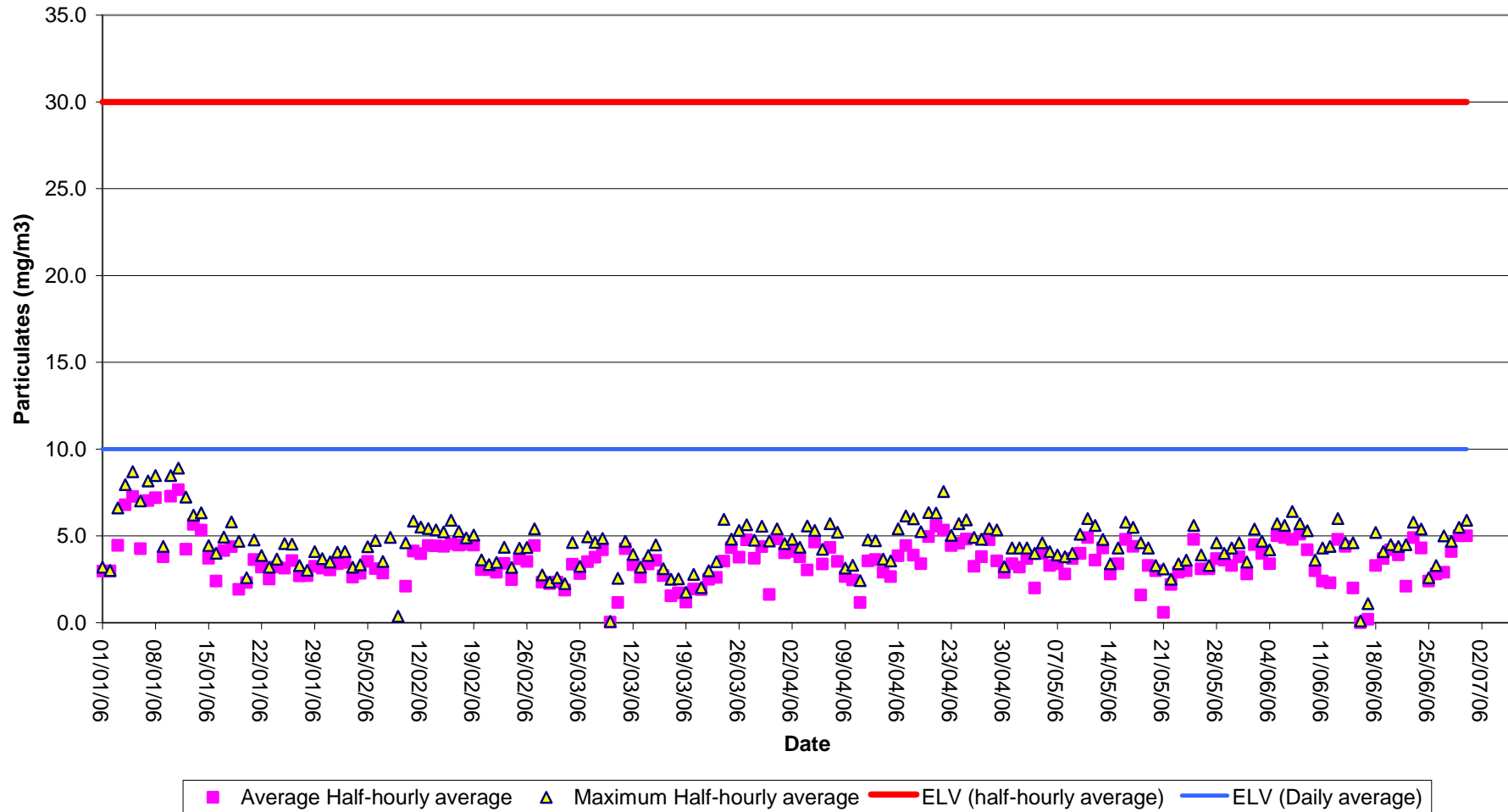
Oxides of Nitrogen (July - December 2006 Summary)



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Chart A3 Particulates (January – June 2006)

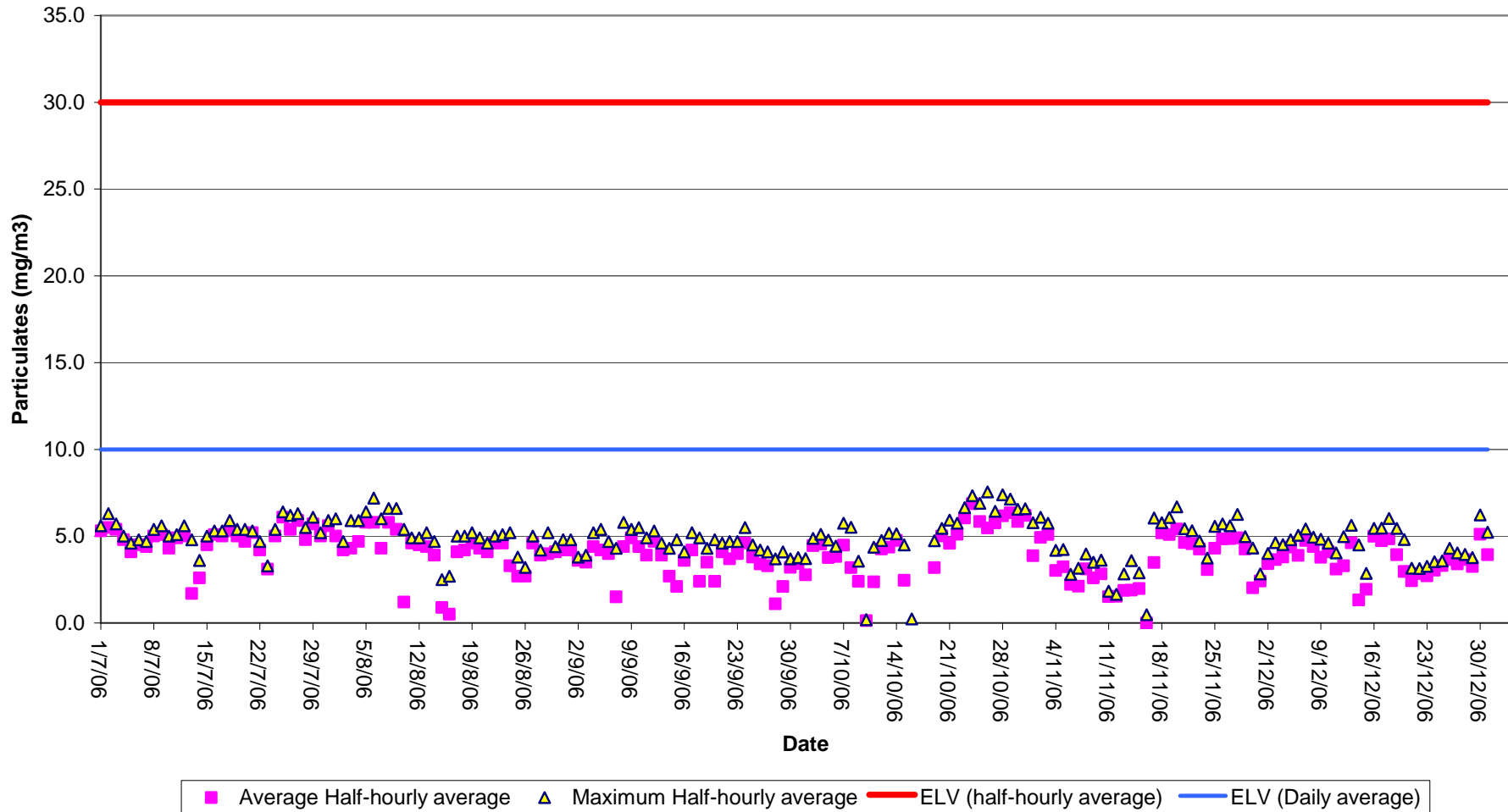
Particulates (January - June 2006 Summary)



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Chart A4 Particulates (July – December 2006)

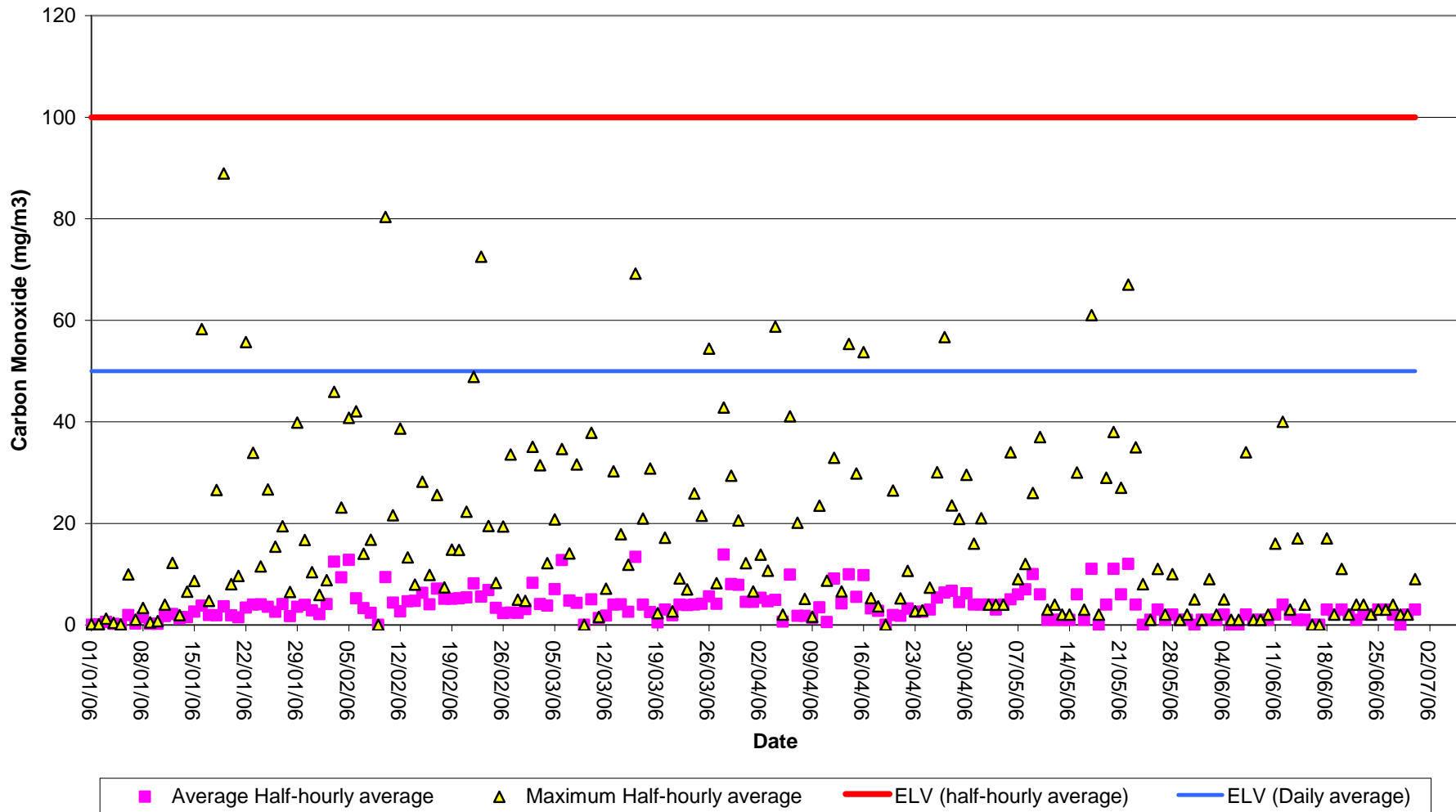
Particulates (July - December 2006 Summary)



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Chart A5 Carbon Monoxide (January – June 2006)

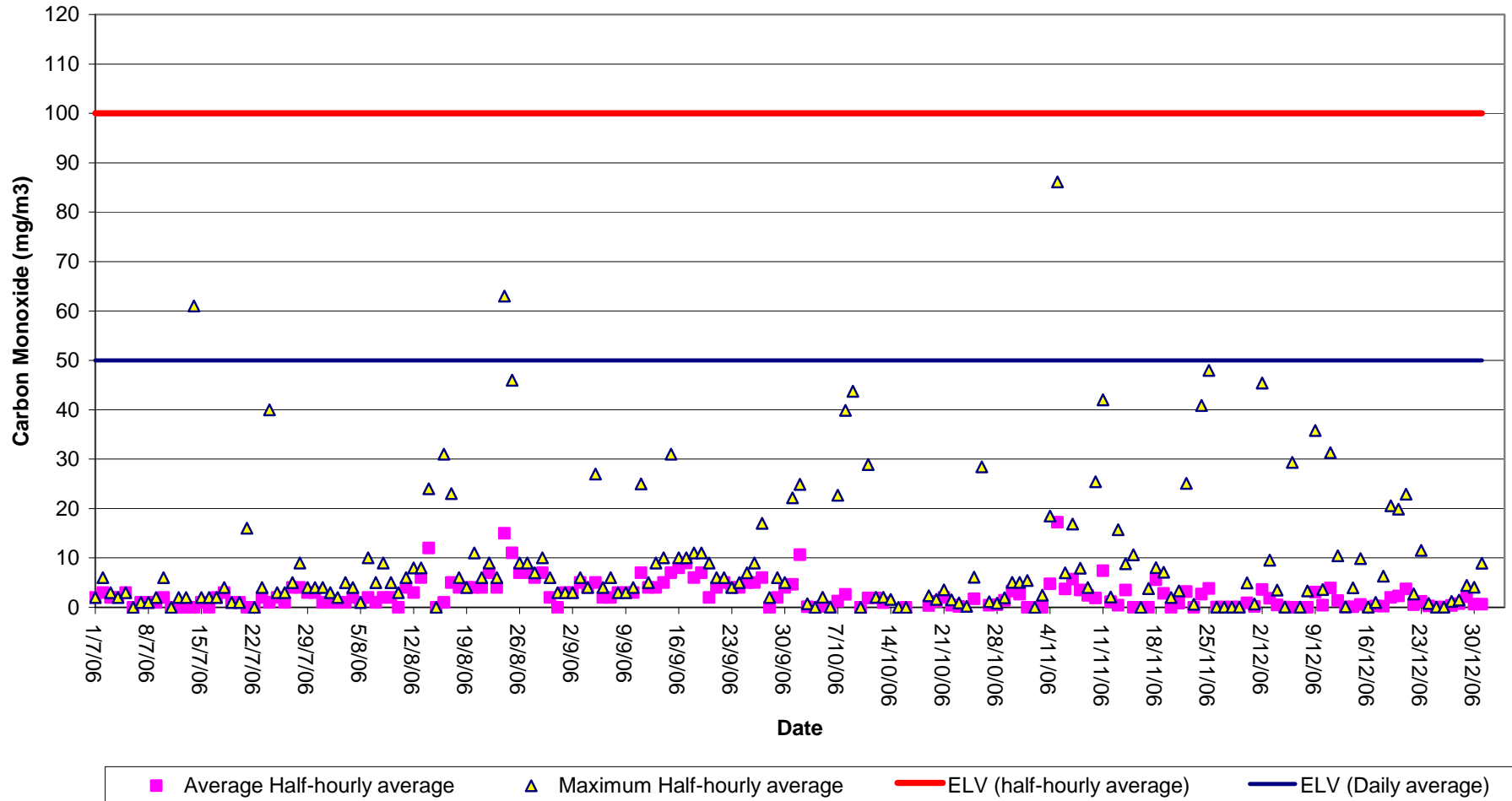
Carbon Monoxide (January - June 2006)



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Chart A6 Carbon Monoxide (July – December 2006)

Carbon Monoxide (July - December 2006)



Appendix B

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

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

Substance	Units	Jun-06			Dec-06			Annual Average
		Sample 1	Sample 2	Average	Sample 1	Sample 2	Average	
VOC's (as TOC) (Daily mean)	mg/m3	3.6	2.9	3.25	0.84	0.72	0.78	2.015
VOC's (as TOC) (half-hourly mean)	mg/m3	4.7	3.6	4.15	2.75	2.42	2.585	3.368
Gaseous chlorides (as HCl) (Daily mean)	mg/m3	0.8	0.7	0.75	1.7	1.31	1.505	1.128
Gaseous chlorides (as HCl) (half hourly mean)	mg/m3	1.1	1	1.05				
Gaseous fluorides (as HF)	mg/m3	<0.4	<0.3	0.175	<0.09	<0.09	0.045	0.110
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (mammals) (ng/m3)	ng/m3	0.0069	0.006	0.00645	0.00079	0.0007	0.000745	0.004
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (birds) (ng/m3)	ng/m3	0.0155	0.0136	0.01455	0.00198	0.00177	0.001875	0.008
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (fish) (ng/m3)	ng/m3	0.0064	0.0056	0.006	0.00066	0.00059	0.000625	0.003
Polychlorinated Aromatic Hydrocarbons (PAHs)	µg/m3	10.15	8.87	9.51	1.38	1.24	1.31	5.410
Polychlorinated biphenyls (PCBs) (Human) TEQ	ng/m3	0.00037	0.00032	0.000345	0.00006	0.00006	0.00006	0.0002
Polychlorinated biphenyls (PCBs) (Birds) TEQ	ng/m3	0.00213	0.00186	0.001995	0.00031	0.00028	0.000295	0.001
Polychlorinated biphenyls (PCBs) (Fish) TEQ	ng/m3	0.00002	0.00001	0.000015	0.000005	0.000004	0.0000045	0.00001
Cadmium (mg/m3)	mg/m3	<0.0007	<0.0005	0.0003	0.00138	0.00114	0.00126	0.001
Mercury (mg/m3)	mg/m3	0.0089	0.0066	0.00775	0.00421	0.00347	0.00384	0.006
Arsenic and compounds (as As)	mg/m3	<0.0007	<0.0005	0.0003	0.05538	0.04565	0.050515	0.025
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			

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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) (Daily mean)	2.015	mg/m3	10	-	-	-	-	0	Yes
VOC's (as TOC) (half-hourly mean)	3.368	mg/m3	-	20	10	-	-	0	Yes
Gaseous chlorides (as HCl) (Daily mean)	1.128	mg/m3	10	-	-	-	-	0	Yes
Gaseous chlorides (as HCl) (half hourly mean)	0.000	mg/m3	-	60	10	-	-	0	Yes
Gaseous fluorides (as HF)	0.11	mg/m3	1	4	2	-	-	0	Yes
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (mammals) (ng/m3)	0.004	ng/m3	-	-	-	-	-	0.1	Yes
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (birds) (ng/m3)	0.008	ng/m3	-	-	-	-	-	0.1	Yes
Dioxins and furans expressed as TEQ (PCDDs/PCDFs) (fish) (ng/m3)	0.003	ng/m3	-	-	-	-	-	0.1	Yes
Polychlorinated Aromatic Hydrocarbons (PAHs)	5.410	µg/m3	-	-	-	-	-	Non-specified	Yes
Polychlorinated biphenyls (PCBs) (Human) TEQ	0.0002	ng/m3	-	-	-	-	-	Non-specified	Yes
Polychlorinated biphenyls (PCBs) (Birds) TEQ	0.001	ng/m3	-	-	-	-	-	Non-specified	Yes
Polychlorinated biphenyls (PCBs) (Fish) TEQ	0.00001	ng/m3	-	-	-	-	-	Non-specified	Yes
Cadmium (mg/m3)	0.001	mg/m3	-	-	-	0.05	0.10	0	Yes
Mercury (mg/m3)	0.006	mg/m3	-	-	-	0.05	0.10	0	Yes
Heavy metals (Arsenic and compounds (as As), etc.)	0.025	mg/m3	-	-	-	0.50	1.00	0	Yes

Appendix C

Reporting of Performance Indicators for the period

1 January 2006 to 31 December 2006

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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 2006 to 31 December 2006

Total Waste Incinerated	118,321	tonnes
Steam Generated	177,456	tonnes

Environmental Performance Indicators

Parameter	Quarterly Average	Units
Natural Gas	8.735	kg/tonne of waste incinerated
Mass of bottom ash produced	4.432	kg/tonne of waste incinerated
Mass of APC residues produced	573	kg/tonne of waste incinerated

Trends in Environmental Performance		
Year	Parameter	Waste Hazard Score
	Supplementary Fuel Oil used	
2005	Not Applicable	
2006	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.....