WHIMPLE 3 (572f)

Reddish fine loamy or fine silty over clayey soils with slowly permeable subsoils and slight seasonal waterlogging

e(iii). Available Water Content continued

Available water for cereal represents the water that is available to a cereal crop that is able to root to 120cm depth.

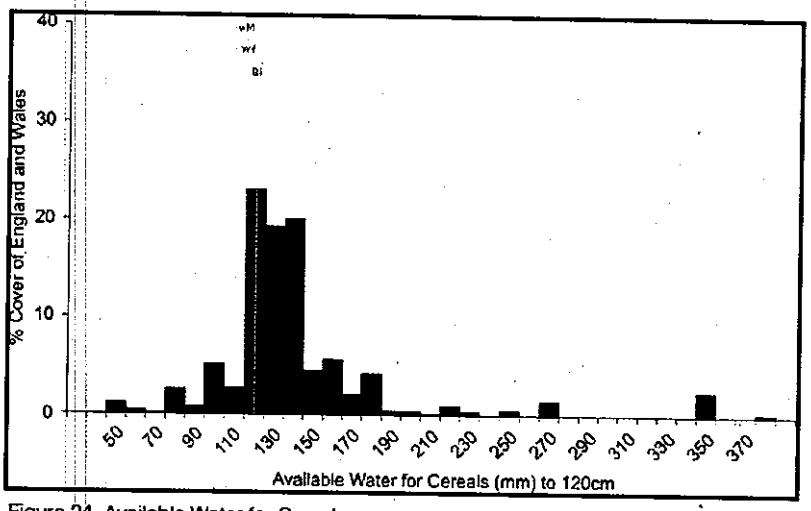


Figure 24. Available Water for Cereal

Available water for Sugar Beet represents the water that is available to a sugar beet crop that is able to root to 140cm depth.

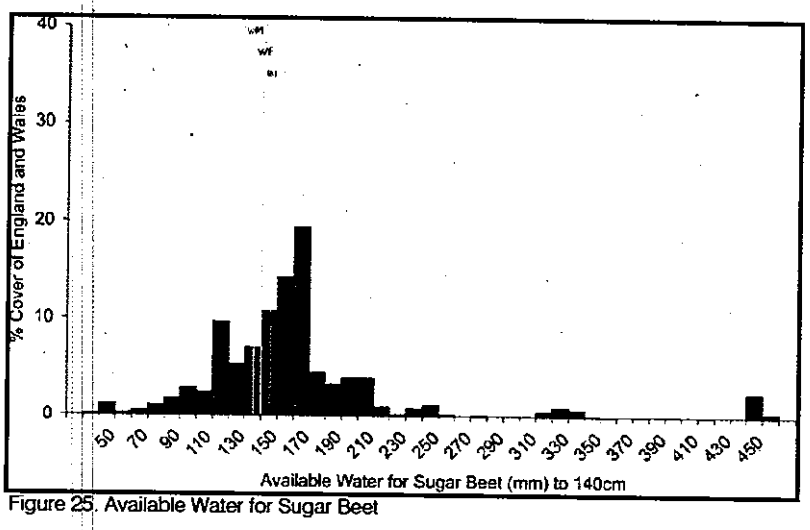


Figure 25. Available Water for Sugar Beet

Available water for Potatoes represents the water that is available to a potato crop that is able to root to 70cm depth.

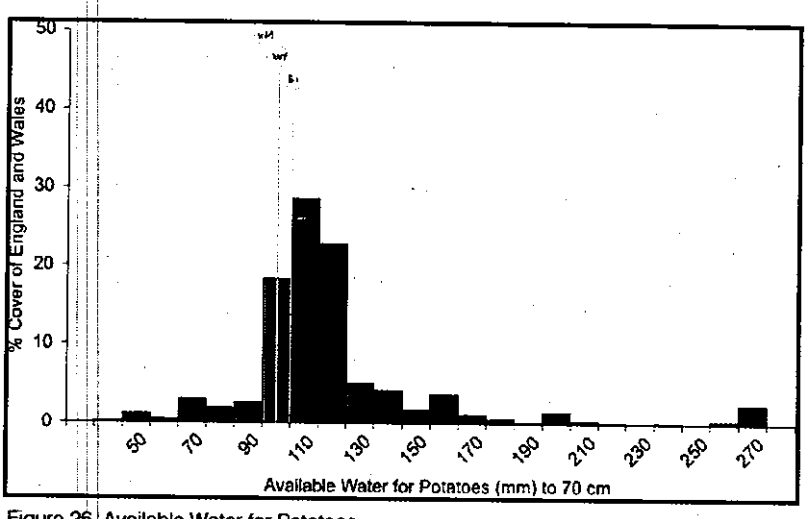
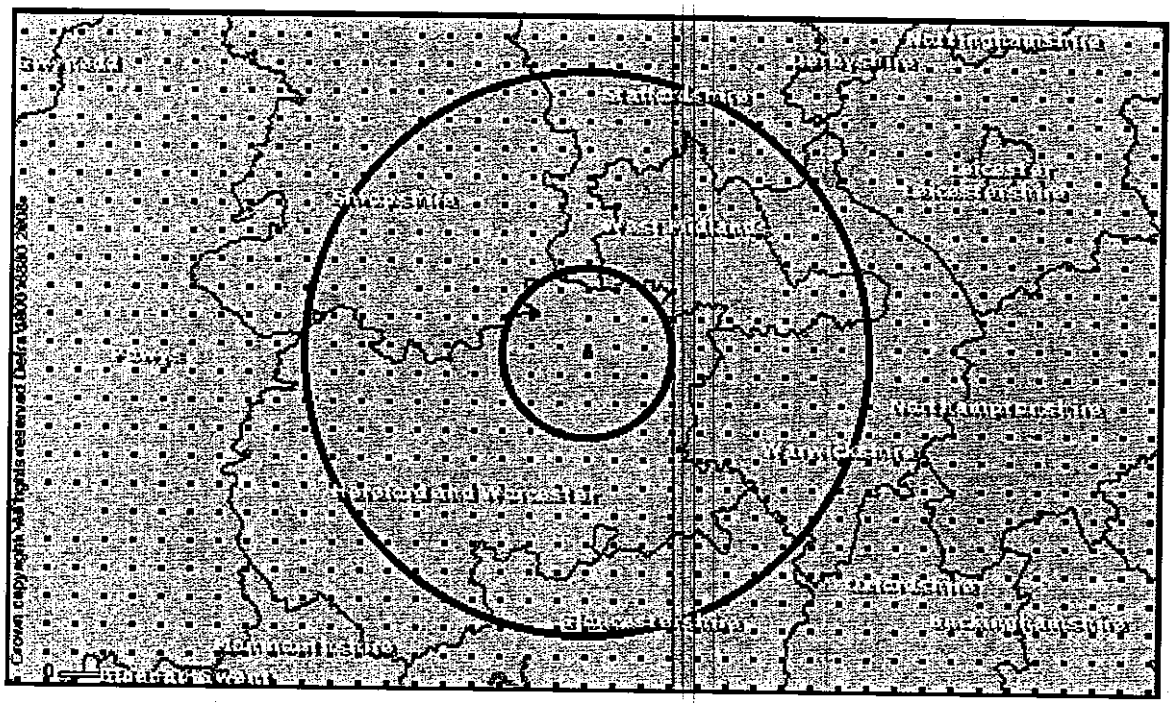


Figure 26. Available Water for Potatoes

3. TOPSOIL ELEMENT BACKGROUND LEVELS



TOPSOIL ELEMENT BACKGROUND LEVELS KEY

- ▪ - NSI sample points
- □ - Report area
- ○ - 15 km radius - local area
- ◯ - 50 km radius - regional area

TOPSOIL ELEMENT BACKGROUND LEVELS DESCRIPTION

The National Soil Inventory (NSI) covers England and Wales on a 5 km grid and provides detailed information for each intersect of the grid. Collectively NSI data are statistically representative of England and Wales soils. The original sampling was undertaken around 1980 and there were partial resamplings in the mid-1990s. The most up-to-date data is presented here.

Analysis of the NSI samples provides detailed measurements of over 20 elements from the soils, in addition to pH. This data is summarised over three areas to provide you with an understanding of how your site, and your data for it, sits within the local, regional and national context.

Where available, the soil element levels are compared with the Soil Guideline Values and where a soil sample we have analysed has been found in excess of the SGV guidelines for "residential with plant uptake" land, this is displayed in red in the tables which follow.

SGV levels are provided for the following elements: lead, selenium, nickel, mercury, chromium, cadmium and arsenic.

In the following pages, a number of analyses of the topsoil are provided. The majority of analyses have been performed on the full compliment of sample points, however, in some areas, for some elements, only a few samples were analysed as part of subsequent programmes. In order to present the full suite of possible datasets, and accurately convey the validity of the data, the number of actual measured samples is stated for each analysis. Care should be taken where the number of samples is disproportionately low.

3a. Analyses Within a 15 km Radius (25 Sample Points)

ANALYSES	SAMPLES	MEAN	MIN	MAX	ST. DEV
pH (PH)	25	5.9	4.1	7.3	1.1
Carbon (CARBON)	25	2.8	0.8	6.2	1.3
Aluminium (AL_ACID)	25	24,660.3	5,435.0	49,901.0	11,107.4
Arsenic (AS_ACID)	9	2.3	1.2	3.2	0.7
Barium (BA_ACID)	25	140.0	18.0	265.0	56.5
Calcium (CA_ACID)	25	2,965.6	62.0	6,252.0	1,714.5
Cadmium (CD_ACID)	25	0.6	0.1	1.3	0.4
Cadmium (Extractable) (CD_EDTA)	25	0.2	0.1	0.5	0.1
Cobalt (CO_ACID)	25	10.5	2.3	21.1	4.4
Cobalt (Extractable) (CO_EDTA)	25	0.9	0.1	2.3	0.5
Chromium (CR_ACID)	25	34.2	4.0	68.2	15.0
Copper (CU_ACID)	25	28.8	6.5	110.1	22.1
Copper (Extractable) (CU_EDTA)	25	8.5	1.7	34.8	6.6
Flouride (F_ACID)	13	34.5	0.0	90.2	23.2
Iron (FE_ACID)	25	23,507.4	5,659.0	40,661.0	8,315.1
Mercury (HG_ACID)	3	0.1	0.0	0.3	0.2
Potassium (K_ACID)	25	6,290.5	1,531.0	15,791.0	3,312.0
Potassium (Extractable) (K_NITRATE)	25	182.5	35.0	464.0	88.4
Magnesium (MG_ACID)	25	6,202.1	745.0	17,357.0	4,289.3
Magnesium (Extractable) (MG_NITRATE)	25	171.1	14.0	721.0	160.1
Manganese (MN_ACID)	25	764.2	192.0	1,396.0	347.9
Manganese (Extractable) (MN_EDTA)	25	182.5	28.0	460.0	110.7
Molybdenum (MO_ACID)	20	0.7	0.0	2.9	0.6
Sodium (NA_ACID)	25	269.0	61.0	524.0	116.8
Nickel (NI_ACID)	25	21.9	0.0	45.8	10.3
Nickel (Extractable) (NI_EDTA)	25	1.4	0.3	4.2	1.0
Phosphorus (P_ACID)	25	653.2	264.0	1,403.0	244.3
Phosphorus (Extractable) (P_OLSEN)	25	37.1	1.0	119.0	27.8
Lead (PB_ACID)	25	51.2	21.0	259.0	50.6
Lead (Extractable) (PB_EDTA)	25	18.2	6.3	94.1	17.5
Selenium (SE_ACID)	9	0.3	0.0	0.4	0.1
Strontium (SR_ACID)	25	21.8	0.0	84.0	15.3
Vanadium (V_ACID)	20	37.2	0.0	96.0	22.1
Zinc (ZN_ACID)	25	91.0	19.0	185.0	36.0
Zinc (Extractable) (ZN_EDTA)	25	9.6	4.6	29.5	6.0

for units, see Analyses Definitions (p41)

3b. Analyses Within a 50 km Radius (284 Sample Points)

ANALYSES	SAMPLES	MEAN	MIN	MAX	ST. DEV
pH (PH)	280	6.2	3.4	8.1	1.0
Carbon (CARBON)	283	3.3	0.5	38.2	3.4
Aluminium (AL_ACID)	284	29,037.9	4,234.0	76,950.0	12,936.8
Arsenic (AS_ACID)	120	2.7	0.0	29.6	2.9
Barium (BA_ACID)	284	167.1	18.0	865.0	92.2
Calcium (CA_ACID)	284	7,153.3	62.0	230,835.0	19,053.4
Cadmium (CD_ACID)	284	0.7	0.0	12.8	0.9
Cadmium (Extractable) (CD_EDTA)	282	0.7	0.0	85.0	5.1
Cobalt (CO_ACID)	284	13.7	2.0	567.0	33.3
Cobalt (Extractable) (CO_EDTA)	282	1.0	0.1	4.6	0.7
Chromium (CR_ACID)	284	43.5	4.0	613.9	47.5
Copper (CU_ACID)	284	27.5	6.4	380.4	30.2
Copper (Extractable) (CU_EDTA)	282	8.8	0.7	203.0	15.8
Flouride (F_ACID)	164	40.8	0.0	297.2	39.4
Iron (FE_ACID)	284	29,019.9	5,659.0	100,060.0	12,004.2
Mercury (HG_ACID)	77	0.1	0.0	0.4	0.1
Potassium (K_ACID)	284	6,325.4	897.0	19,102.0	3,082.3
Potassium (Extractable) (K_NITRATE)	280	208.6	35.0	1,030.0	149.8
Magnesium (MG_ACID)	284	6,555.4	310.0	25,621.0	4,163.2
Magnesium (Extractable) (MG_NITRATE)	280	205.3	11.0	1,300.0	216.7
Manganese (MN_ACID)	284	845.5	81.0	2,809.0	433.3
Manganese (Extractable) (MN_EDTA)	282	194.8	17.0	909.0	133.7
Molybdenum (MO_ACID)	234	1.0	0.0	48.3	3.2
Sodium (NA_ACID)	284	256.3	43.0	1,158.0	110.9
Nickel (NI_ACID)	284	30.7	0.0	243.0	20.1
Nickel (Extractable) (NI_EDTA)	282	1.9	0.3	38.3	3.0
Phosphorus (P_ACID)	284	691.4	119.0	3,565.0	382.0
Phosphorus (Extractable) (P_OLSEN)	280	28.9	1.0	135.0	24.2
Lead (PB_ACID)	284	48.8	10.0	472.0	48.9
Lead (Extractable) (PB_EDTA)	282	17.6	2.9	194.9	18.7
Selenium (SE_ACID)	120	0.5	0.0	22.8	2.1
Strontium (SR_ACID)	284	27.4	0.0	327.0	30.1
Vanadium (V_ACID)	234	44.8	0.0	189.4	23.5
Zinc (ZN_ACID)	284	105.7	1.0	903.0	95.3
Zinc (Extractable) (ZN_EDTA)	282	12.9	0.8	264.7	23.6

for units, see Analyses Definitions (p41)

3c. National Analyses (5686 Sample Points)

ANALYSES	SAMPLES	MEAN	MIN	MAX	ST. DEV
pH (PH)	5,630	6.0	3.1	9.2	1.3
Carbon (CARBON)	5,672	6.1	0.1	61.5	8.9
Aluminium (AL_ACID)	5,677	26,775.3	491.0	79,355.0	12,772.2
Arsenic (AS_ACID)	2,729	4.6	0.0	110.0	5.7
Barium (BA_ACID)	5,677	150.0	7.0	3,840.0	159.5
Calcium (CA_ACID)	5,677	13,768.7	0.0	339,630.0	37,785.0
Cadmium (CD_ACID)	5,677	0.7	0.0	40.9	1.0
Cadmium (Extractable) (CD_EDTA)	5,655	0.5	0.0	85.0	3.0
Cobalt (CO_ACID)	5,677	10.6	0.0	567.0	13.7
Cobalt (Extractable) (CO_EDTA)	5,655	1.1	0.0	26.5	1.2
Chromium (CR_ACID)	5,677	38.9	0.0	2,339.8	43.7
Copper (CU_ACID)	5,677	22.6	0.0	1,507.7	36.8
Copper (Extractable) (CU_EDTA)	5,655	6.4	0.3	431.4	11.1
Flouride (F_ACID)	3,320	58.5	0.0	6,307.9	186.2
Iron (FE_ACID)	5,677	28,147.8	395.0	264,405.0	16,510.5
Mercury (HG_ACID)	2,159	0.1	0.0	2.4	0.2
Potassium (K_ACID)	5,677	4,727.7	60.0	23,905.0	2,700.2
Potassium (Extractable) (K_NITRATE)	5,609	182.0	6.0	2,776.0	151.6
Magnesium (MG_ACID)	5,677	3,648.1	0.0	62,690.0	3,284.1
Magnesium (Extractable) (MG_NITRATE)	5,609	146.0	1.0	1,601.0	147.5
Manganese (MN_ACID)	5,677	777.0	3.0	42,603.0	1,068.8
Manganese (Extractable) (MN_EDTA)	5,654	159.4	0.0	3,108.0	188.6
Molybdenum (MO_ACID)	4,417	0.9	0.0	56.3	2.0
Sodium (NA_ACID)	5,677	323.3	17.0	25,152.0	572.3
Nickel (NI_ACID)	5,677	25.4	0.0	1,350.2	29.2
Nickel (Extractable) (NI_EDTA)	5,655	1.6	0.1	73.2	2.0
Phosphorus (P_ACID)	5,677	792.1	41.0	6,273.0	433.9
Phosphorus (Extractable) (P_OLSEN)	5,604	27.4	0.0	534.0	25.5
Lead (PB_ACID)	5,677	73.3	0.0	17,365.0	280.6
Lead (Extractable) (PB_EDTA)	5,655	27.8	1.2	6,056.5	119.7
Selenium (SE_ACID)	2,729	0.6	0.0	22.8	0.8
Strontium (SR_ACID)	5,677	42.3	0.0	1,445.0	67.8
Vanadium (V_ACID)	4,428	41.0	0.0	854.4	33.9
Zinc (ZN_ACID)	5,677	90.2	0.0	3,648.0	104.4
Zinc (Extractable) (ZN_EDTA)	5,655	9.6	0.5	712.0	24.6

for units, see Analyses Definitions (p41)

SOIL GUIDELINE VALUES (SGV)

Defra and the Environment Agency have produced soil guideline values (SGVs) as an aid to preliminary assessment of potential risk to human health from land that may be contaminated. SGVs represent 'intervention values', which, if exceeded, act as indicators of potential unacceptable risk to humans, so that more detailed risk assessment is needed.

The SGVs were derived using the Contaminated Land Exposure Assessment (CLEA) model for four land uses:

1. residential (with plant uptake / vegetable growing)
2. residential (without vegetable growing)
3. allotments
4. commercial / industrial

SGVs are only designed to indicate whether further site-specific investigation is needed. Where a soil guideline value is exceeded, it does not mean that there is necessarily a chronic or acute risk to human health.

The values presented in this report represent those from a number of sample points (given in the "Samples" column in each table) providing local, regional and national background levels. Figures which appear in red indicate that a bulked sample from 20m surrounding a sample point, has at a past date, exceeded the SGV for the 'residential with plant uptake' land use.

It is always advisable to perform site specific investigations.

More details on all the SGVs can be found on the Environment Agency Website.

All units are mg/kg which is equivalent to parts per million (ppm)

SUBSTANCE	RESIDENTIAL WITH PLANT UPTAKE	RESIDENTIAL WITHOUT PLANT UPTAKE	ALLOTMENTS	COMMERCIAL / INDUSTRIAL
LEAD	450	450	450	750
SELENIUM	35	260	35	8000
NICKEL	50	75	50	5000
MERCURY	8	15	8	480
CHROMIUM	130	200	130	5000
CADMIUM (pH 6)	1	30	1	1400
CADMIUM (pH 7)	2	30	2	1400
CADMIUM (pH 8)	8	30	8	1400
ARSENIC	20	20	20	500

ANALYSES DEFINITIONS

PH (pH)
pH of soil measure after shaking 10ml of soil for 15 minutes with 25ml of water

CARBON (Carbon)
Organic Carbon (% by wt) measured either by loss-on-ignition for soils estimated to contain more than about 20% organic carbon or by dichromate digestion.

AL_ACID (Aluminium)
Total Aluminium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

AS_ACID (Arsenic)
Total Arsenic concentration (mg/kg) determined by Hydride Atomic Absorption Spectrometry (AAS), extracted into hydrochloric acid after digestion with nitric acid and ashing with magnesium nitrate

BA_ACID (Barium)
Total Barium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

CA_ACID (Calcium)
Total Calcium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

CD_ACID (Cadmium)
Total Cadmium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

CD_EDTA (Cadmium Extractable)
Extractable Cadmium concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering

CO_ACID (Cobalt)
Total Cobalt concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

CO_EDTA (Cobalt Extractable)
Extractable Cobalt concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering

CR_ACID (Chromium)
Total Chromium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

CU_ACID (Copper)
Total Copper concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

CU_EDTA (Copper Extractable)
Extractable Copper concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering

F_ACID (Flouride)
Flouride extracted with 1mol / l sulphuric acid and determined by Ion Selective Electrode (ISE)

FE_ACID (Iron)
Total Iron concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

HG_ACID (Mercury)
Total Mercury concentration (mg/kg) determined by Hydride Atomic Absorption Spectrometry (AAS), digested in a nitric/sulphuric acid mixture

K_ACID (Potassium)
Total Potassium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

K_NITRATE (Potassium Extractable)
Extractable Potassium concentration (mg/l) determined by shaking 10ml of air dry soil with 50ml of 1.0M ammonium nitrate for 30mins, filtering and then measuring the concentration by flame photometry

ANALYSES DEFINITIONS continued

MG_ACID (Magnesium)
Total Magnesium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

MG_NITRATE (Magnesium Extractable)
Extractable Magnesium concentration (mg/l) determined by shaking 10ml of air dry soil with 50ml of 1.0M ammonium nitrate for 30mins, filtering and then measuring the concentration by flame photometry

MN_ACID (Manganese)
Total Manganese concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

MN_EDTA (Manganese Extractable)
Extractable Manganese concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering

MO_ACID (Molybdenum)
Total Molybdenum concentration (mg/kg) determined by Atomic Adsorption Spectrometyr (AAS) in an aqua regia digest

MO_EDTA (Molybdenum Extractable)
Extractable Molybdenum concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering

NA_ACID (Sodium)
Total Sodium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

NI_ACID (Nickel)
Total Nickel concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

NI_EDTA (Nickel Extractable)
Extractable Nickel concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering

P_ACID (Phosphorus)
Total Phosphorus concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

P_OLSON (Phosphorous Extractable)
Extractable Phosphorus concentration (mg/l) determined by shaking 5ml of air dry soil with 100ml of 0.5M sodium bicarbonate for 30mins at 20 deg.C, filtering and then measuring the absorbance at 880 nm colorimetrically with acid ammonium molybdate solution

PB_ACID (Lead)
Total Lead concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

PB_EDTA (Lead Extractable)
Extractable Lead concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering

SE_ACID (Selenium)
Total Selenium concentration (mg/kg) determined by Hydride Atomic Absorption Spectrometry (AAS), extracted into hydrochloric acid after digestion with nitric acid and ashing with magnesium nitrate

SR_ACID (Strontium)
Total Strontium concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

V_ACID (Vanadium)
Total Vanadium concentration (mg/kg) determined by Atomic Adsorption Spectrometyr (AAS) in an aqua regia digest

ZN_ACID (Zinc)
Total Zinc concentration (mg/kg) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) in an aqua regia digest

ZN_EDTA (Zinc Extractable)
Extractable Zinc concentration (mg/l) determined by Inductively Coupled Plasma Emission Spectrometry (ICP) after shaking 10ml of soil with 50ml of 0.05M EDTA at pH 7.0 for 1h at 20 deg. C and then filtering

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To view the glossary visit: www.landis.org.uk/sitereporter/GLOSSARY.pdf

For a list of further reading visit: www.landis.org.uk/sitereporter/FURTHER_READING.pdf

For more information visit: www.landis.org.uk/reports

GIS DATASETS:

The GIS data used in the creation of this report is available to lease for use in projects.
To learn more about, or acquire the GIS datasets used in the creation of this report, please contact the National Soil Resources Institute:

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Appendix H – Site Investigation Report

Appendices A to E of report attached as separate files due to size.

Appendix I – Condition report for Construction Compound

SCHEDULE OF CONDITION

PROPERTY

LAND AND BUILDINGS TO THE EAST OF UNIT 111/117 AND FRONTING OAK DRIVE, HARTLEBURY TRADING ESTATE, HARTLEBURY, KIDDERMINSTER, WORCESTERSHIRE DY10 4JB

Landlord: Bristol Road Properties Limited

Tenants: Severn Waste Management

Lease Date.....

Date of Inspection: Thursday 3 June 2010

Introduction

This schedule is intended to provide an indication of the condition and configuration of the building at date of inspection.

Where photos are provided they are intended to add to the written description and provide an indication of the general condition of the item.

General Notes

The electrics have note been tested.

The roller shutter doors have not been tried and tested – either manually or electronically.

The inspection was carried out on a dry day.

The Landlord advised that the sprinkler system and fire hoses are to be removed from the building before the lease starts.

Internal inspection of ceiling was limited from ground level only.

External inspection was limited to overview from ladder to south of building one but detailed inspection not possible without cherry picker.

Schedule of Condition

INTERNAL

Building One (please see plan)

Description	*Condition*	*Photos*
General		
Painted steel portal steel framed	Rusty condition.	
West Elevation		
Single wooden personnel door	Marked and paint flaking	1
Electric and manually operated roller shutter door	Fair condition	2
Insulated panels	Heavy marking near roller shutter door	3
Wooden plywood temporary office construction	Poor condition and landlord confirmed can be removed	4
South Elevation		
Part concrete panel construction in south-west corner	Good condition	5
Insulated panels down whole elevation	Fair condition but some panels broken	6, 7, 8, 9
Two green painted single personnel fire	Marked and paint flaking in parts	10, 11

Description	*Condition*	*Photos*
doors		
East Elevation		
Insulated panels down whole elevation	Marked throughout and missing panels at eaves height	12, 13
Single wooden personnel door	Reasonable condition	13
North Elevation		
Metal sheet cladding as this elevation was previously external wall before building extended	Heavily marked with impact damage especially at low level	14, 15, 16 17, 18
Two vehicular openings and further opening filled with stud partition and integrated personnel door	Landlord has agreed stud partition can be removed	18
Single wooden door	Marked and damage at low level	18
Flooring		
Concrete floor throughout	Fair condition but evidence of heavy use, scratches, bolts in floor	19, 20, 21 22
Roof		
Insulated panels	Appear to be in reasonable condition with some small markings holes in some panels	23, 24, 25 26, 27, 28 29, 30, 31 32, 33, 34 35, 36, 37 38
20 lights	8 working at time of inspection	
3 electric fans	Not tested	
Building Two (please see plan)		
General		
Painted portal steel frame	Rusted in parts with some impact damage but otherwise reasonable condition	
West Elevation		
Insulated panelled walls	Marked and some heavily damaged or broken	39, 40, 41 42, 43, 44
5 roller shutter doors manual and electric	Unable to test but evidence of heavy impact damage	40, 41, 42
South Elevation		
Single fire personnel door	Locked and paint flaking	45

Insulated panelled walls	Some marks, stains with a number broken or damaged by racking	45, 46, 47 48, 49
Opening leading to Building One		
East Elevation		
Insulated panelled walls	Some broken – heavy marking	50, 51, 52
2 personnel fire doors	Fair condition. Not opened.	50, 52
North Elevation		
Insulated panelled walls	Heavy marking, a number broken or damaged	53, 54, 55 56, 57
2 single personnel doors	Door in south-east corner badly damaged both would benefit from repaint	55, 57
Flooring		
Concrete floor throughout	Paint markings in part. Floor has been used heavily. Cracks in part and heavily marked and broken up in some areas with again some bolts still in situ.	58, 59, 60 61, 62, 63 64, 65
Roof		
Insulated roof panels	Reasonable condition but some evidence of impact damage and damaged panels. Evidence of water ingress where there was a vent pipe previously	66 - 90
Strip lighting throughout	Not all in working order at time of inspection	66 - 90
Fans	Unable to test	66 - 90
Shared Access to Building Two West Elevation		
South Elevation		
Partly open and part breeze block wall with cladding above	Good condition	91
East Elevation		
Large roller shutter door	Not tested, good condition but evidence of some impact damage	92, 93
North Elevation / Ext South Building Two		
Aluminium cladding	Very heavy damage and very poor condition	94, 95, 96 97, 98
Roller shutter doors	Evidence of impact damage	94, 95, 96 97, 98

EXTERNAL

Building Two North Elevation		
Aluminium clad elevation	Some damage along length of elevation limited by crash barrier. Inspection hindered by parked lorries. Heavy vegetation growth along elevation	99, 100
2 fire doors	One badly damaged in south-west corner of Building Two as evidenced above.	100
Outside Yard North		
Concrete and tarmac in part	Breaking up in areas but unable to make full inspection due to lorries in place	101, 102
South Yard		
Concrete yard to west of Building One west elevation	Cracked and broken up in part	103, 104 105, 106
Building One West Elevation		
Aluminium sheet cladding	Marked and evidence of impact damage	104, 105
Roller shutter	Reasonable condition	104, 105
Building One South Elevation		
Aluminium cladding	Heaving impact damage along elevation	107, 108 109
Building One North Elevation		
Aluminium cladding	Reasonable condition with some impact damage	110, 111 112
Roof		
Aluminium cladding	Unable to inspect due to restricted access	113, 114 115, 116

Declaration

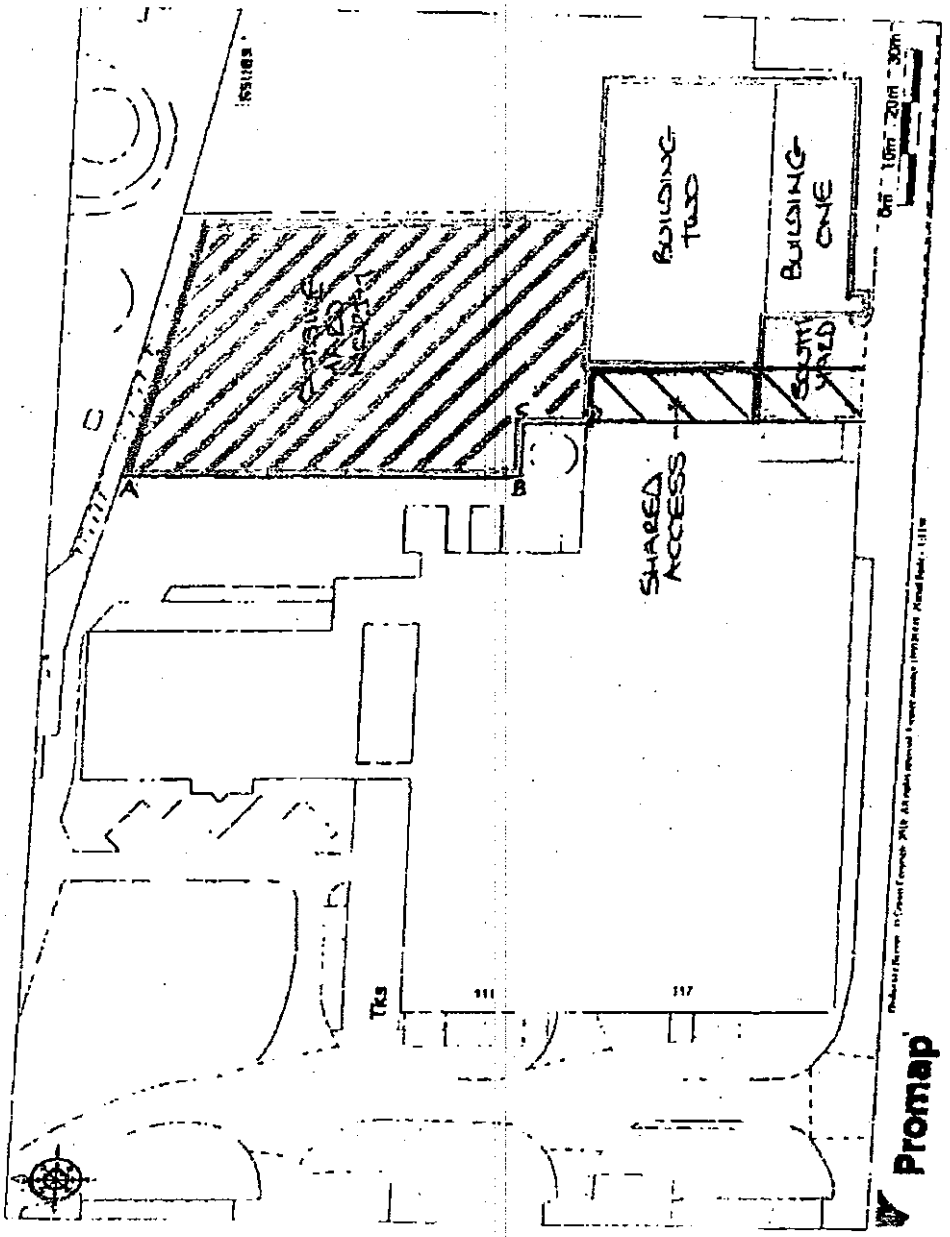
We agree that this is a true account of the condition of **LAND AND BUILDING TO THE EAST OF UNIT 111/117 AND FRONTING OAK DRIVE, HARTLEBURY TRADING ESTATE, HARTLEBURY, KIDDERMINSTER, WORCESTERSHIRE DY10 4JB** as at **3 JUNE 2010**

Landlord:	**Bristol Road Properties Limited**
Signature for Landlord:	.....
Date:	.....
Name of Witness:	.....
Signature of Witness:	.....
Date:	.....

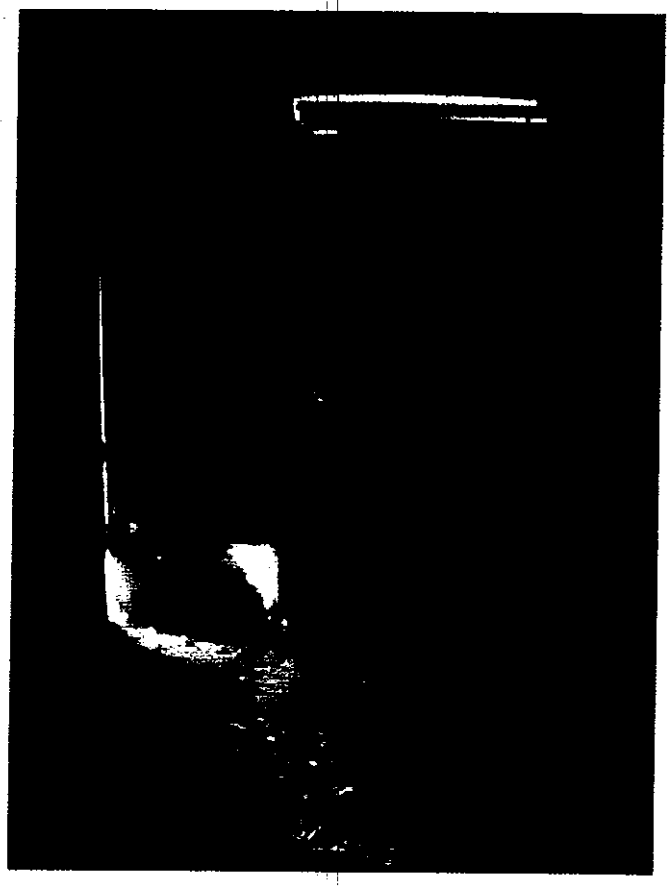
Tenant:	**Severn Waste Management**
Signature for Tenant:	.....
Date:	.....
Name of Witness:	.....
Signature of Witness:	.....
Date:	.....

PLAN FOR SCHEDULE OF CONDITION

Z ←



Photographs – Land and Building to the East of Unit 111/117 and Fronting Oak Drive, Hartlebury Trading Estate, Hartlebury



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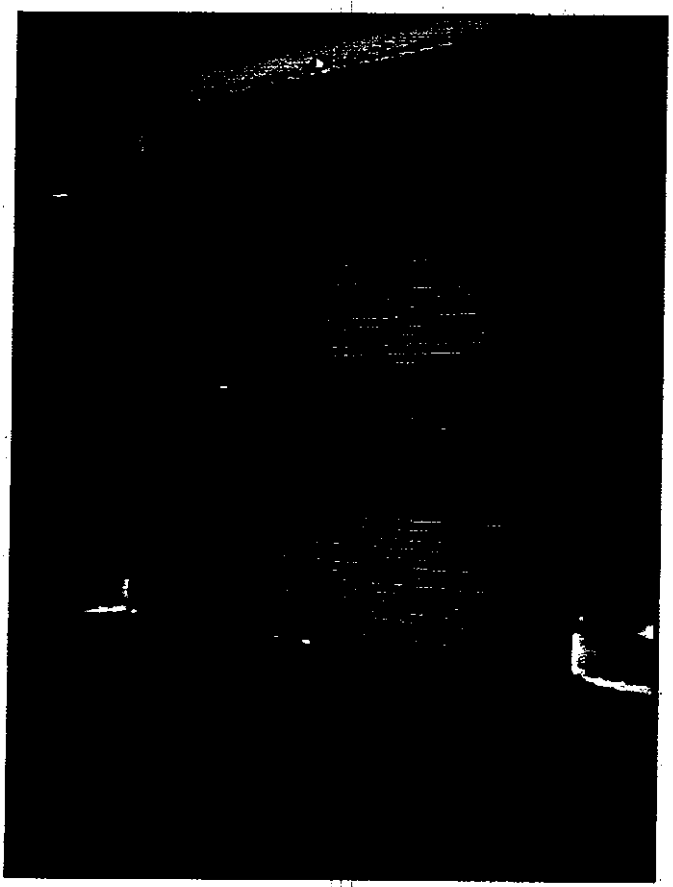

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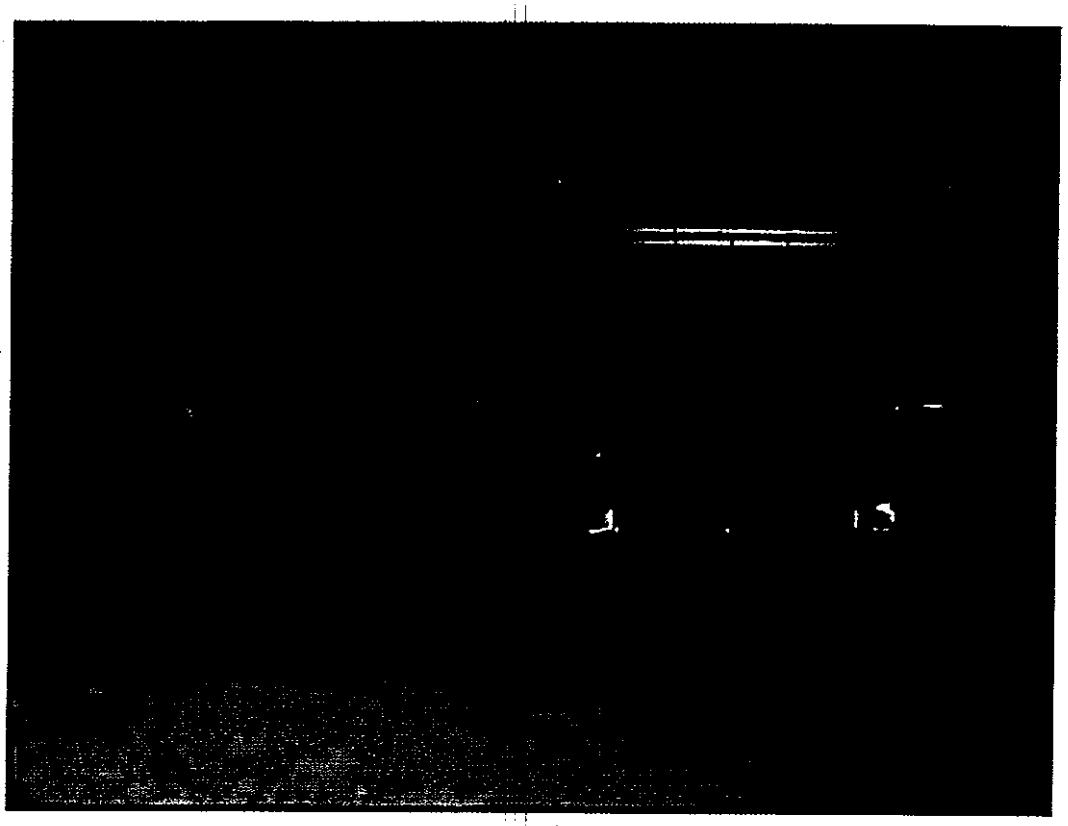

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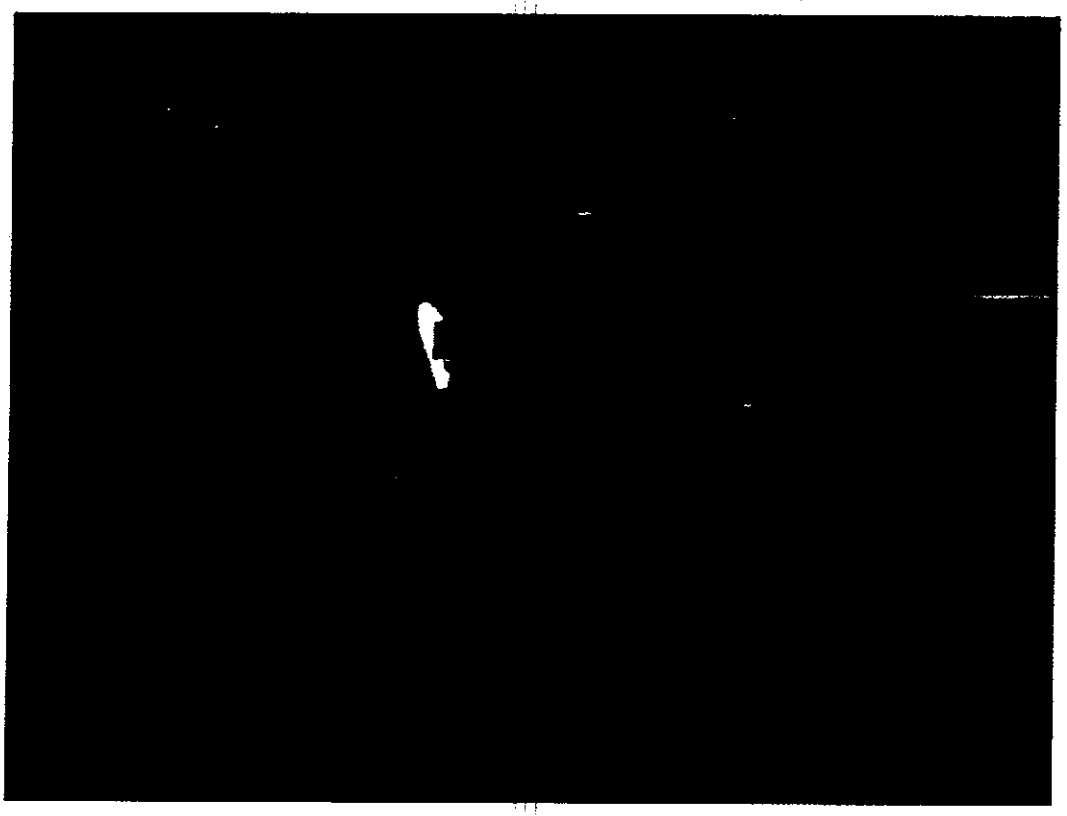

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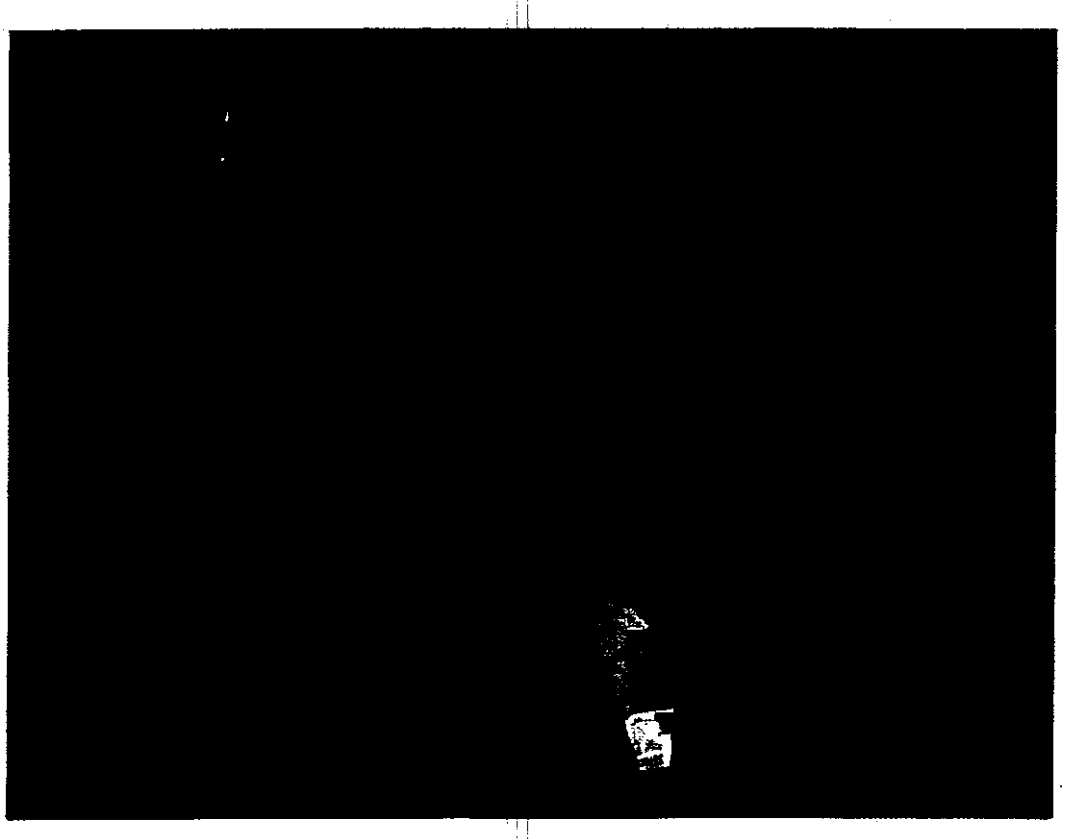

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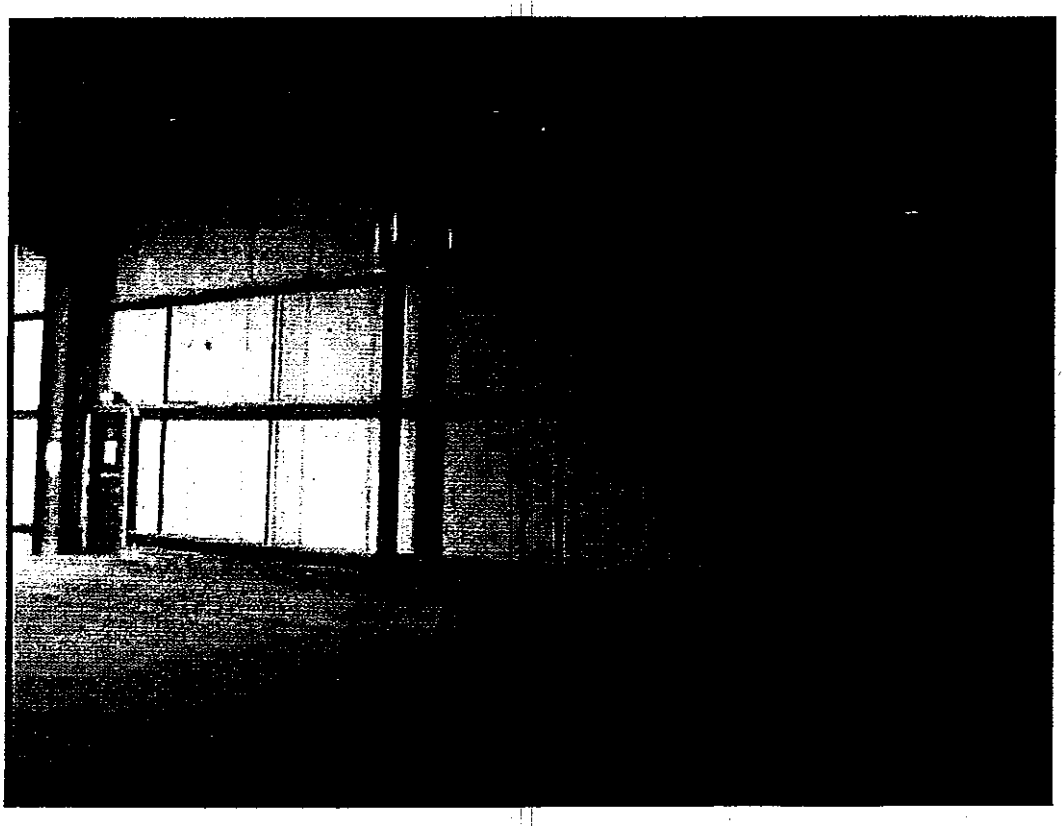

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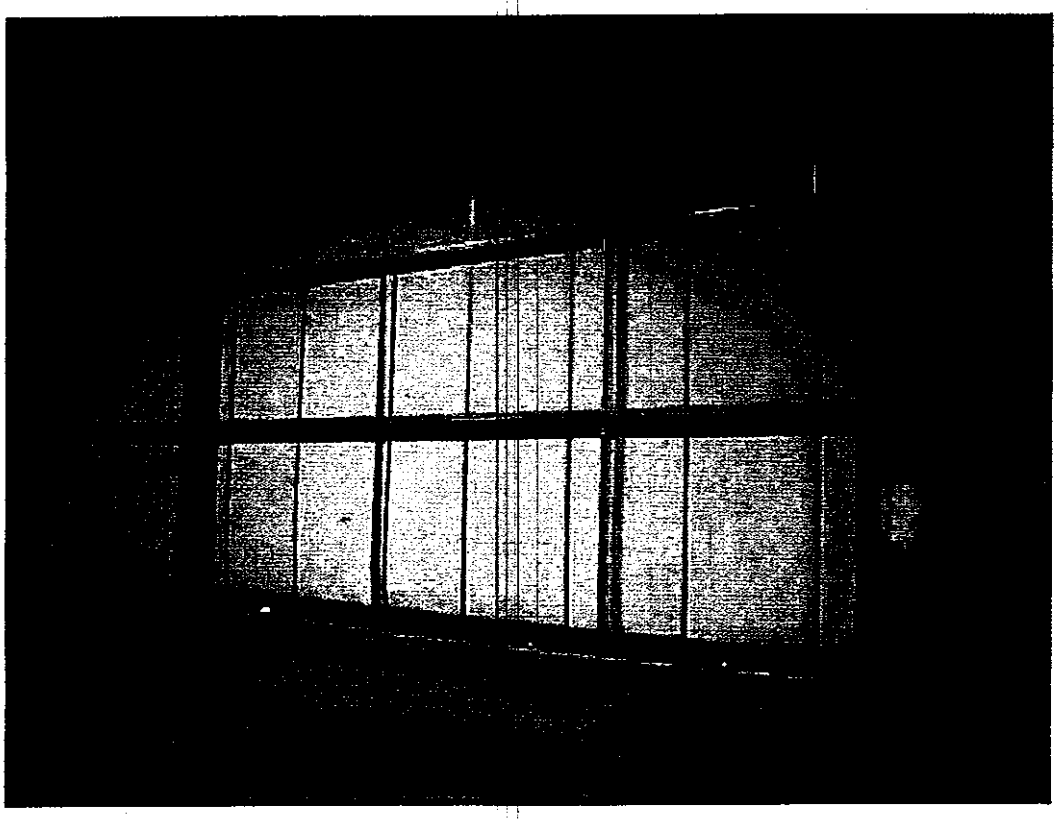

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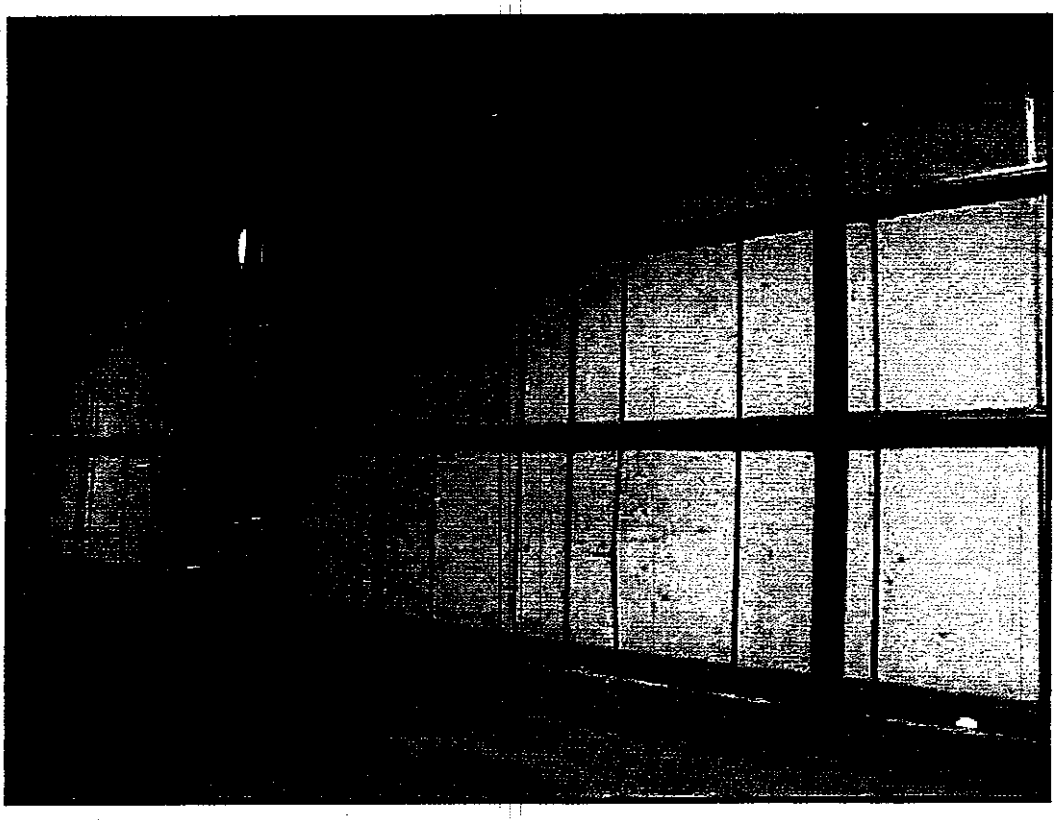

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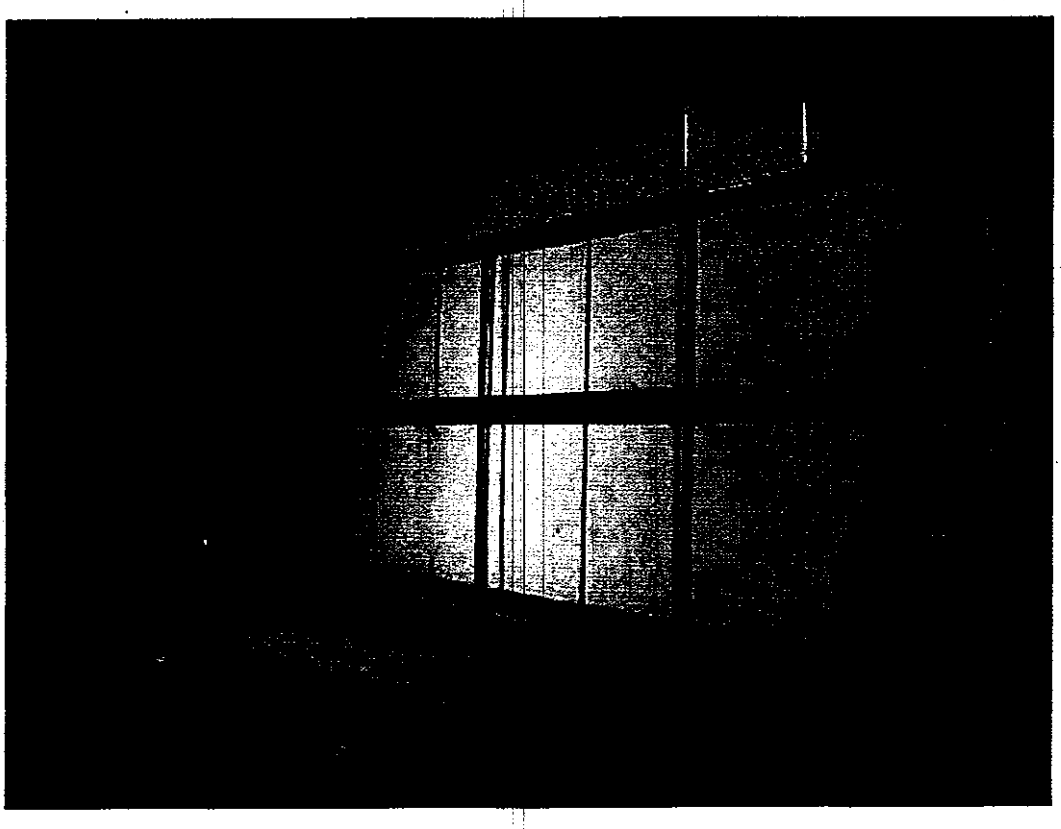

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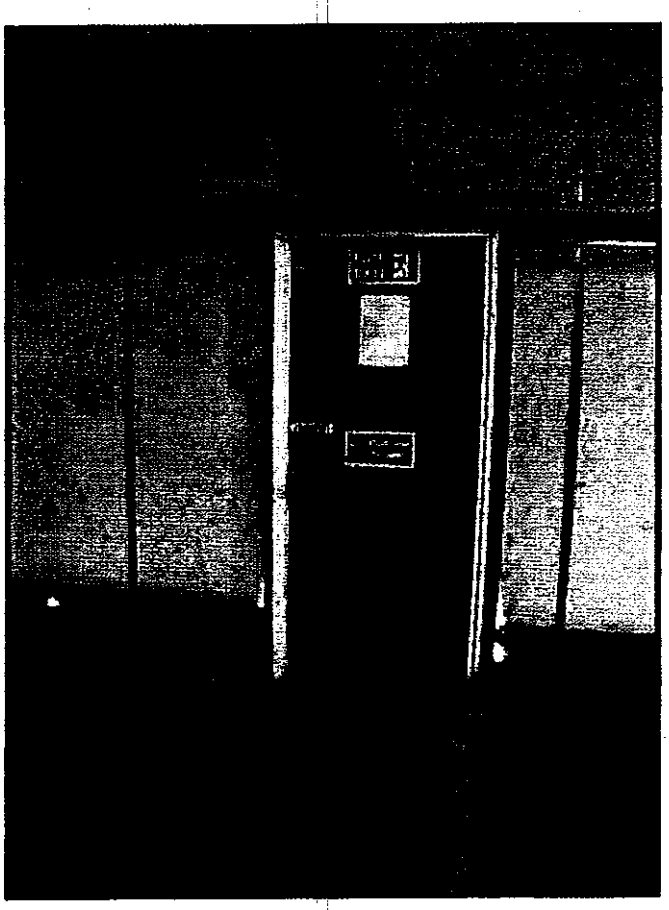

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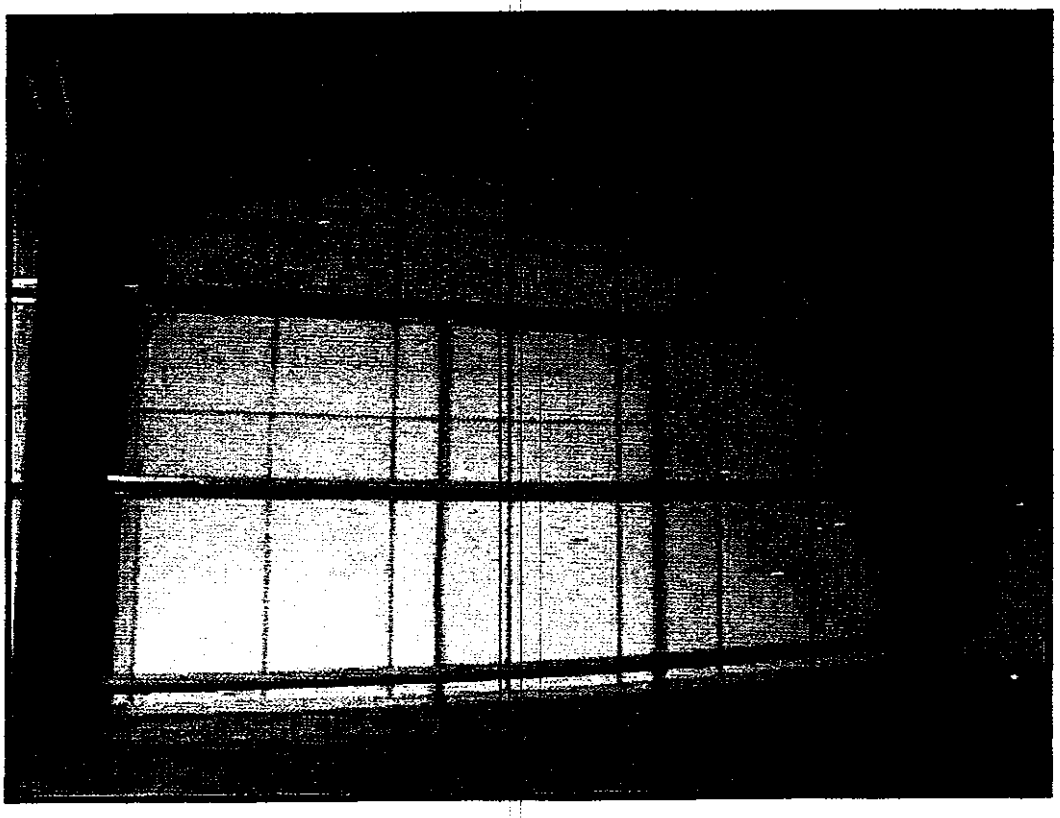

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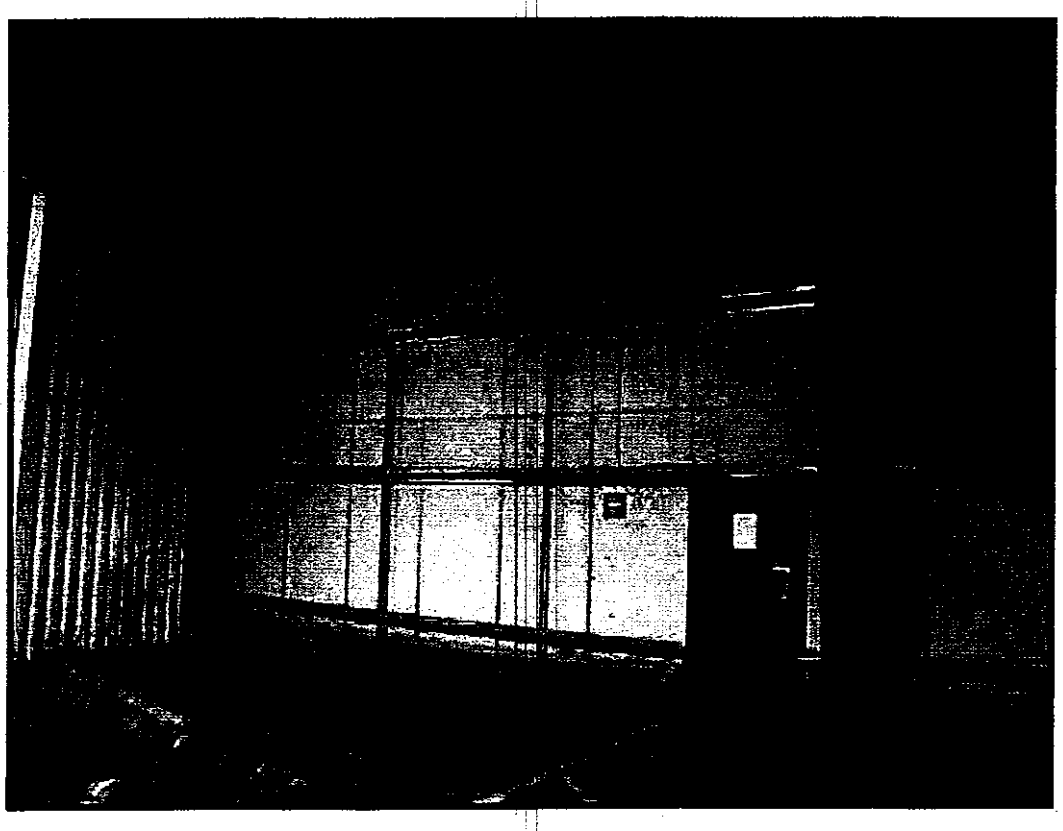

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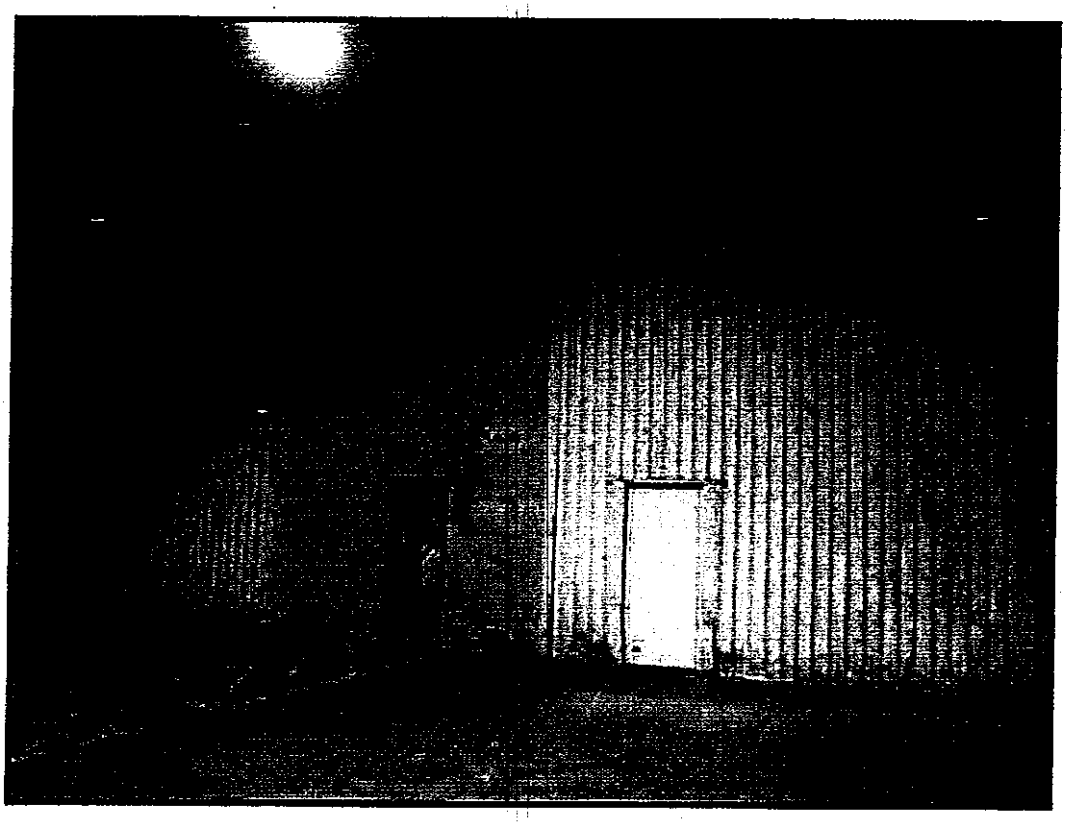

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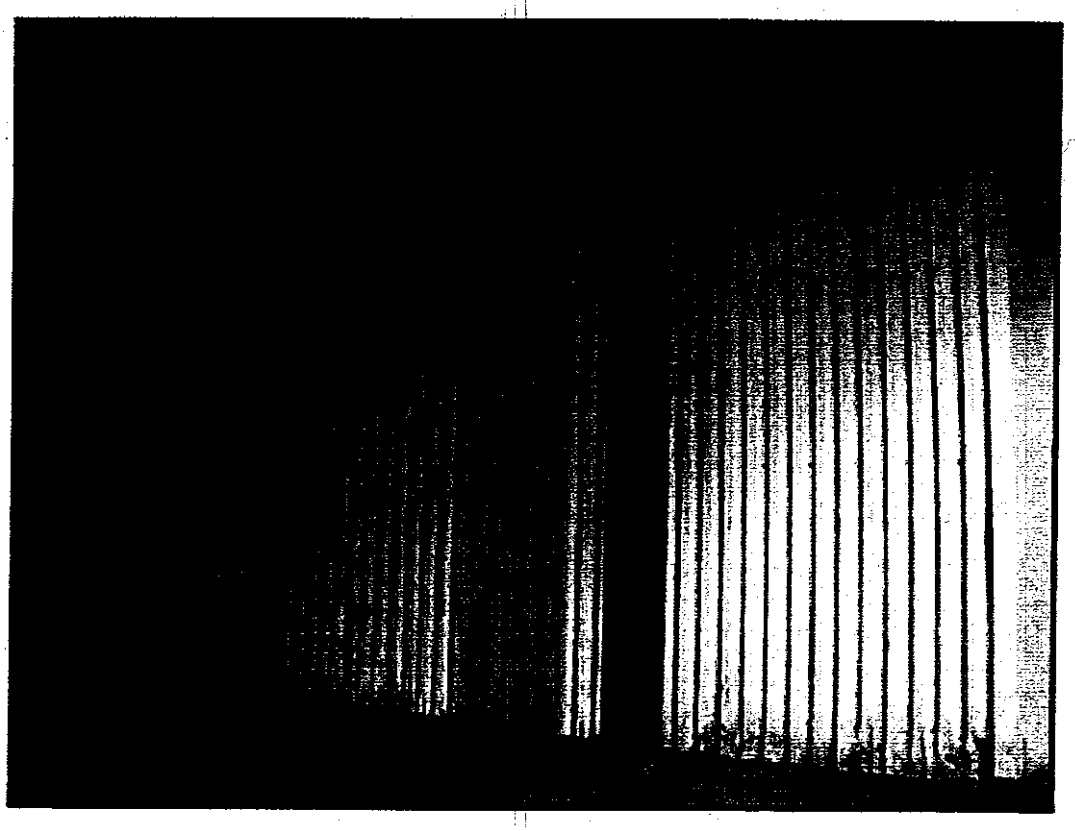

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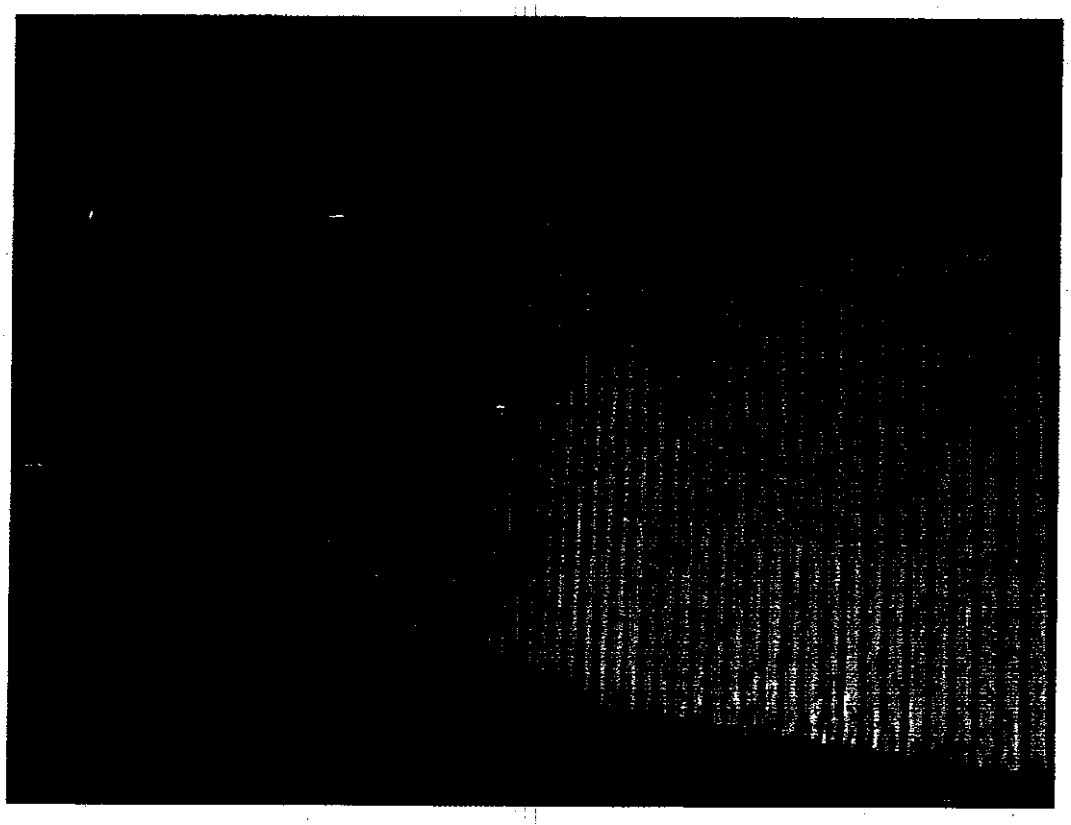

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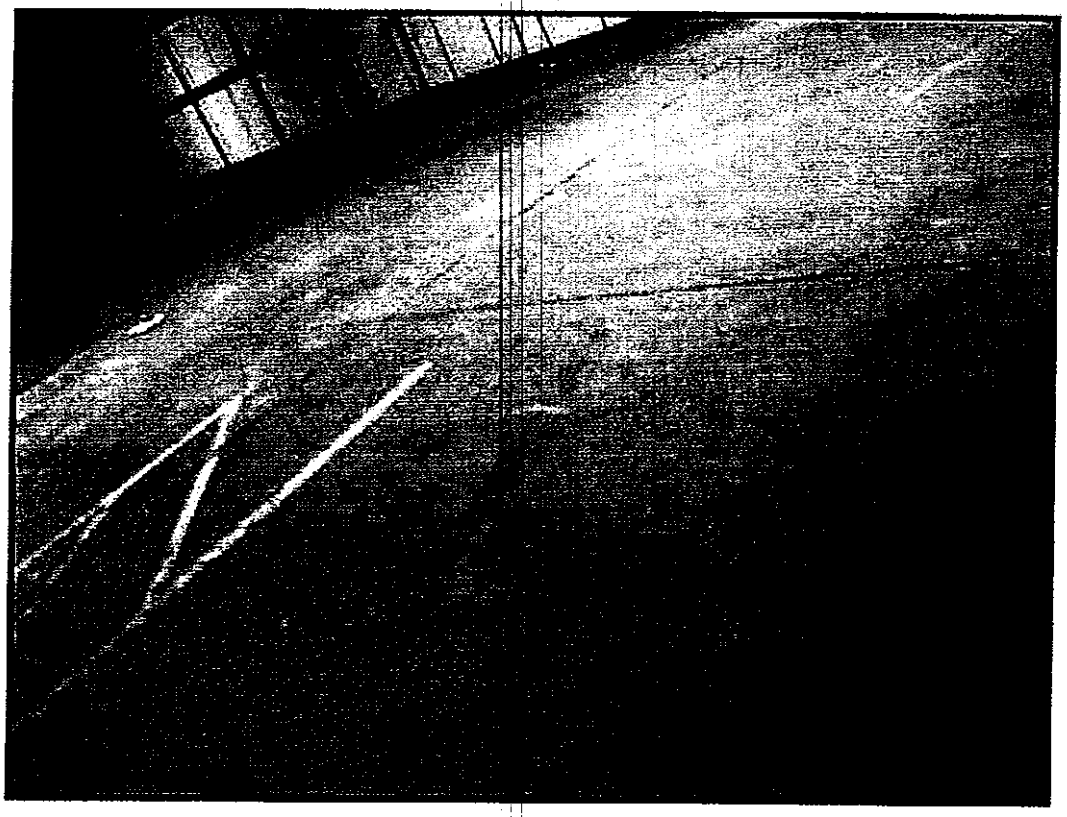

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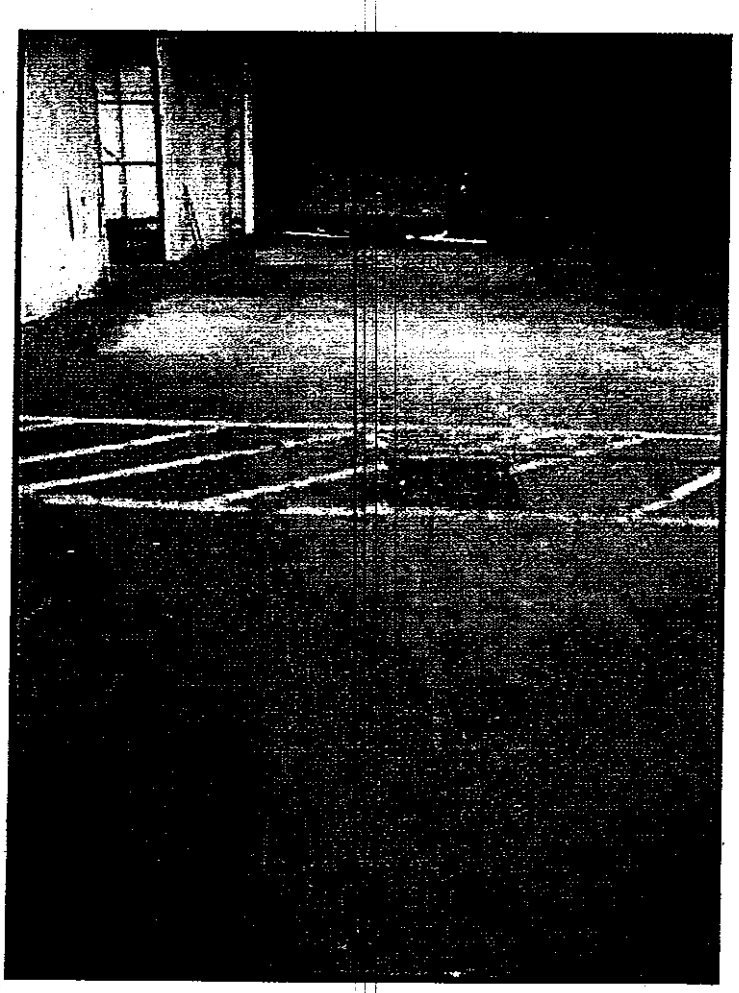

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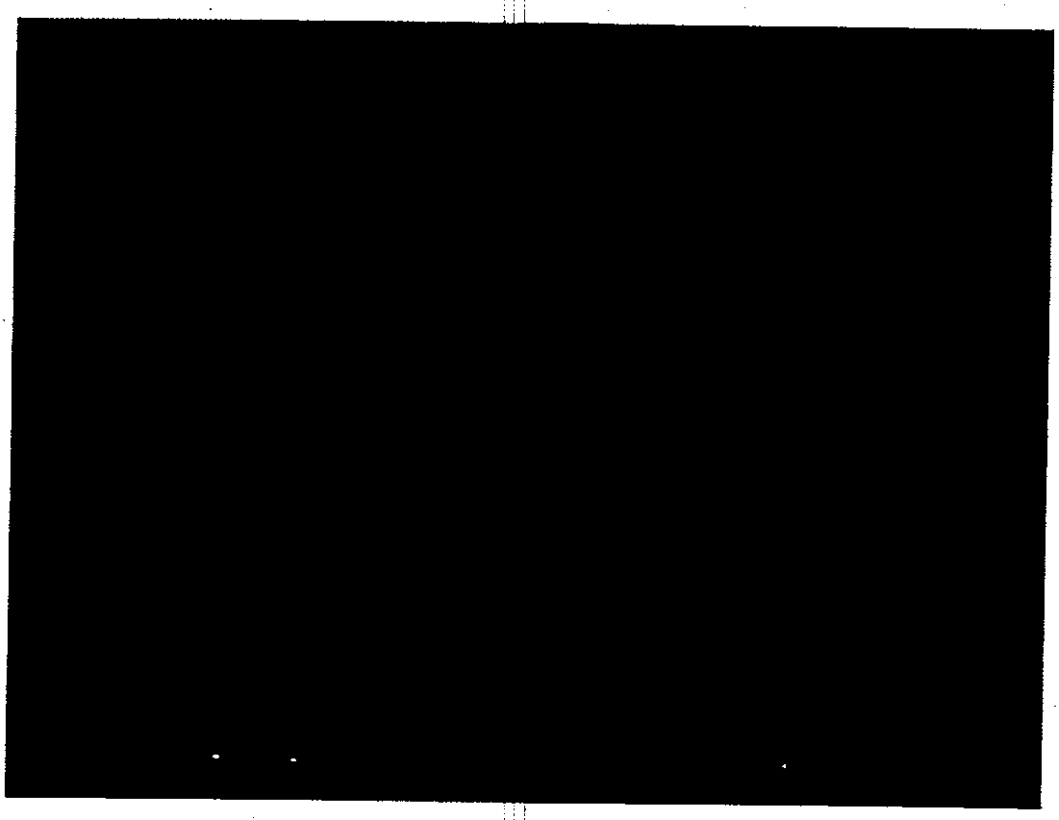

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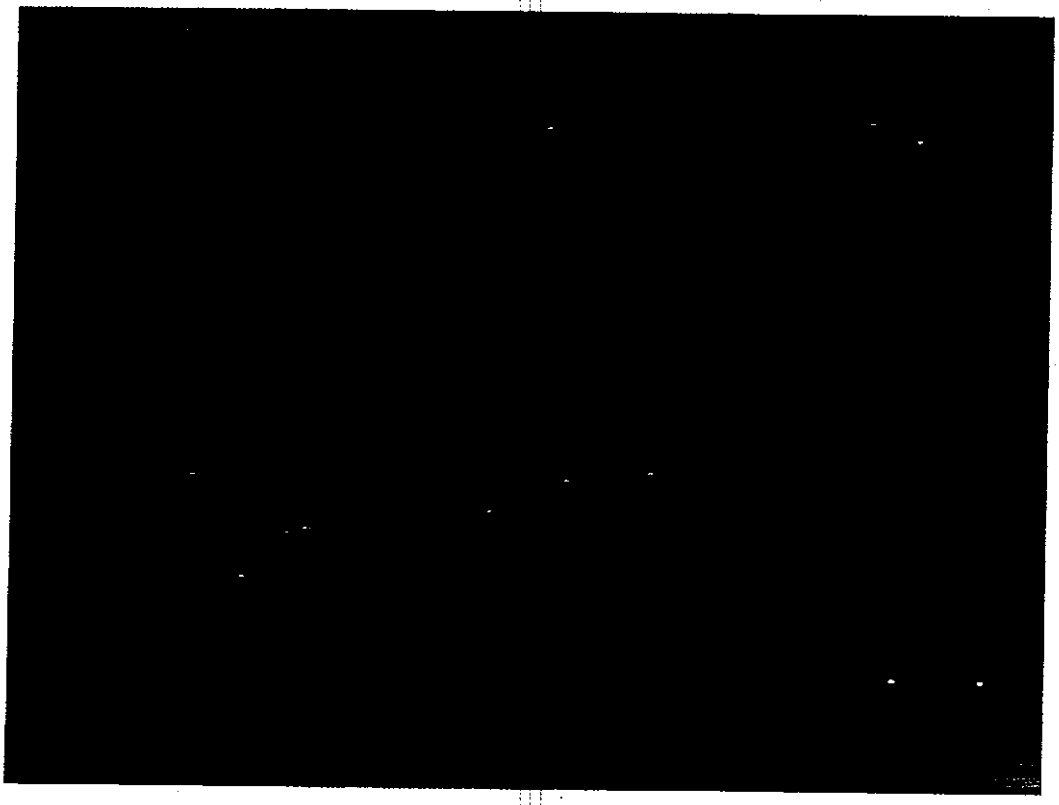

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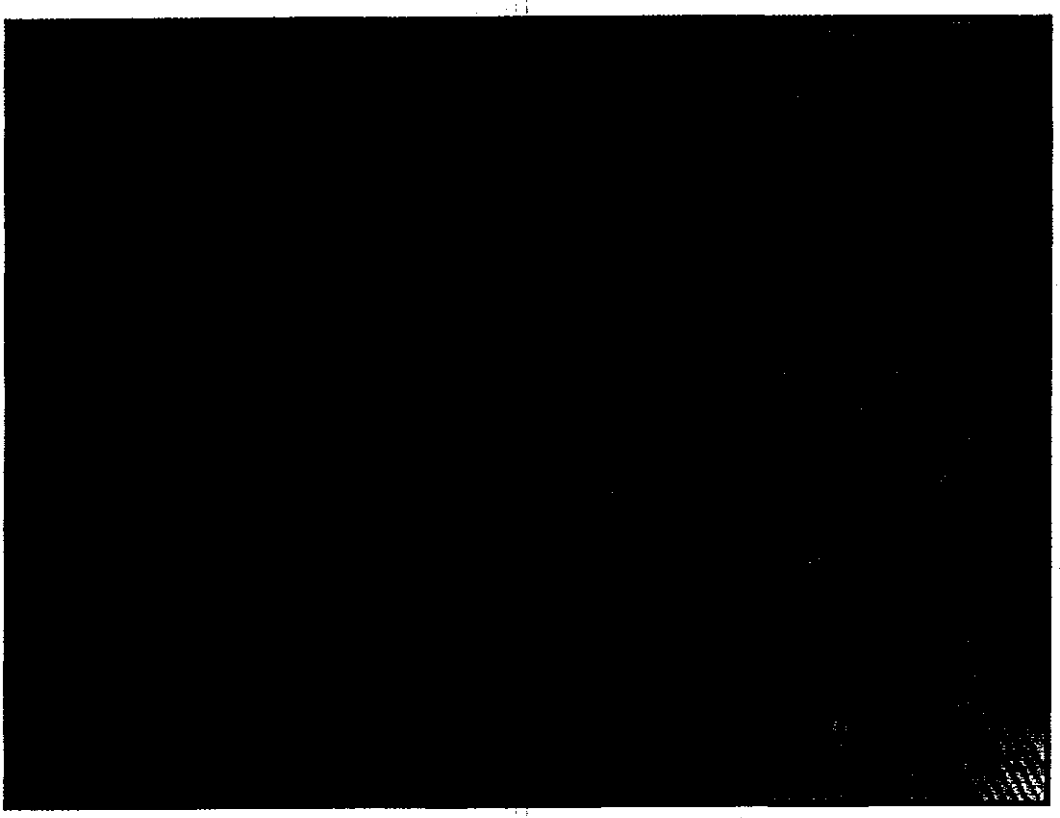

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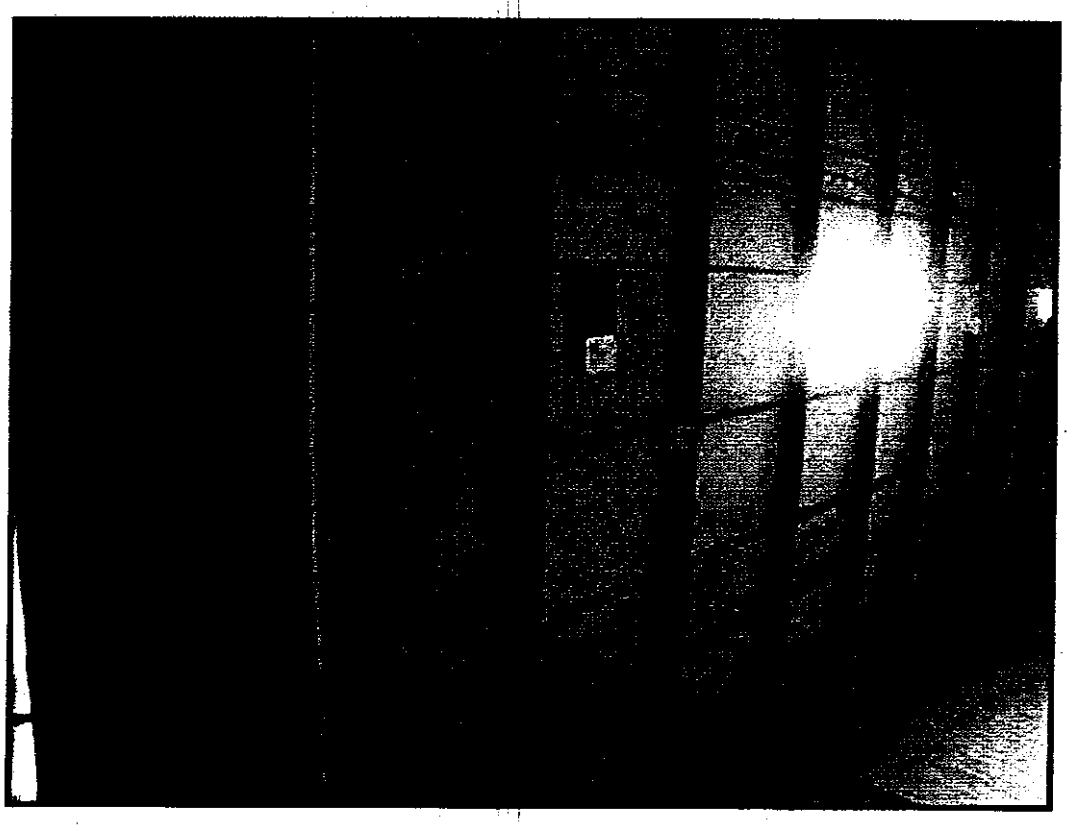

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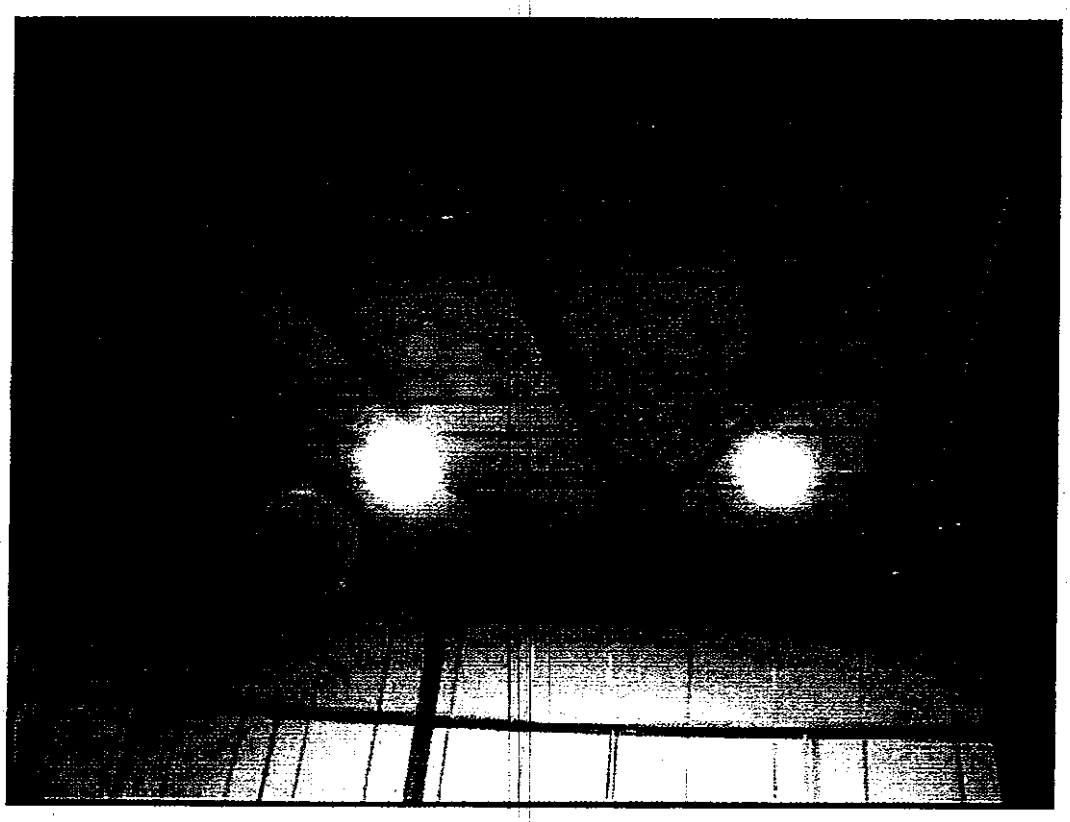

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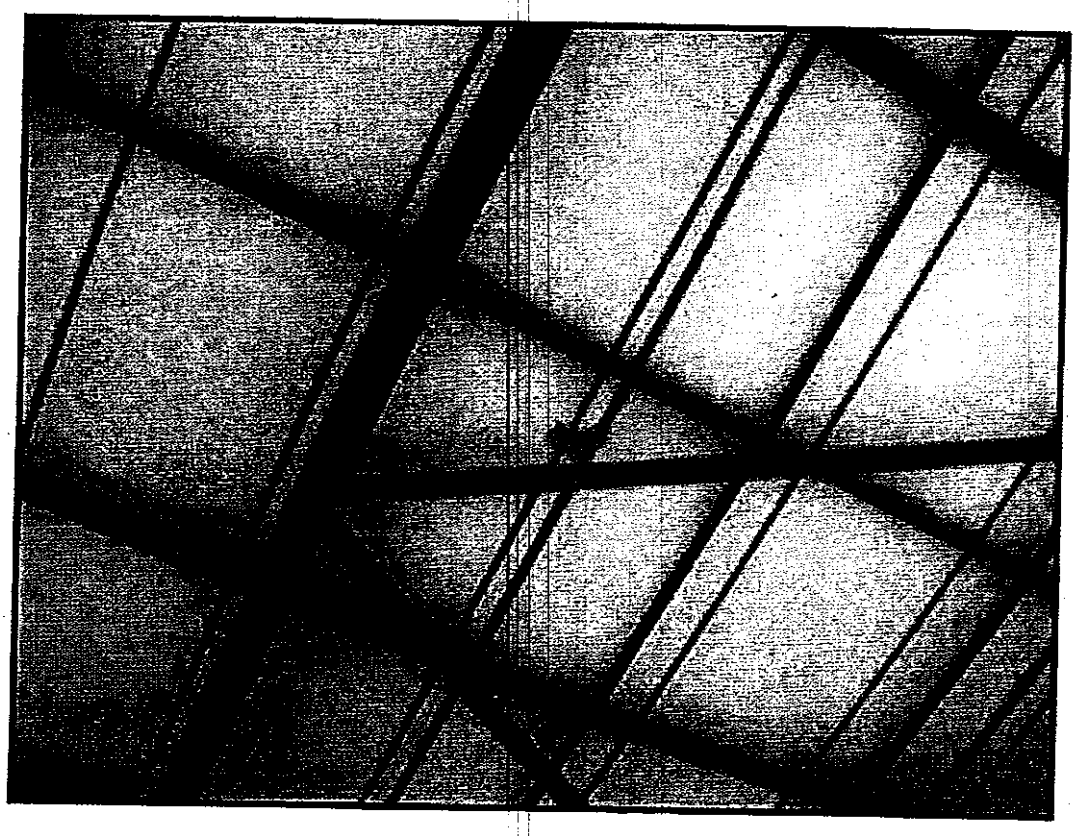

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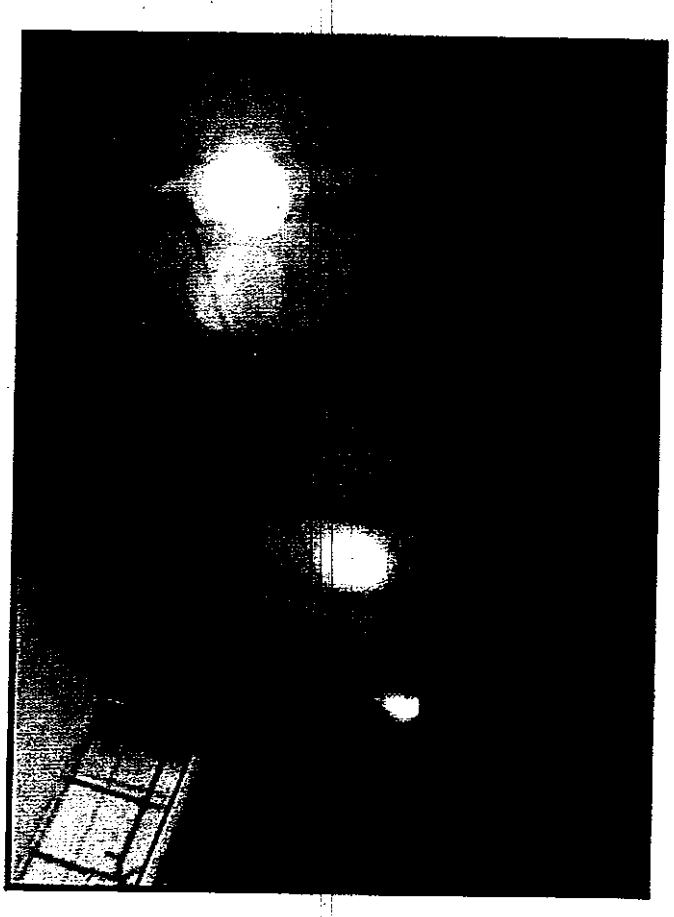

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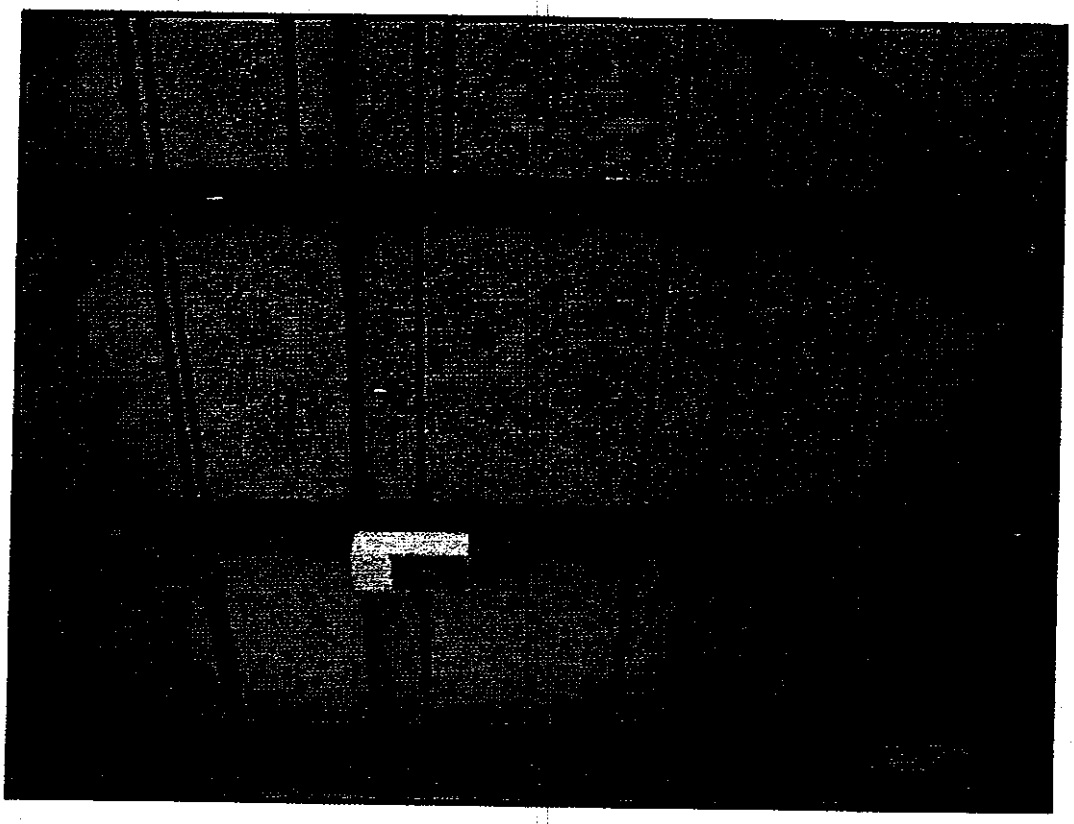

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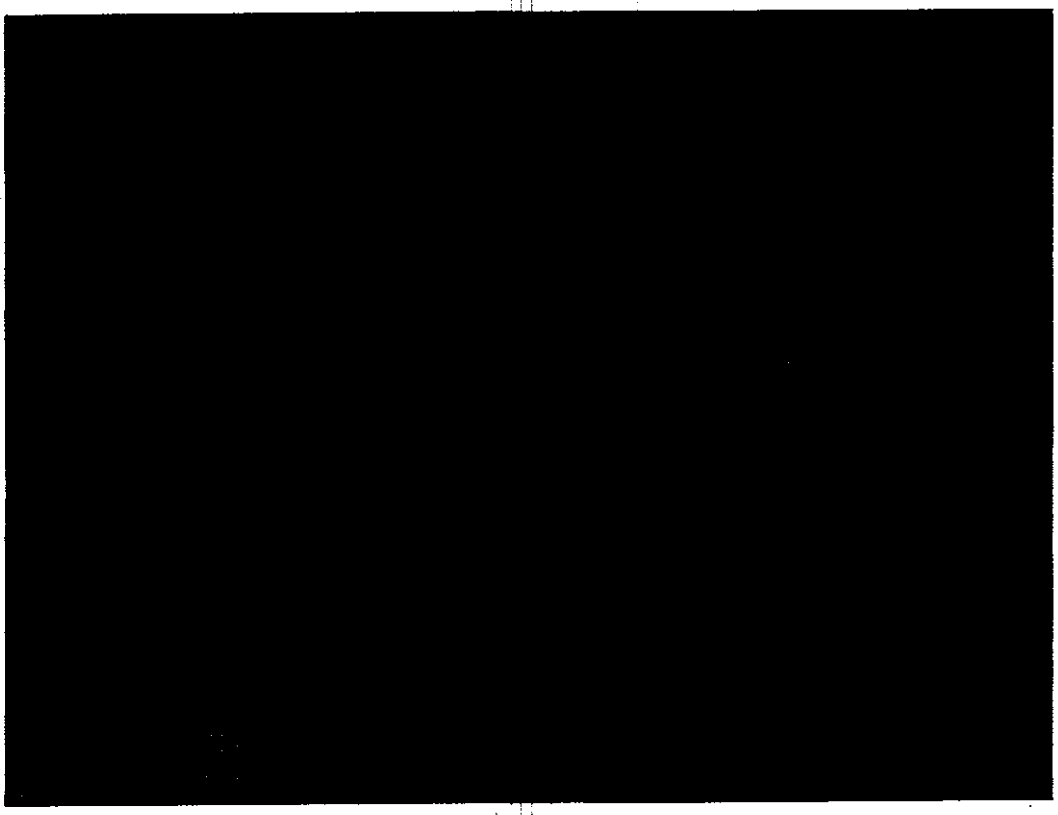

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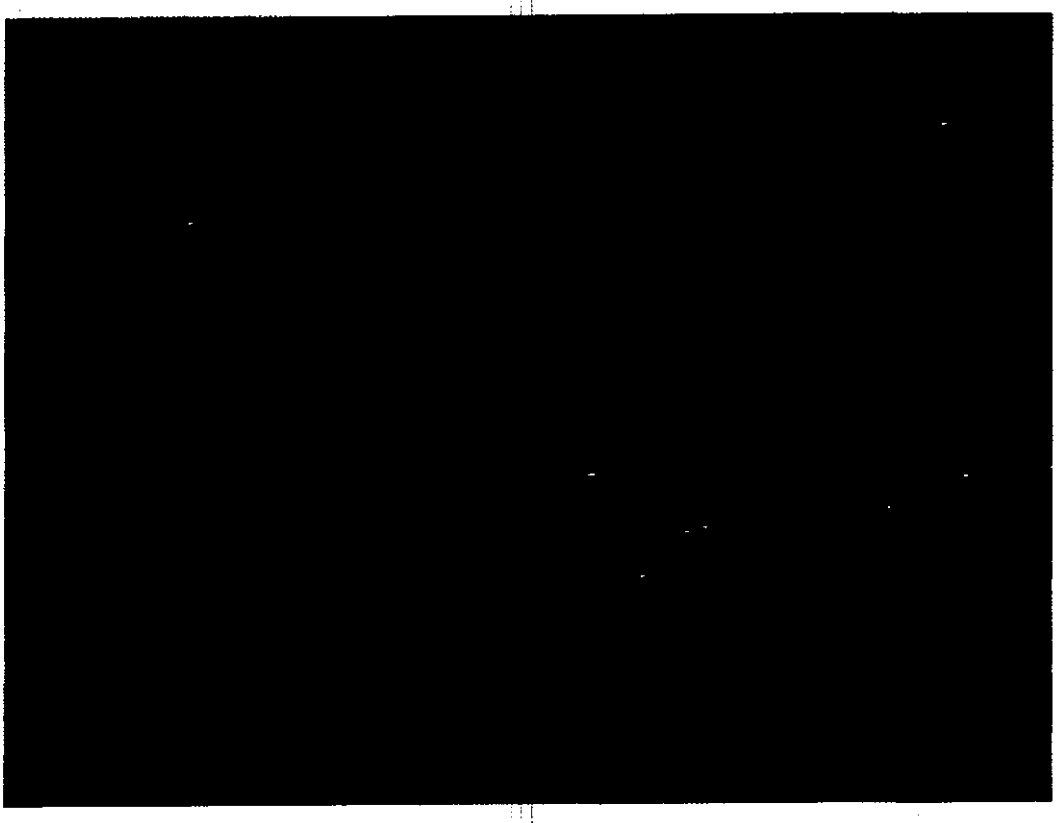

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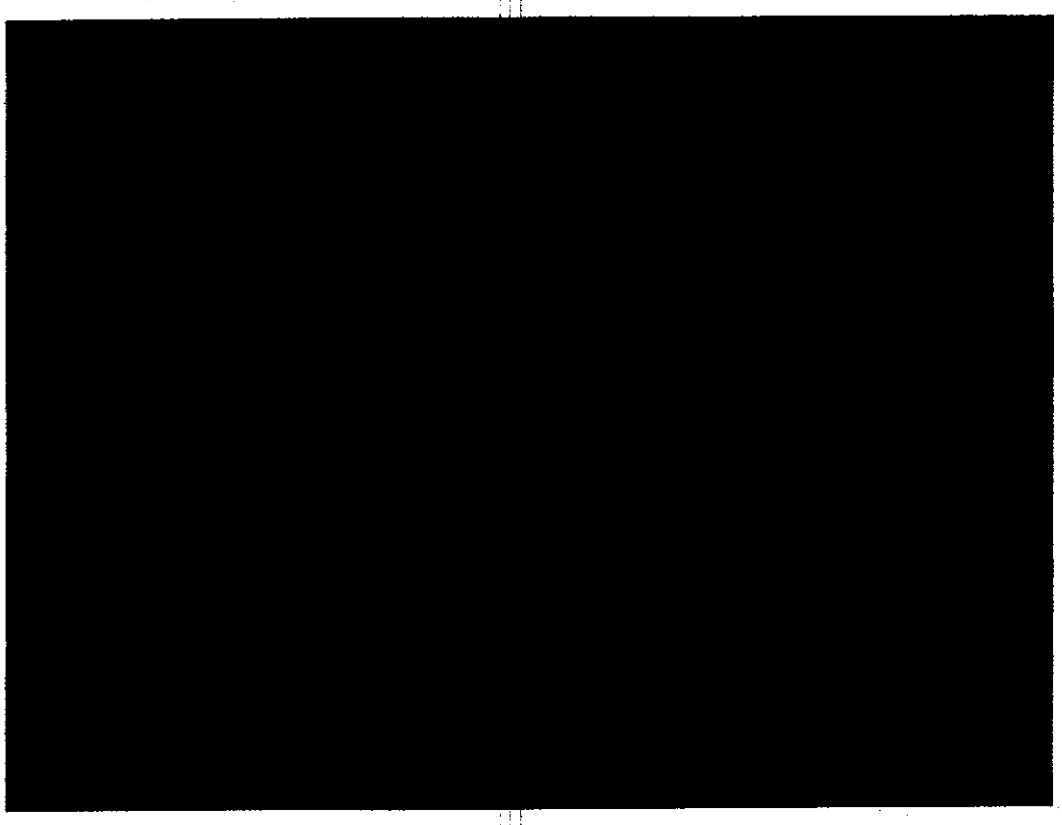

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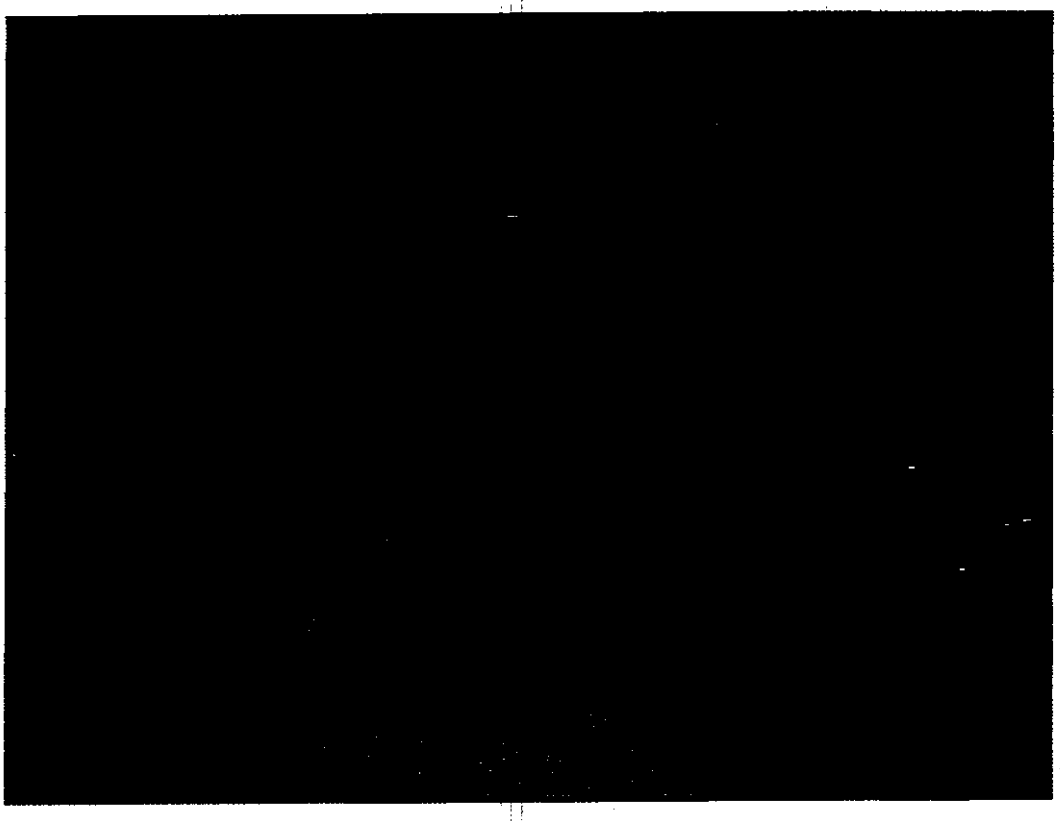

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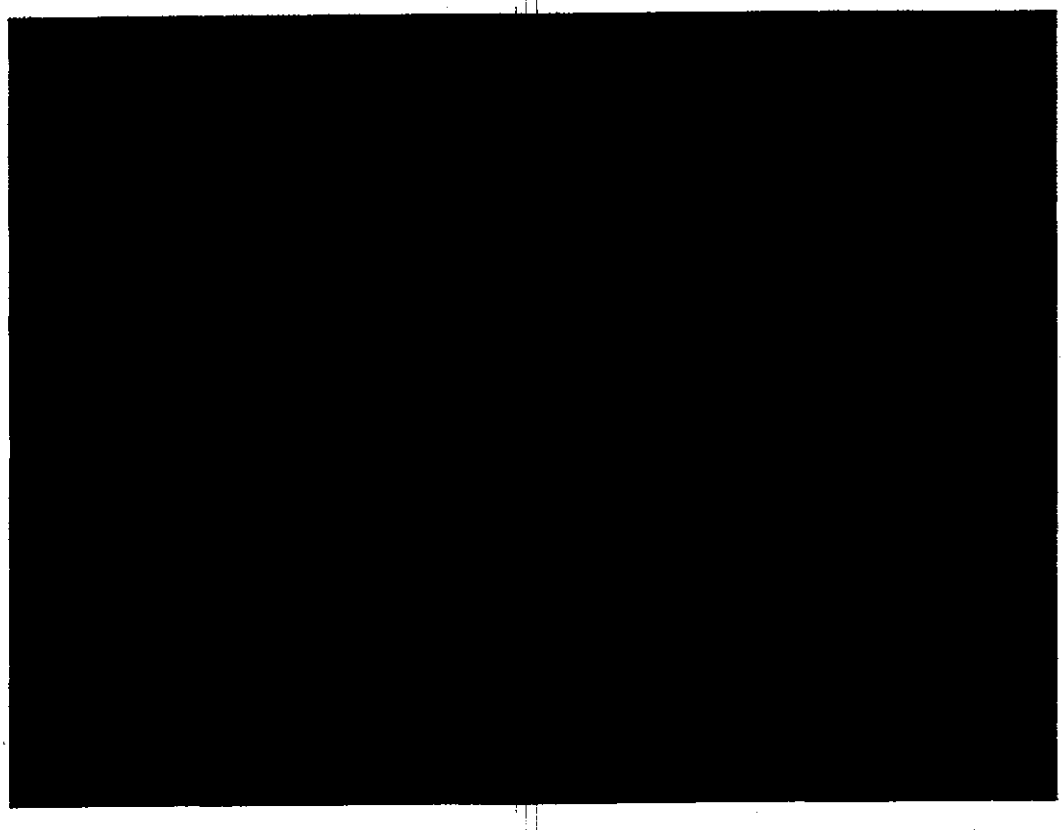

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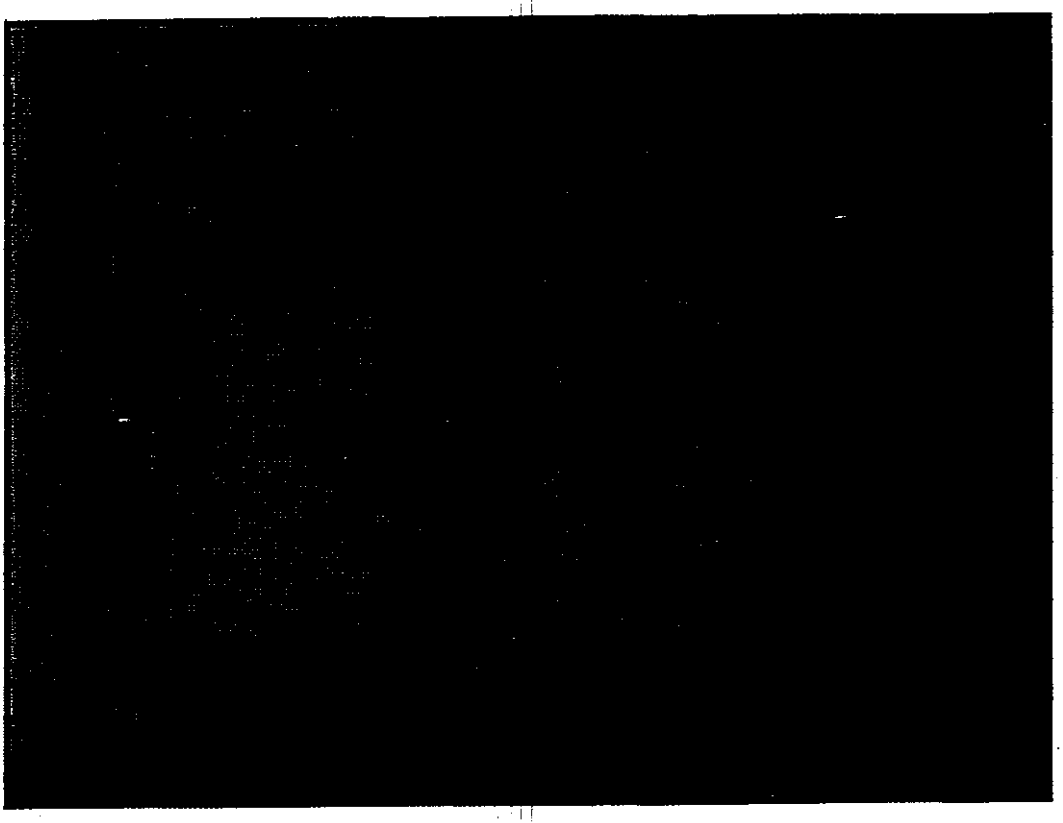

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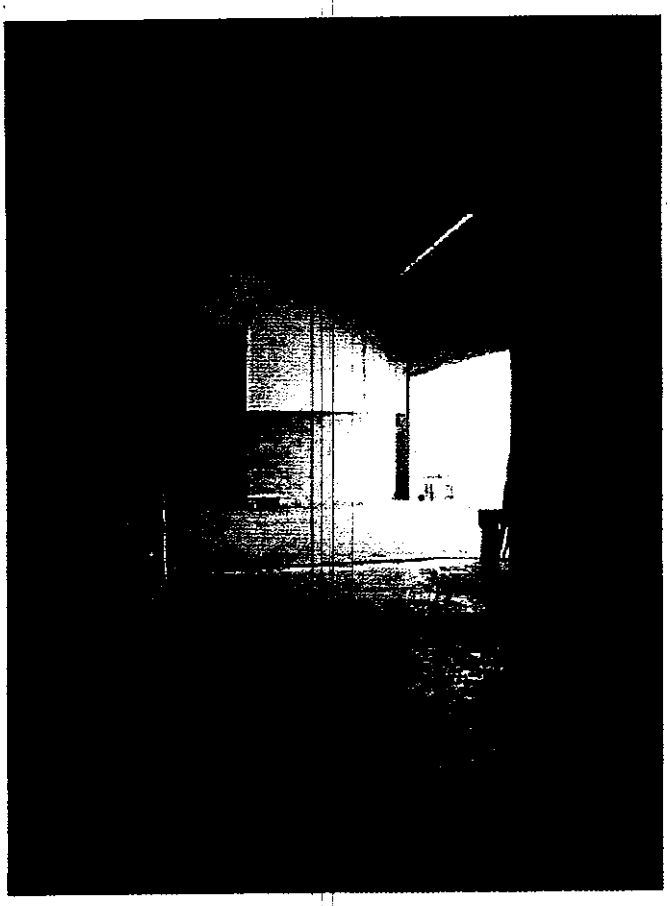

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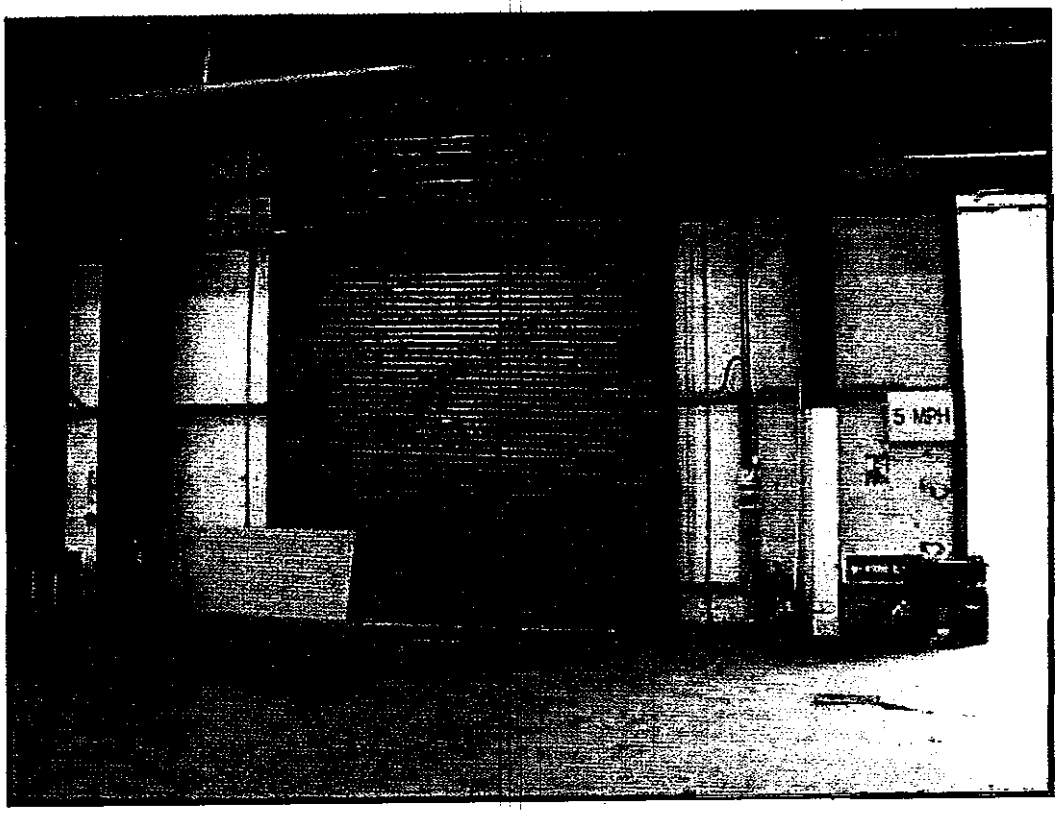

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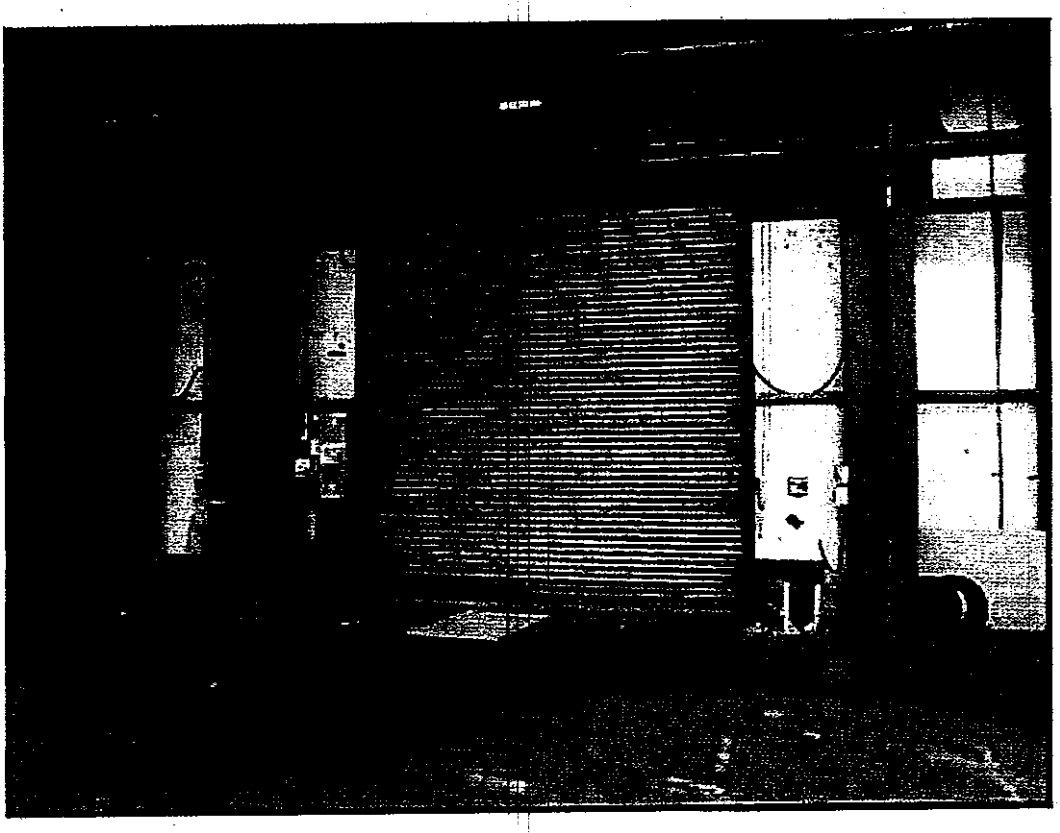

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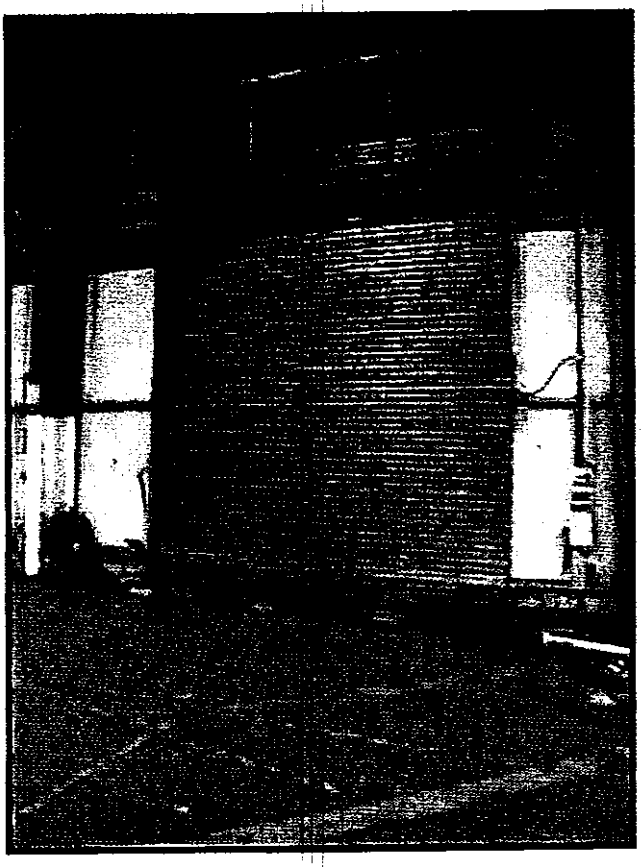

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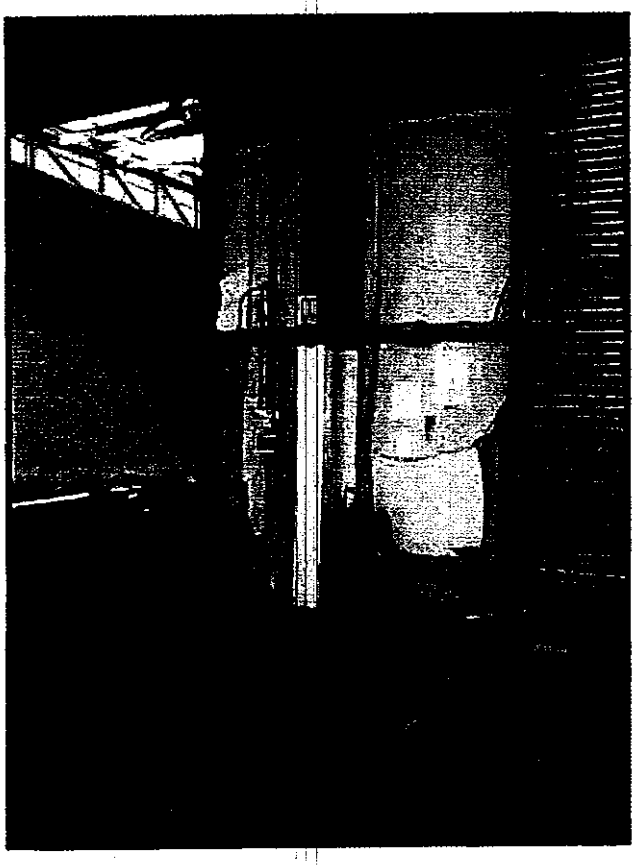

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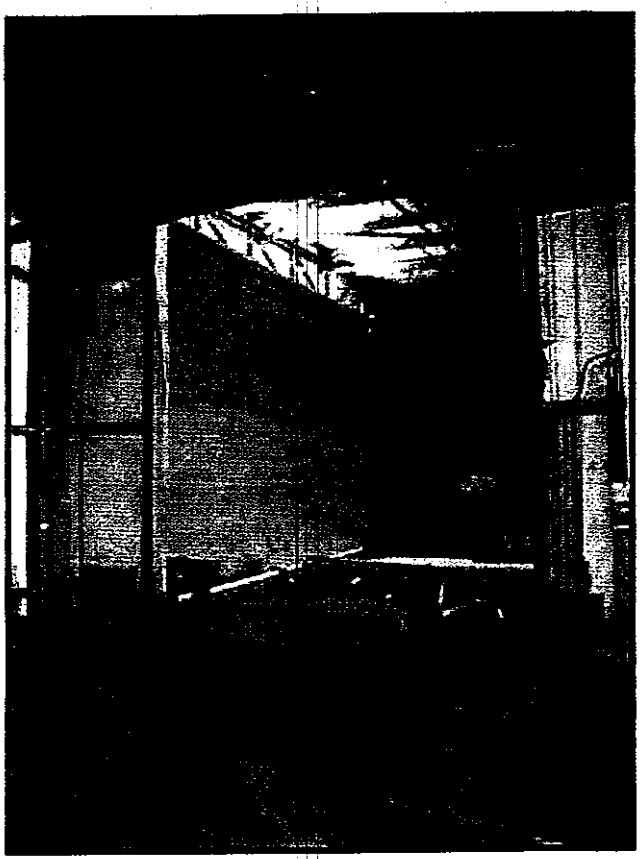

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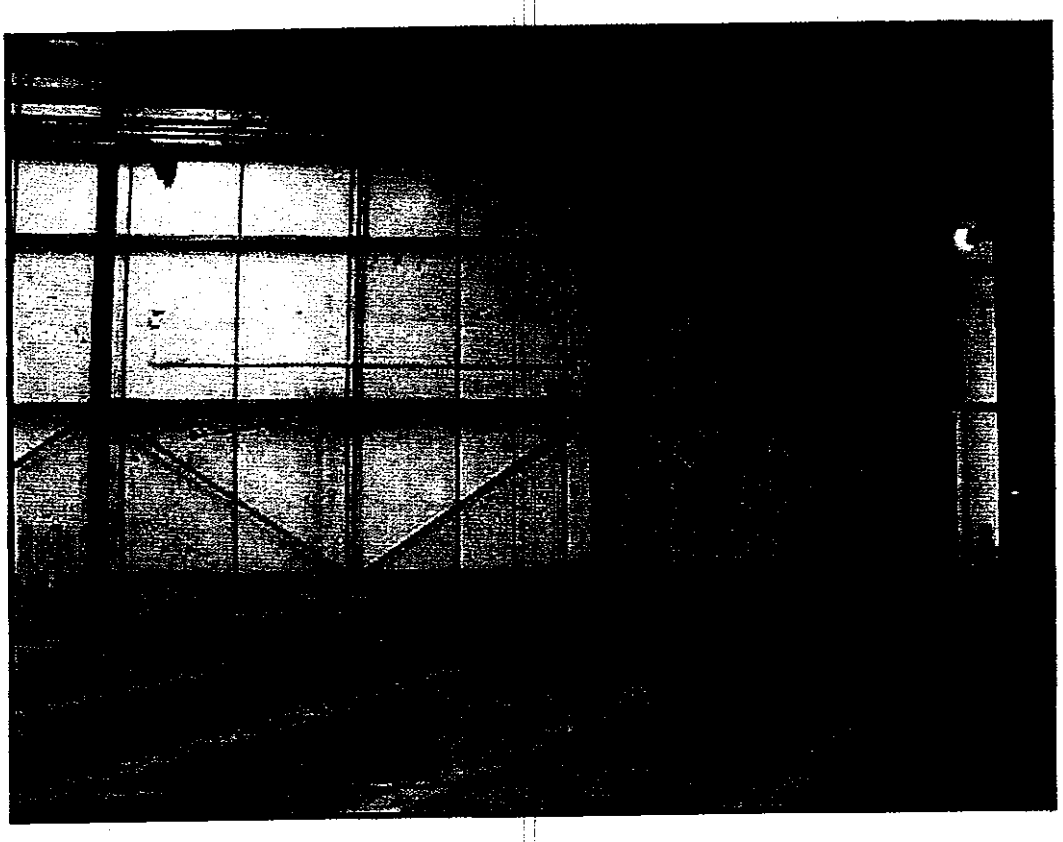

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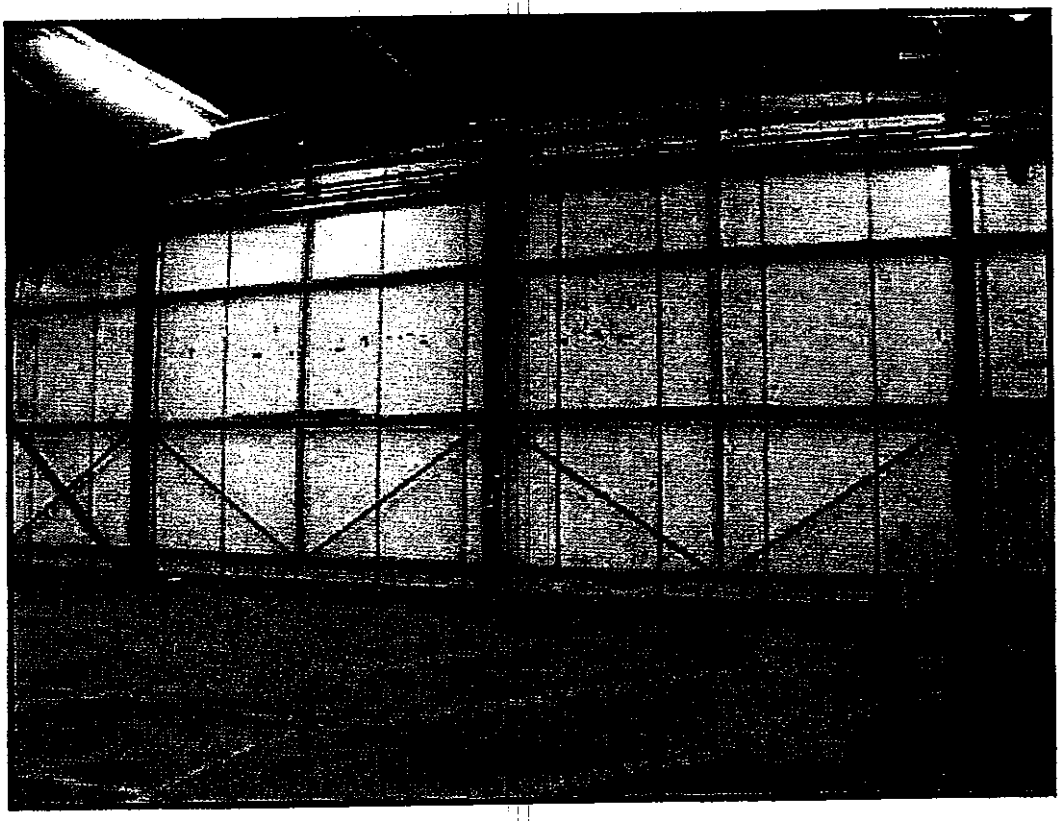

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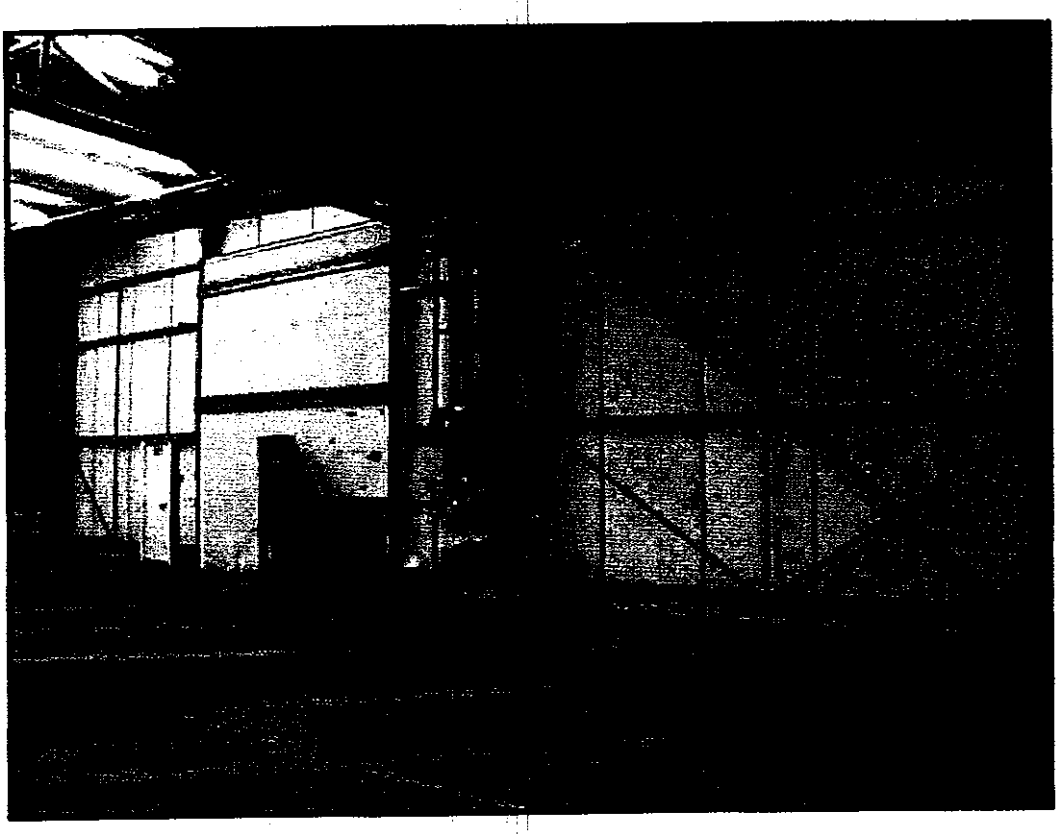

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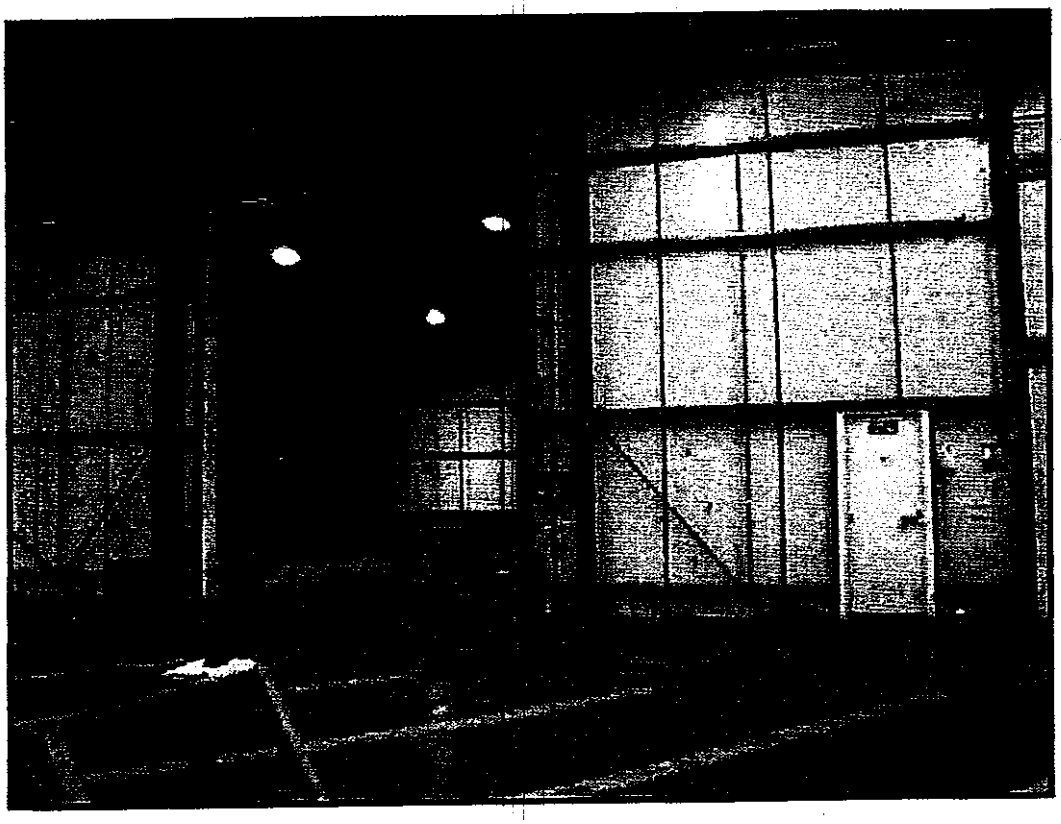

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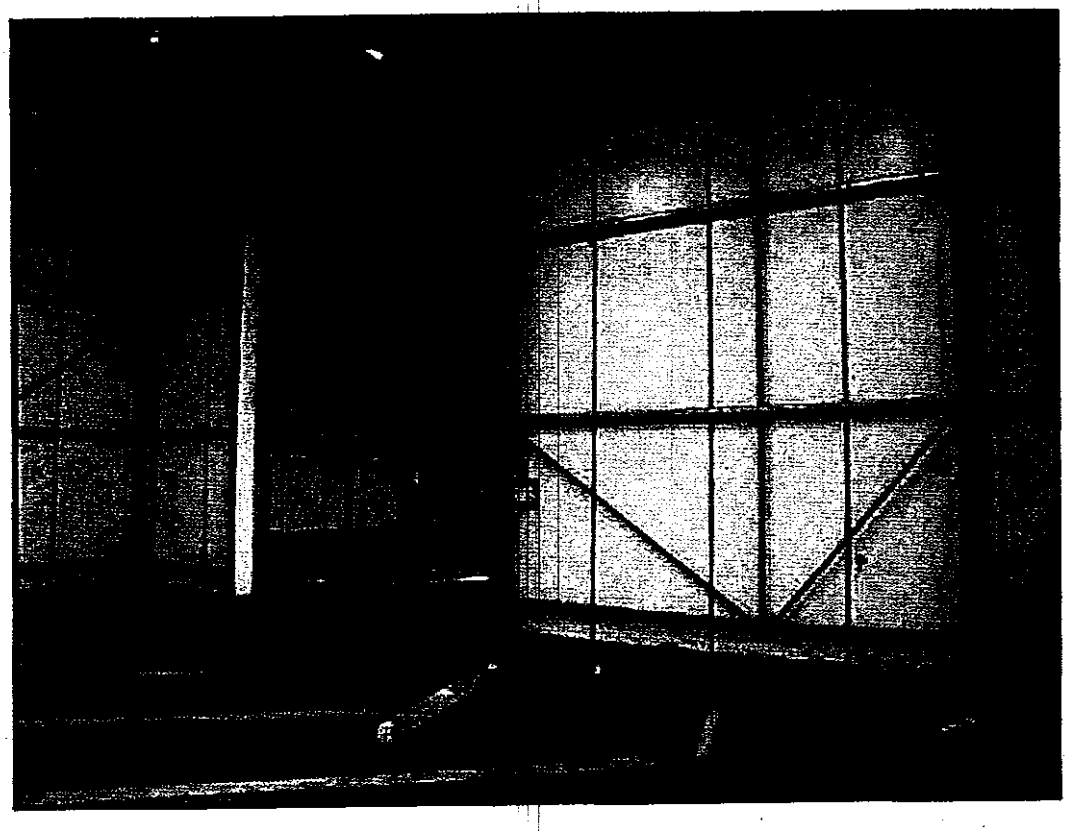

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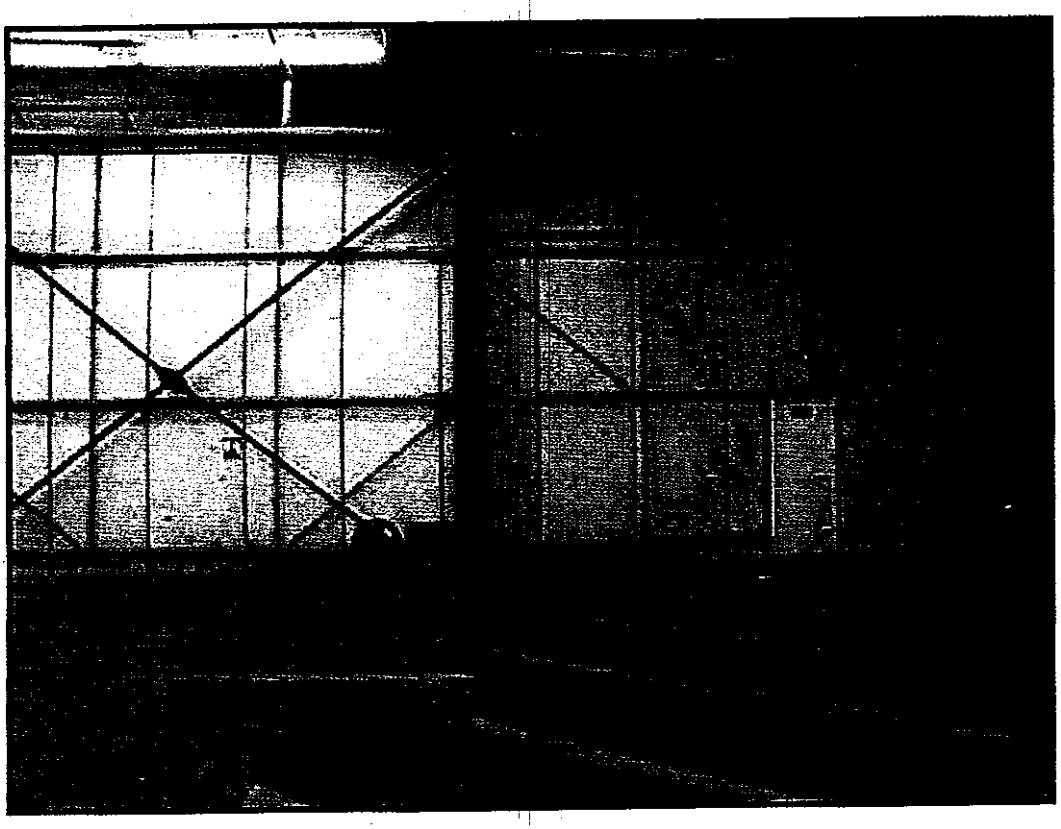

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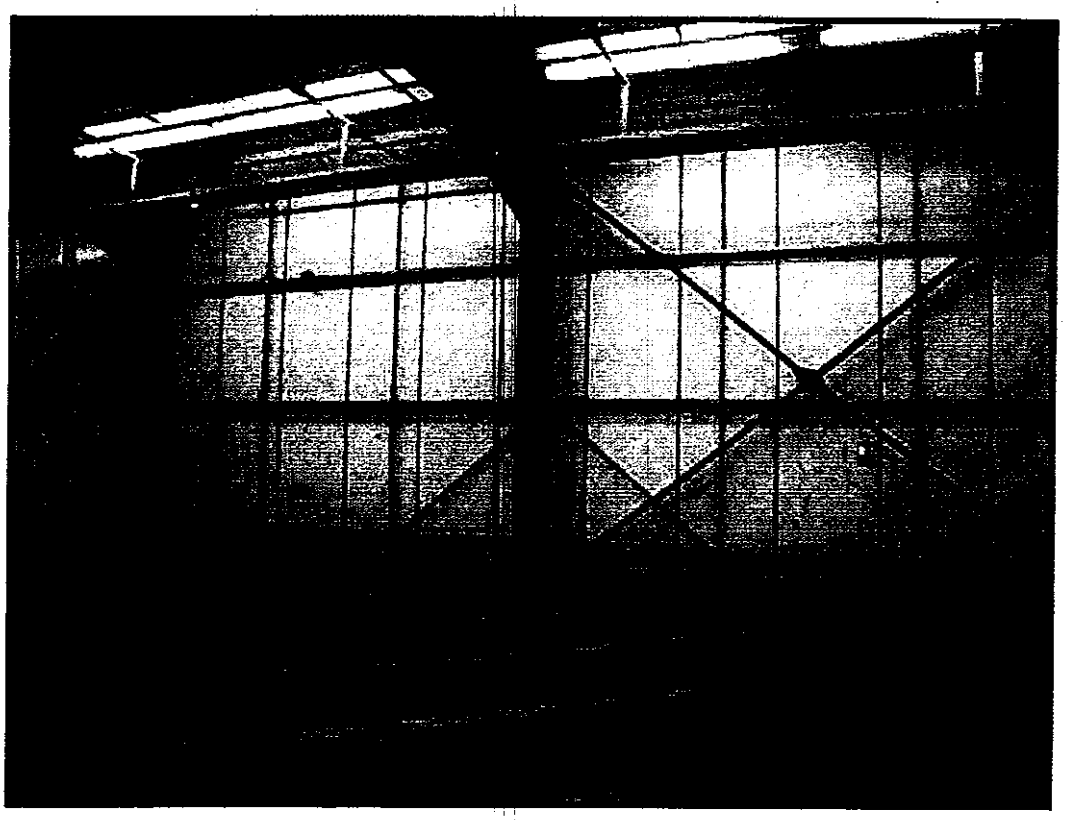

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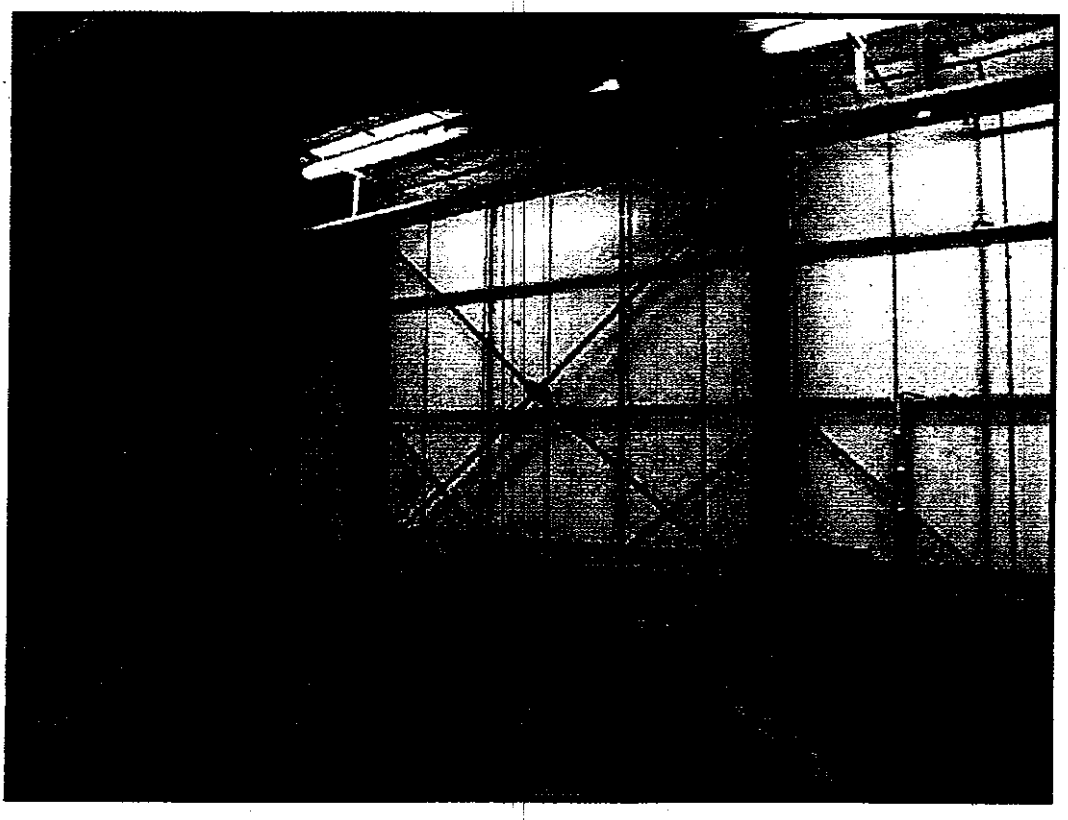

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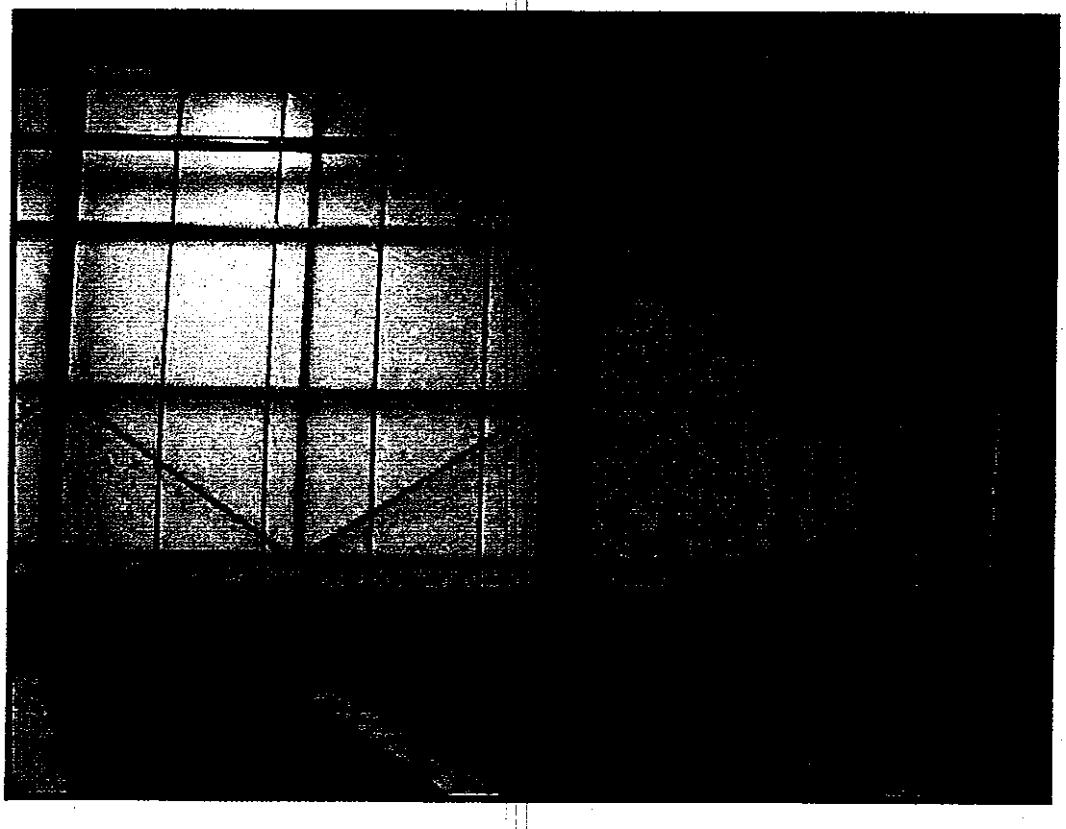

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Photograph No. 55

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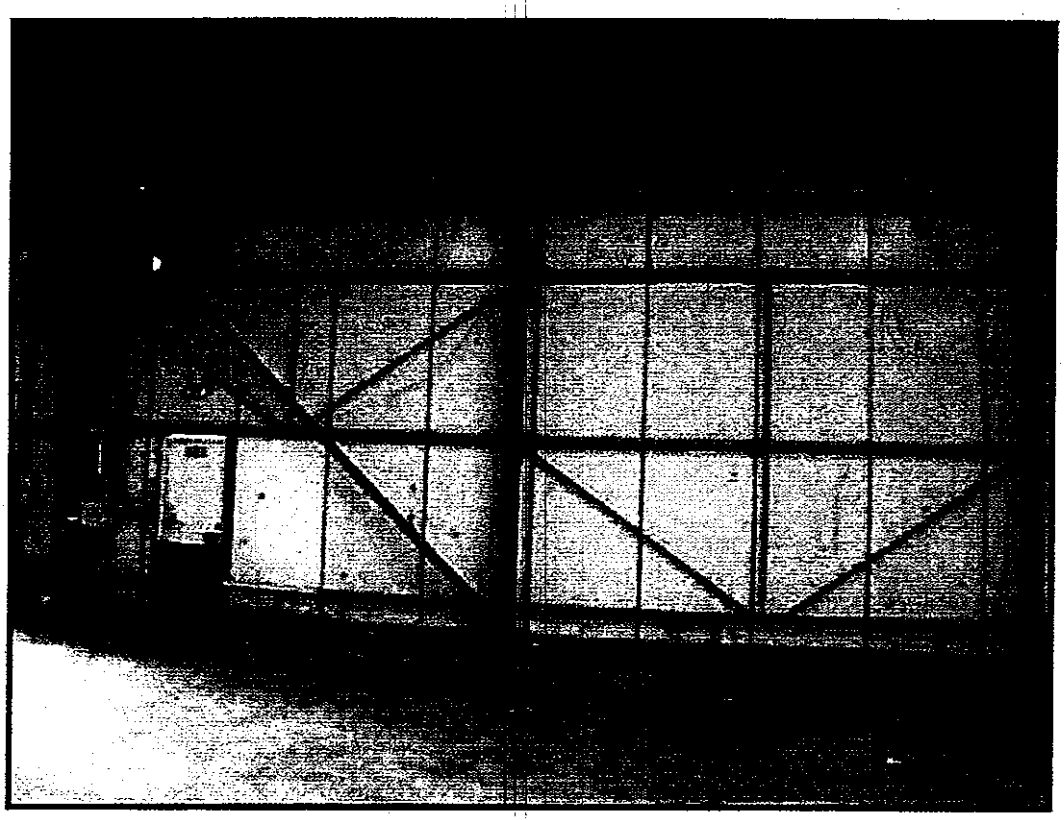

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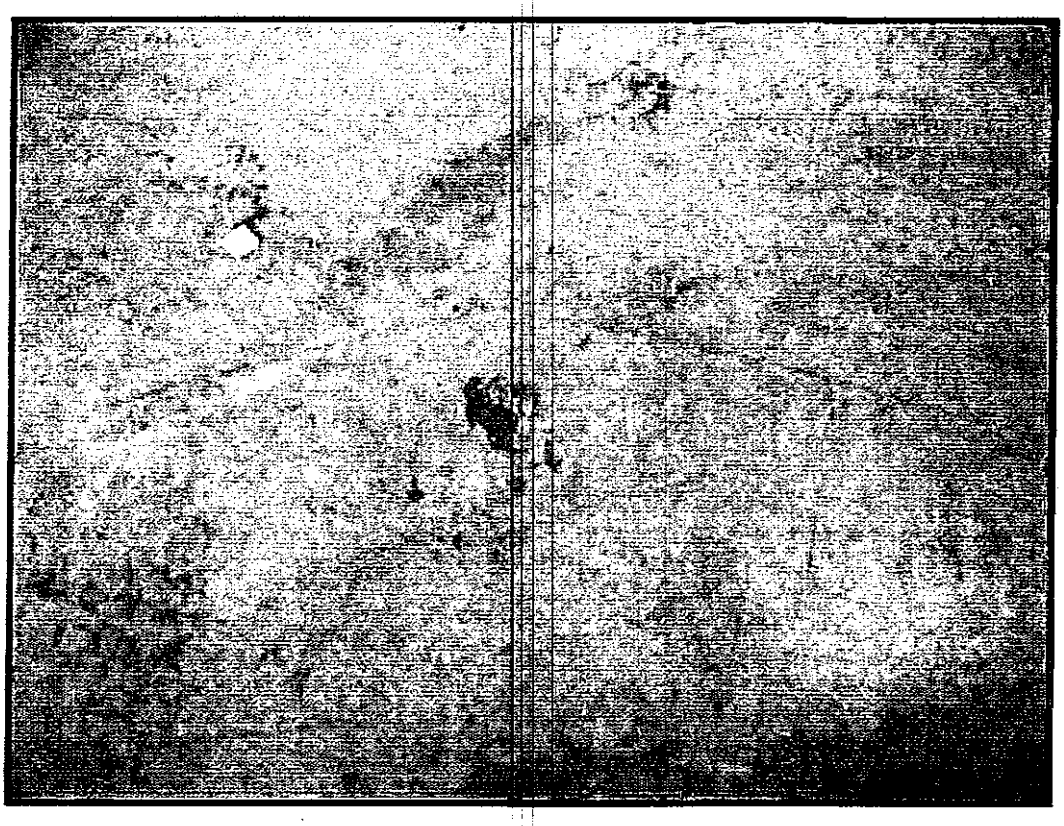

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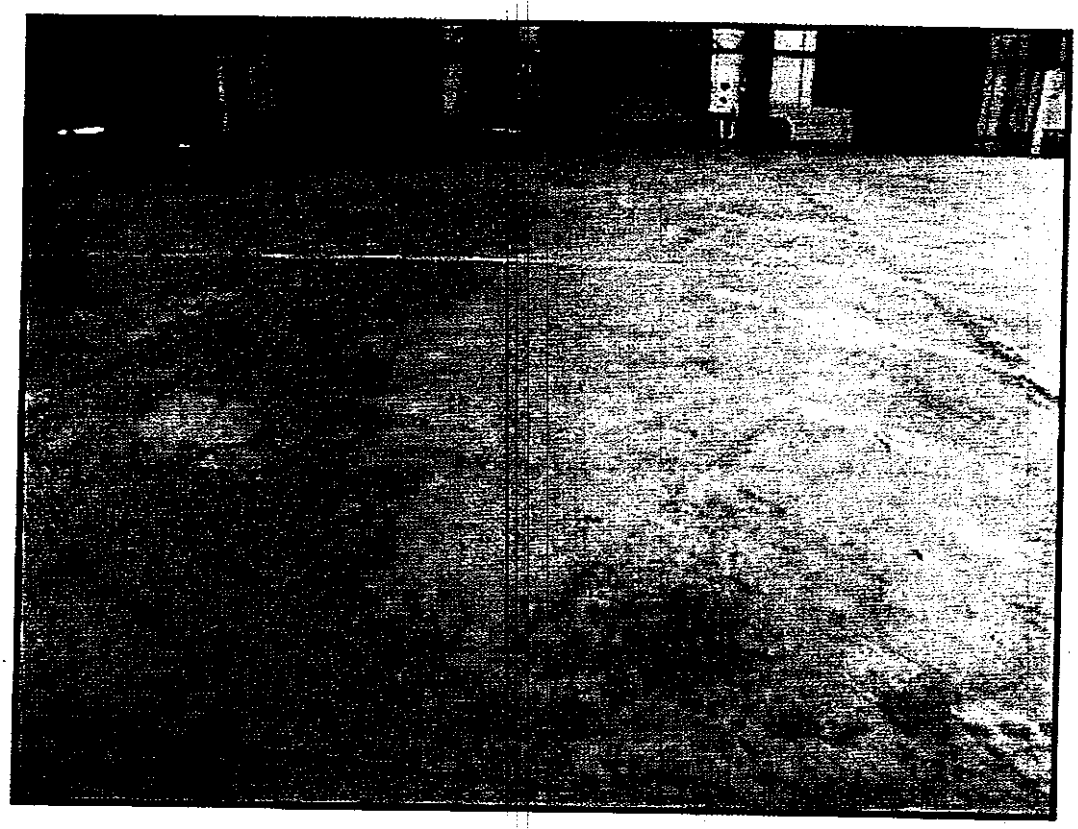

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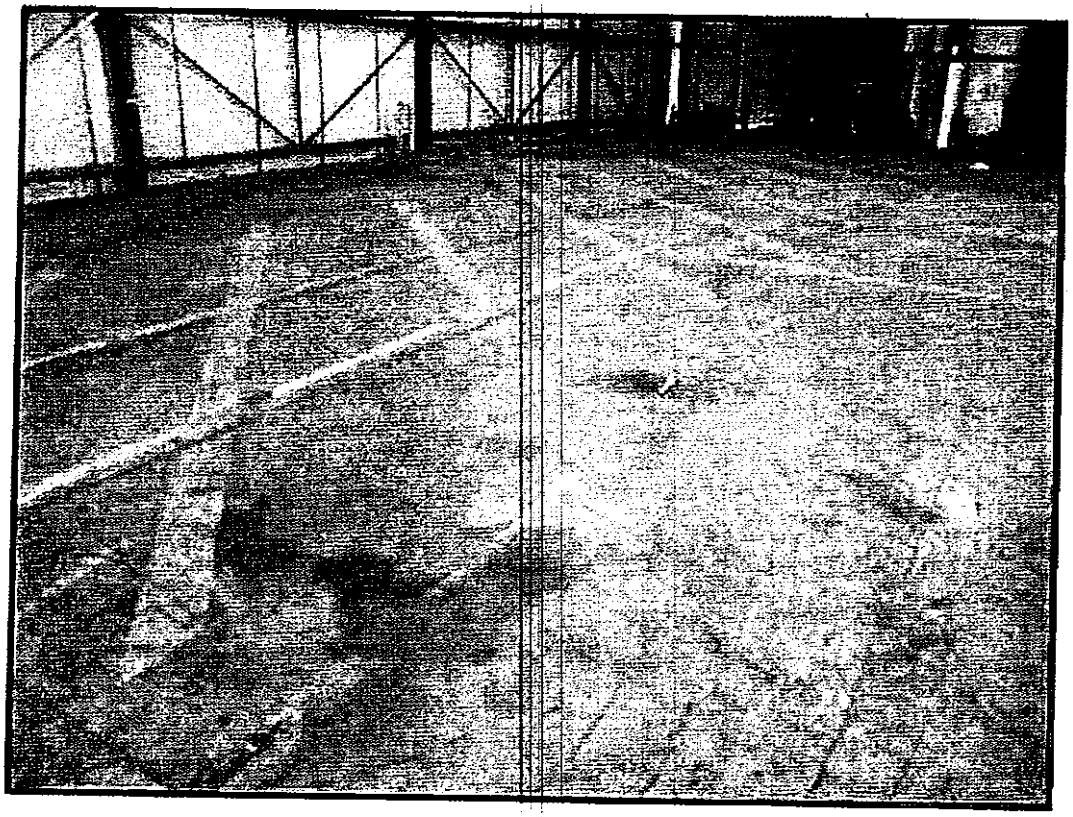

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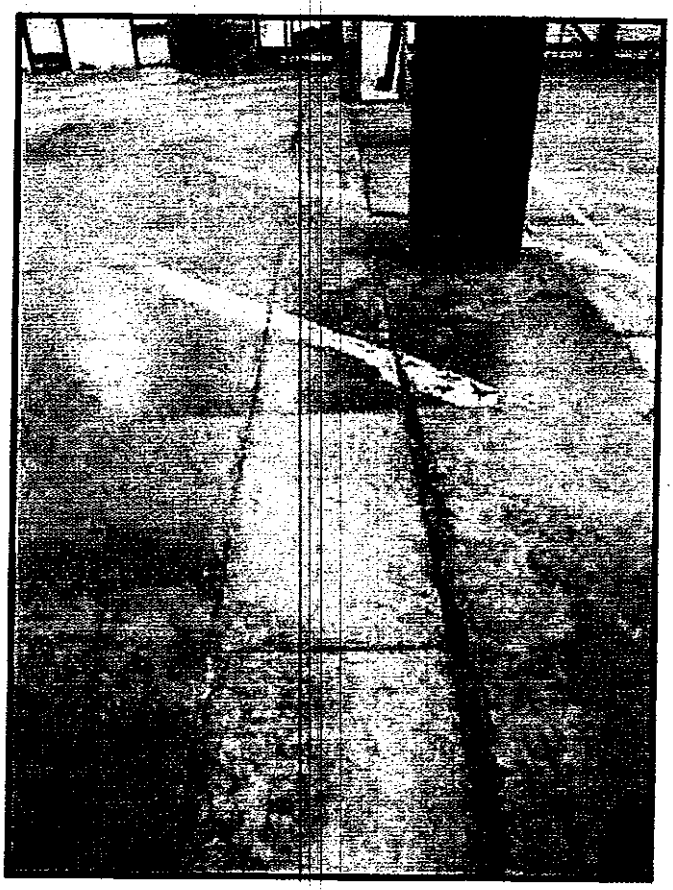
Photograph No. 61

Photograph No. 62



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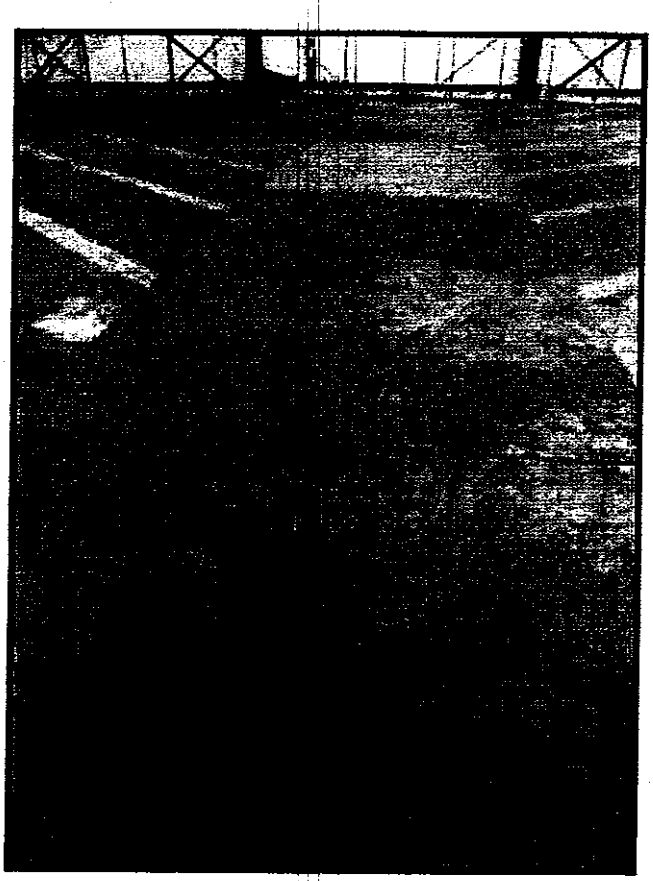

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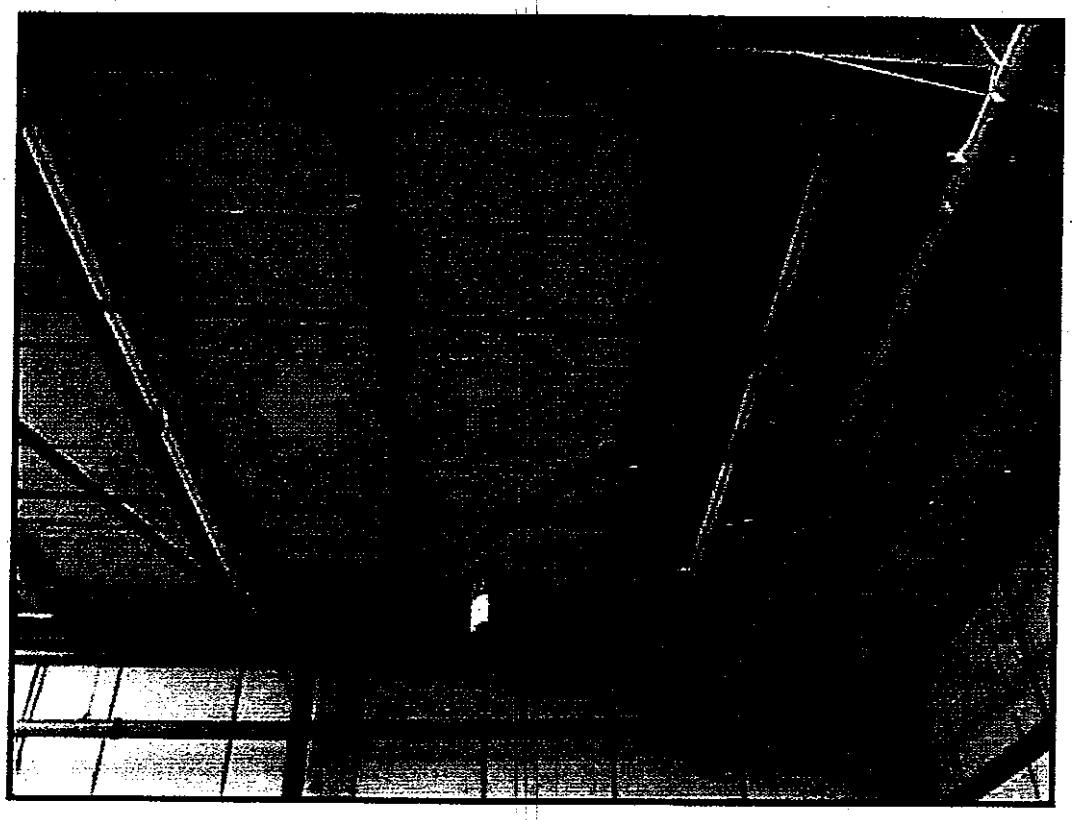

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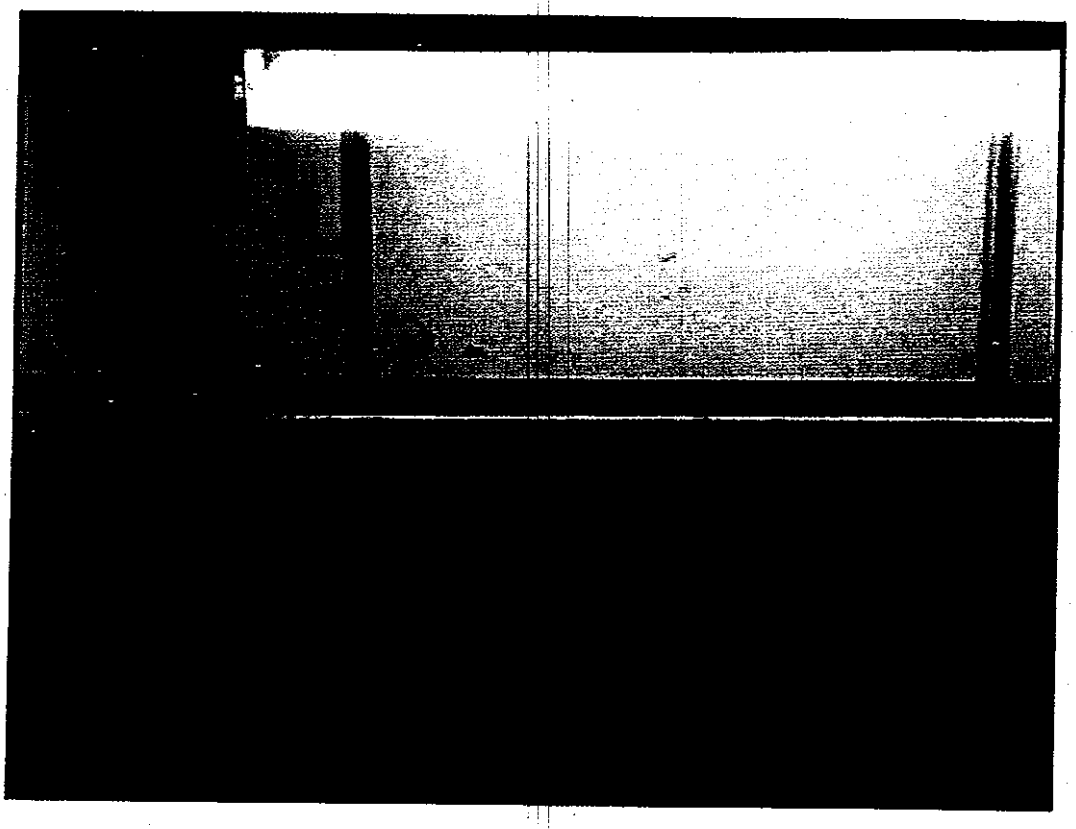

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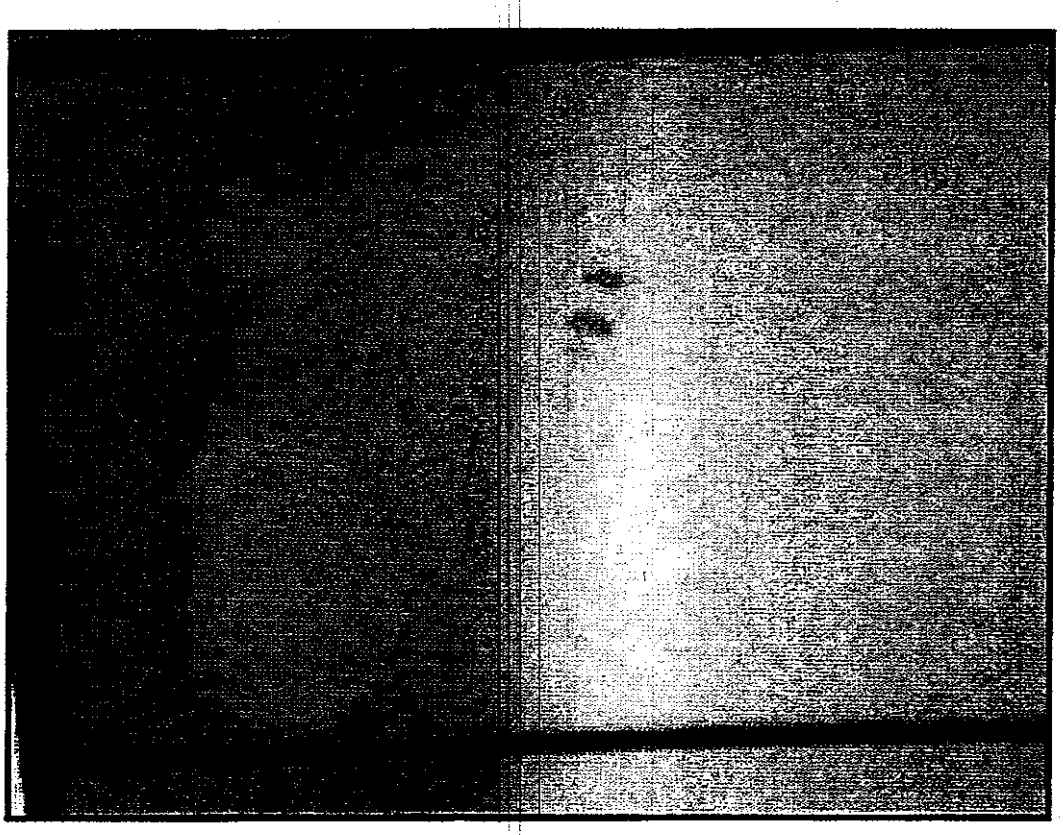

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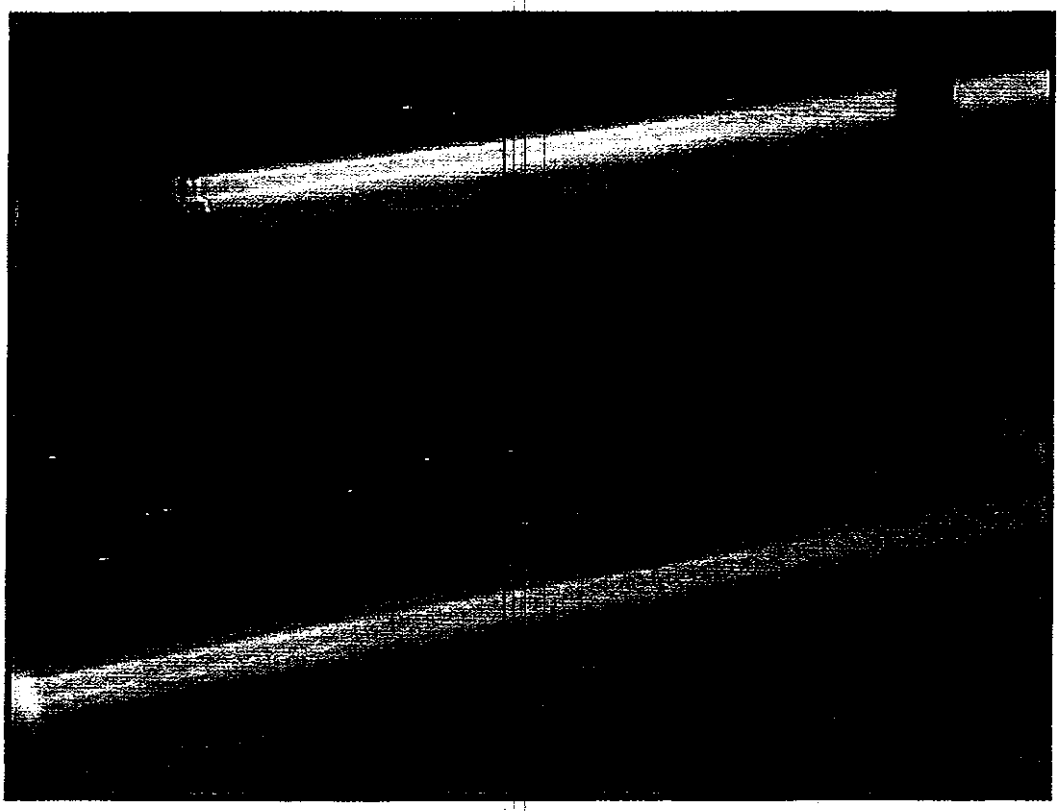

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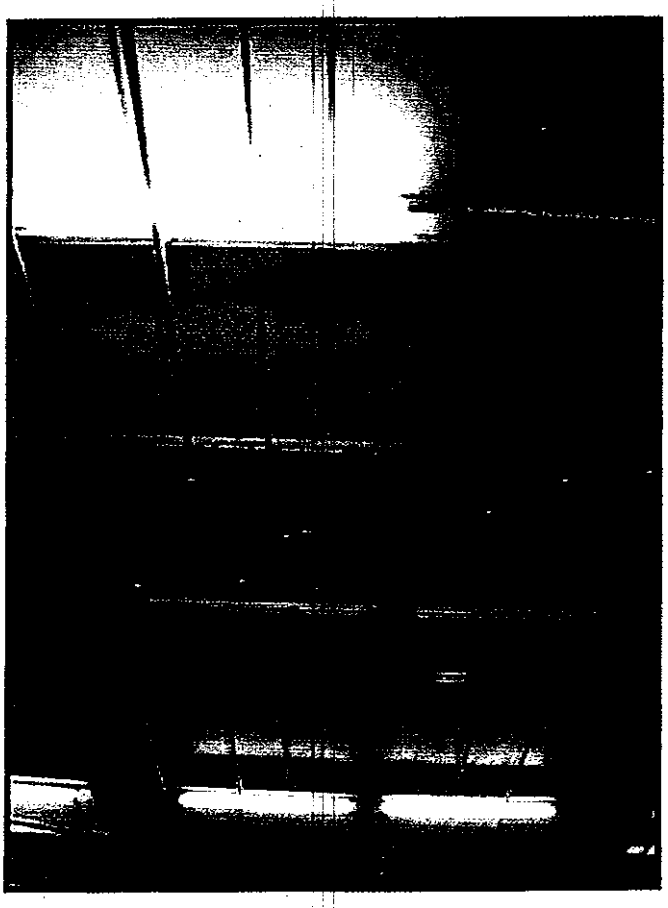

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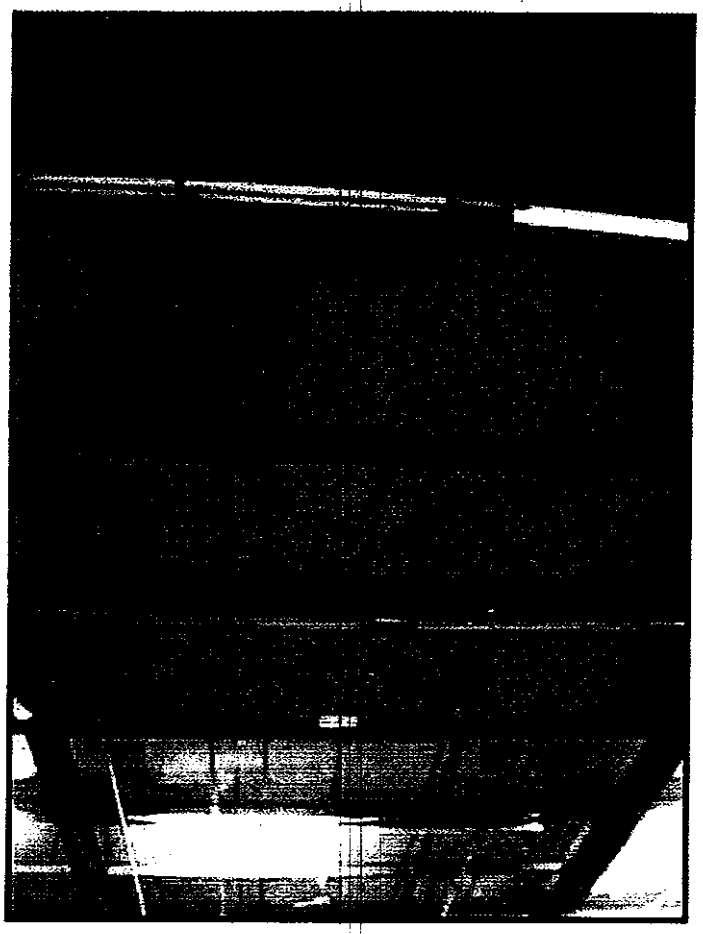

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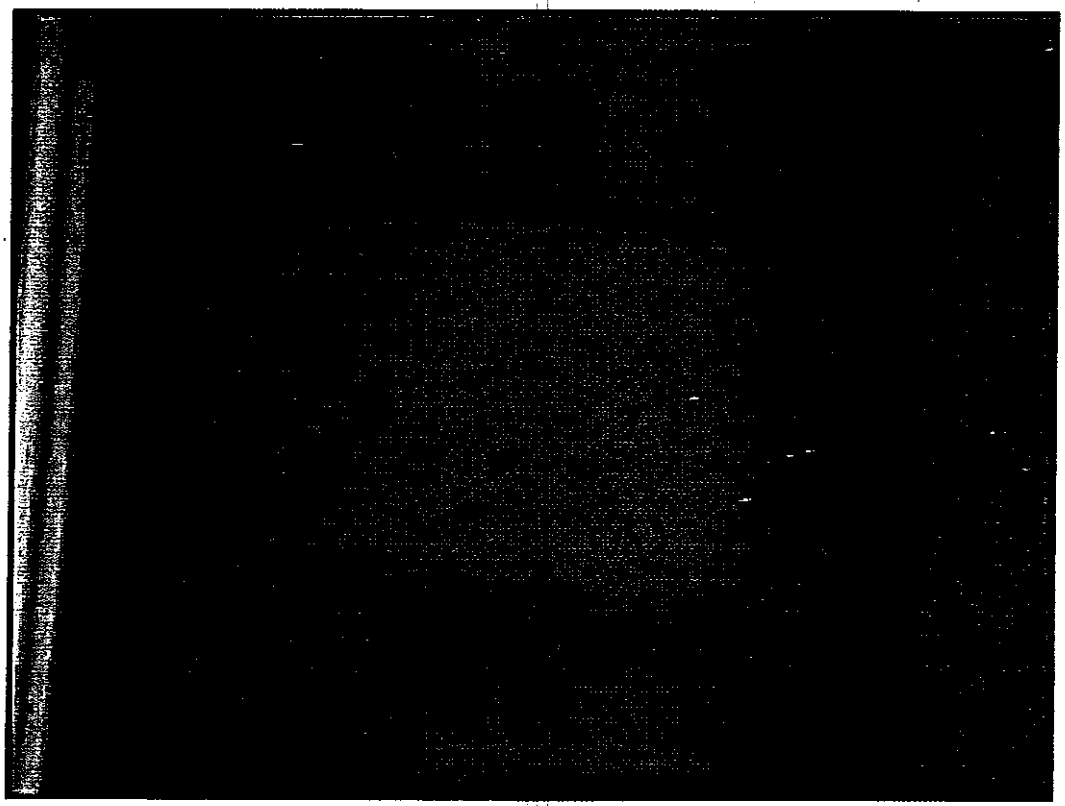

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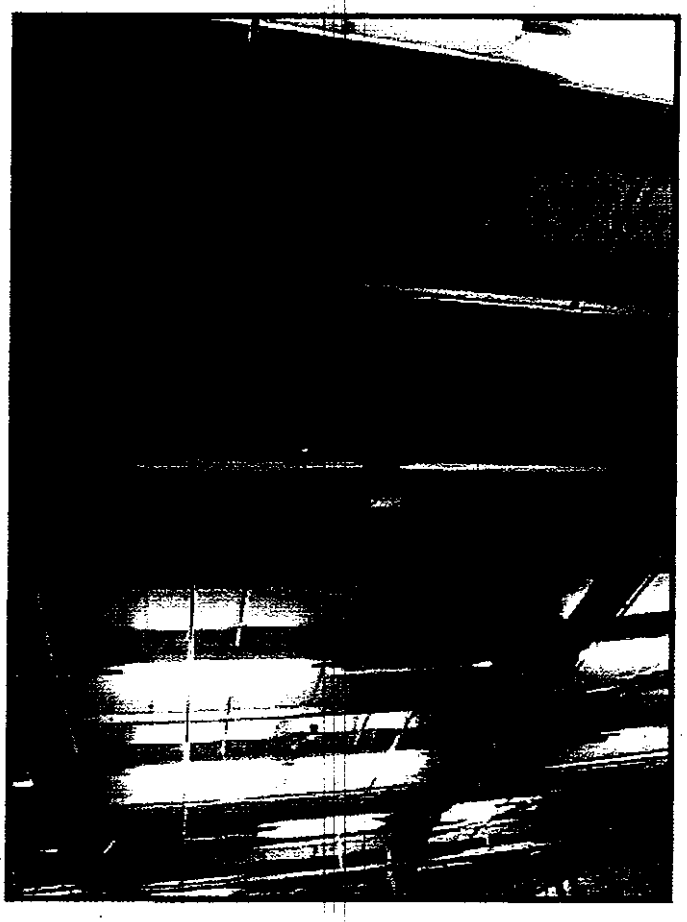

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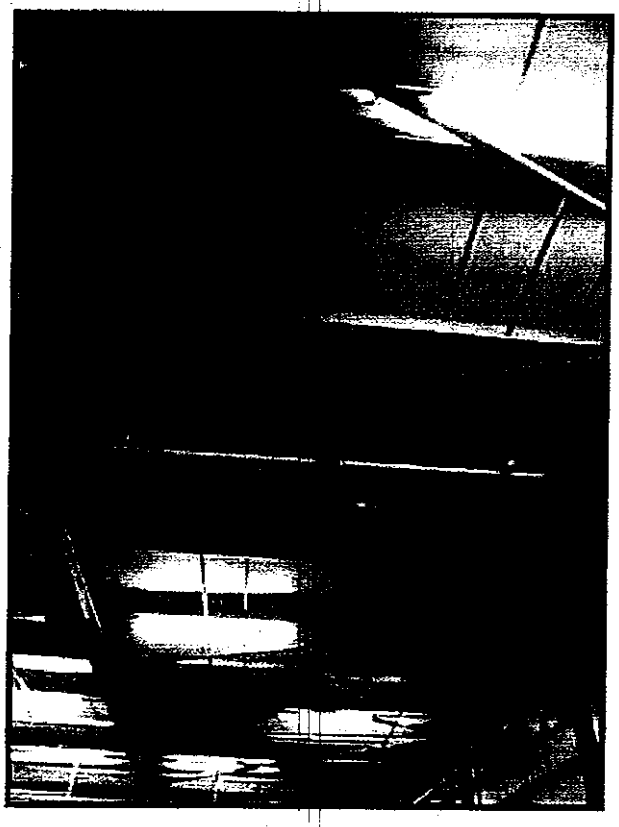

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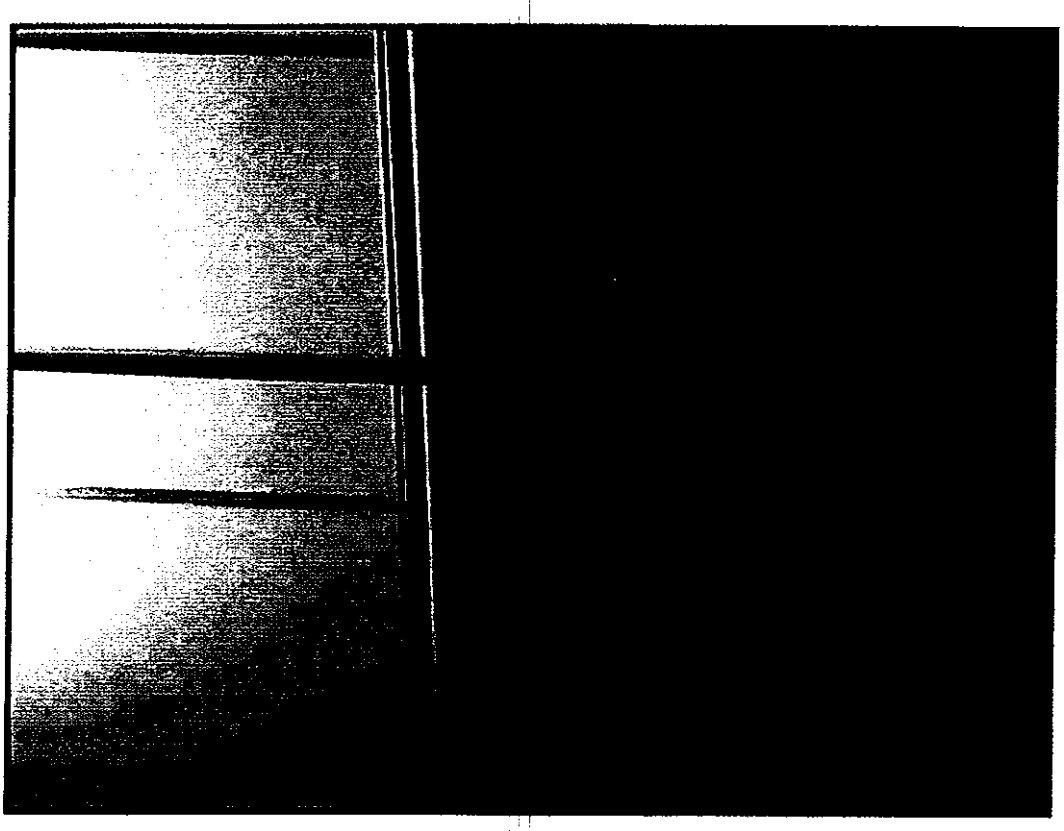

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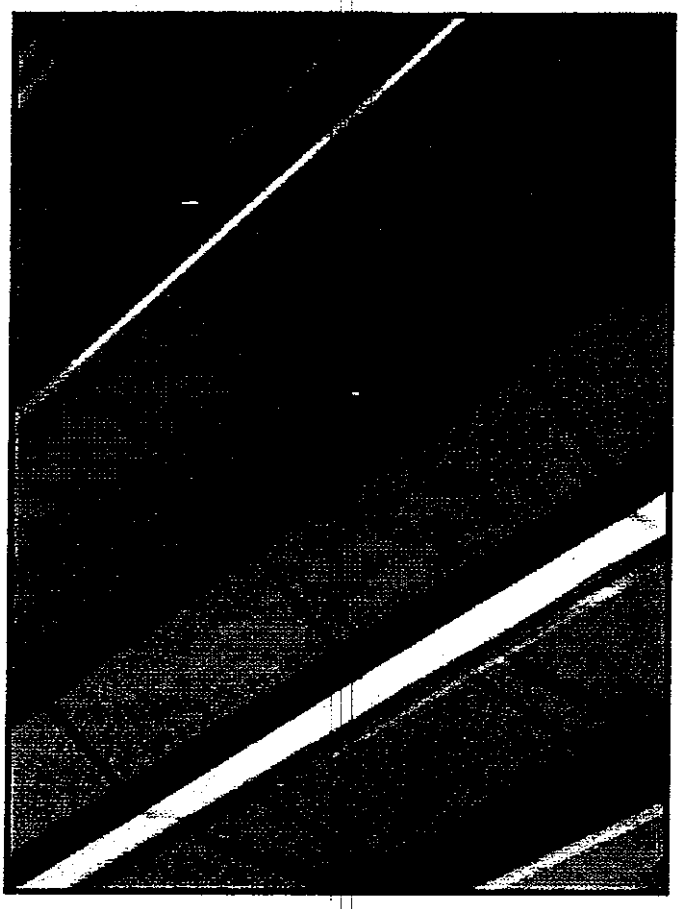

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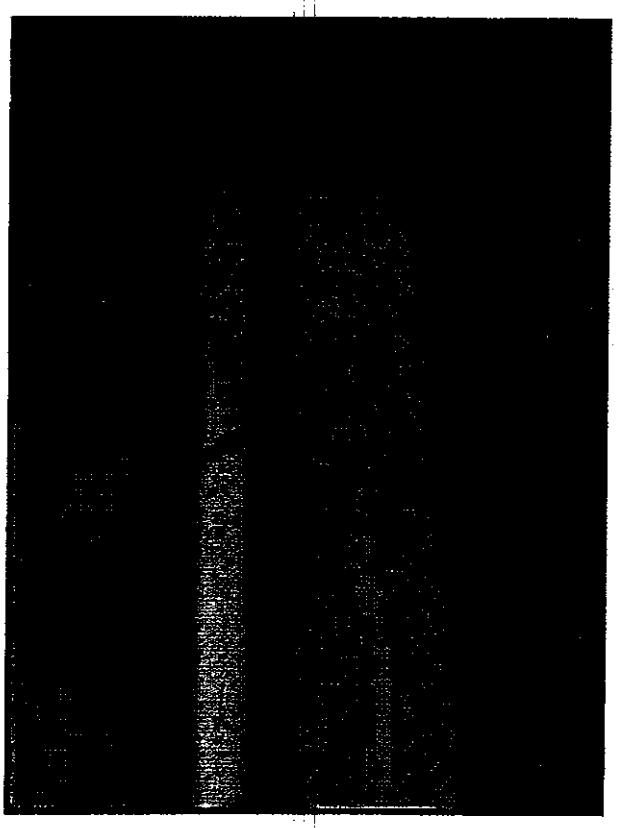

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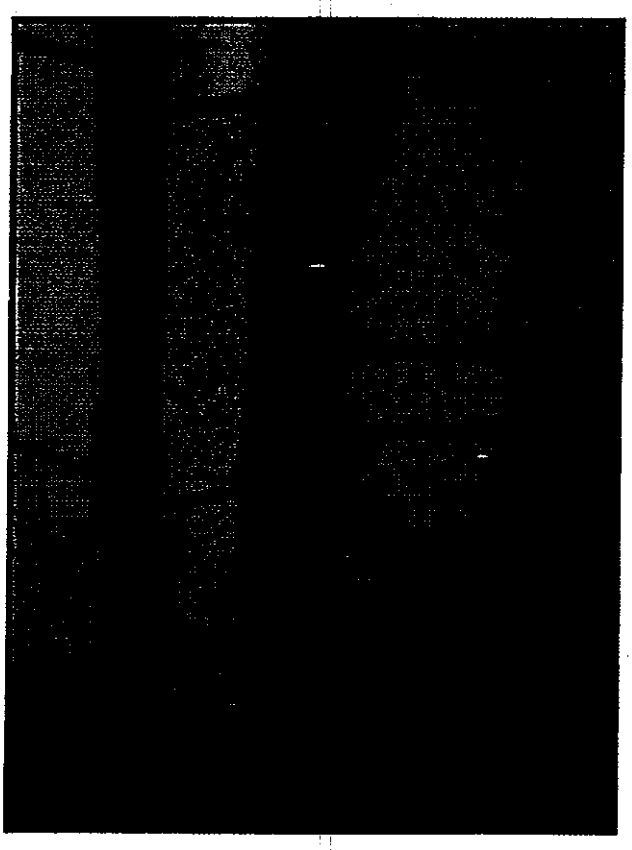

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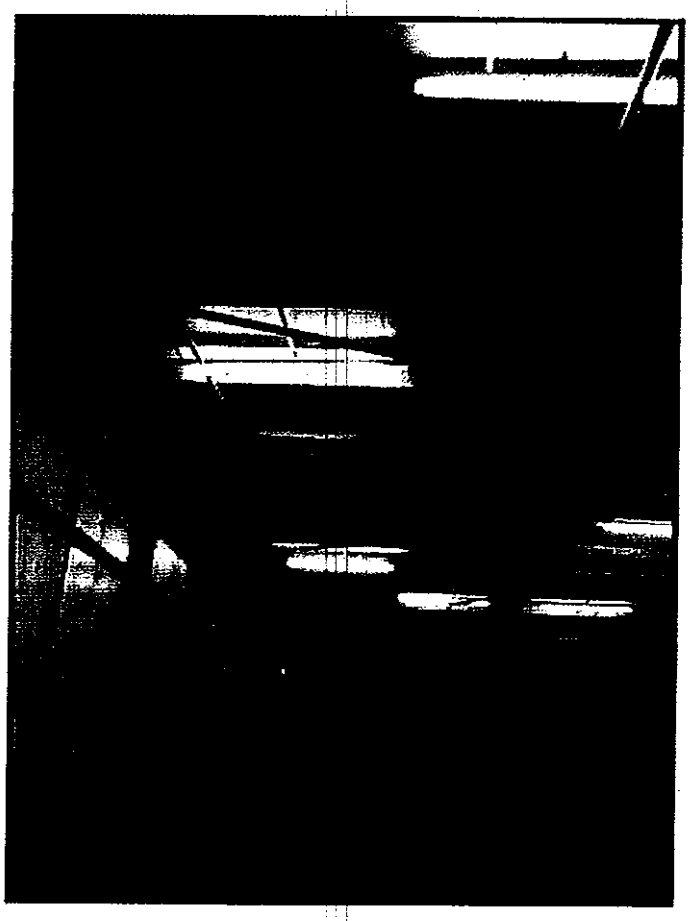

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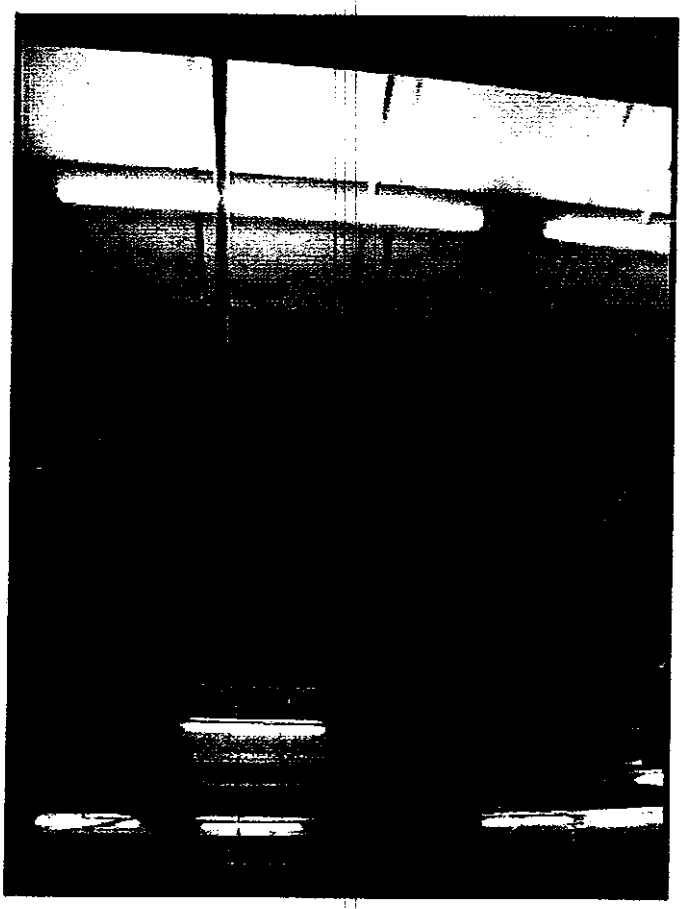

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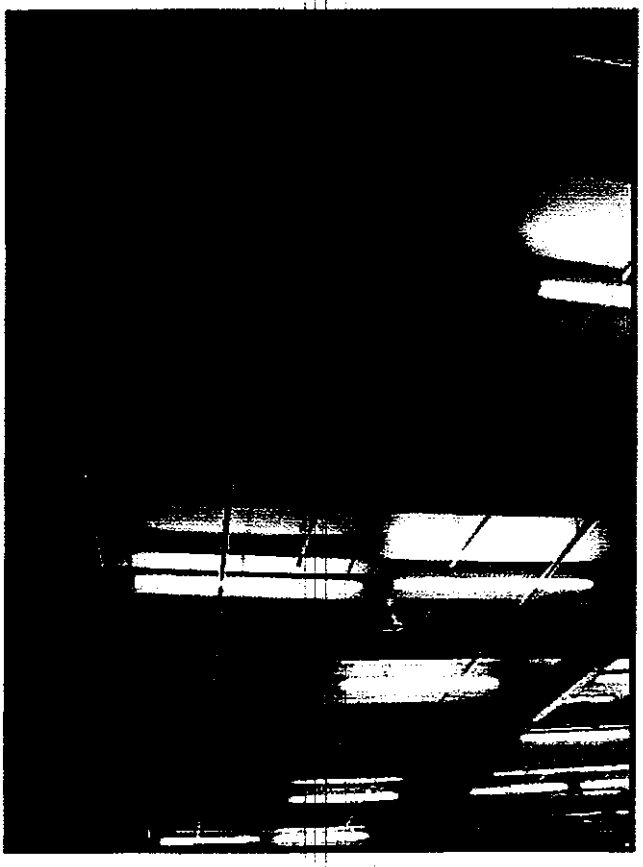

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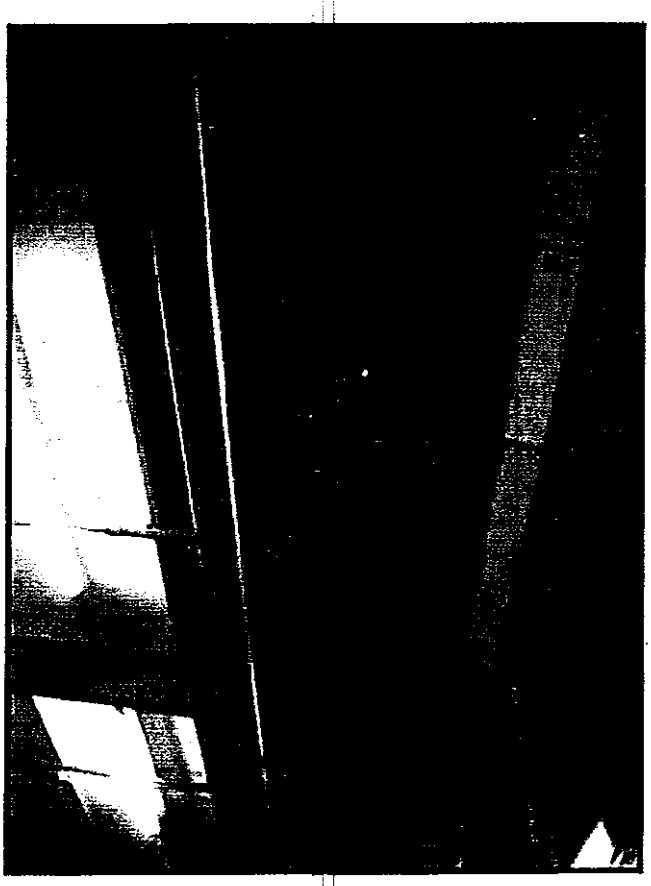

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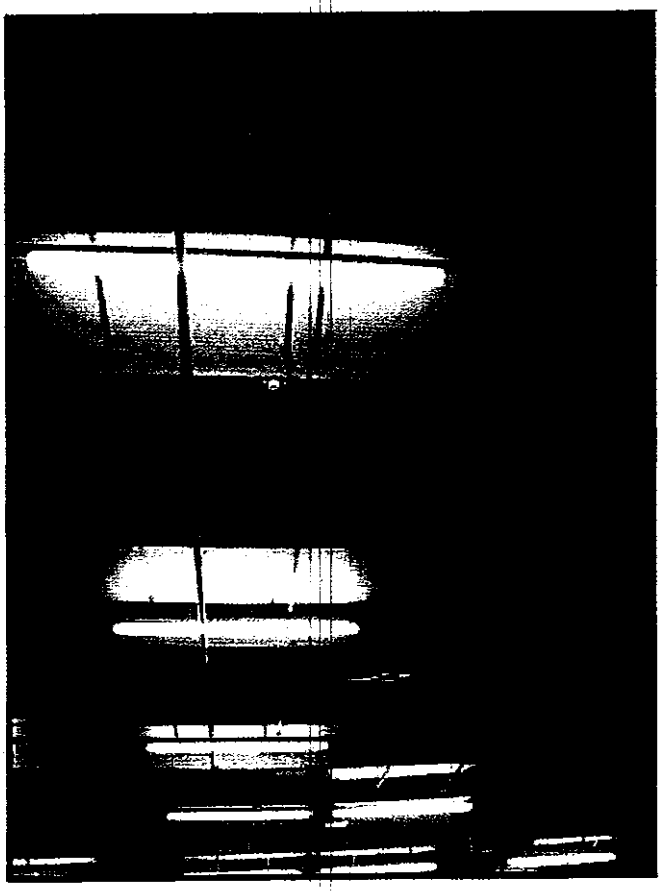

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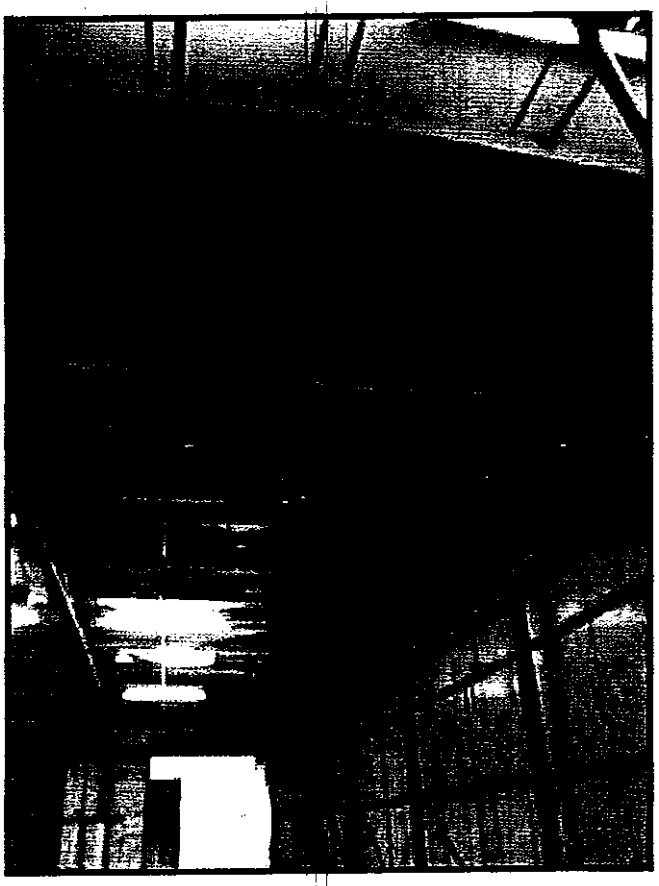

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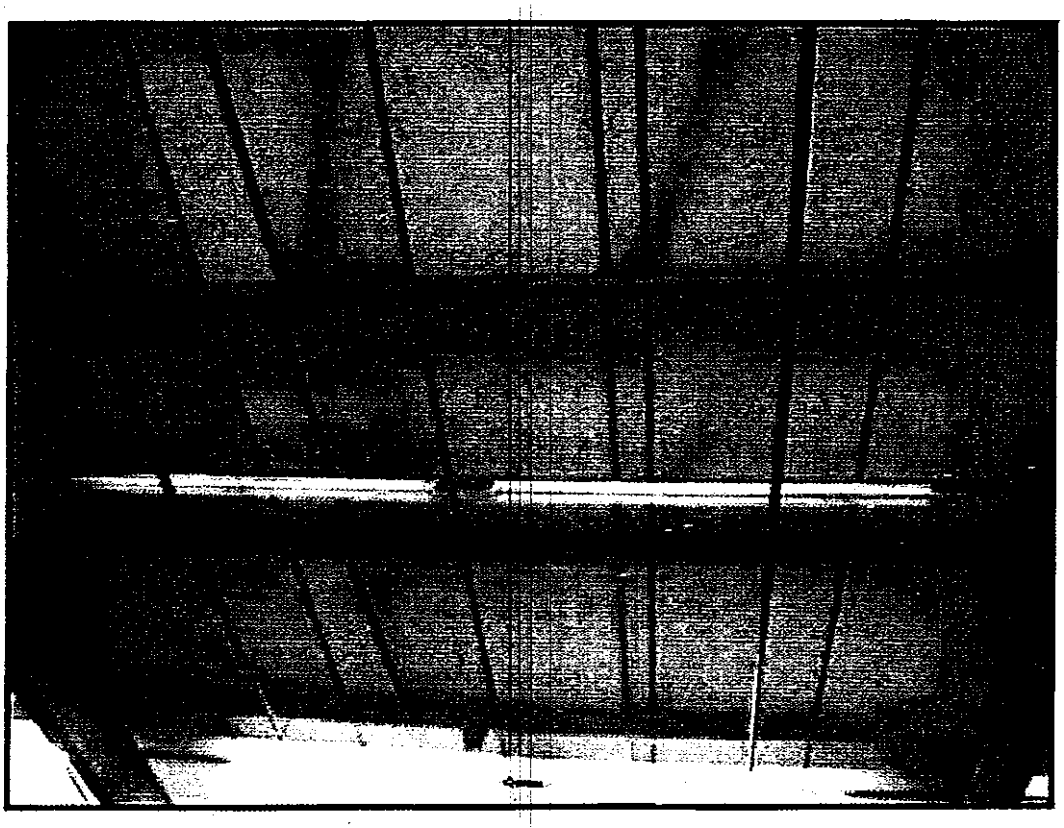

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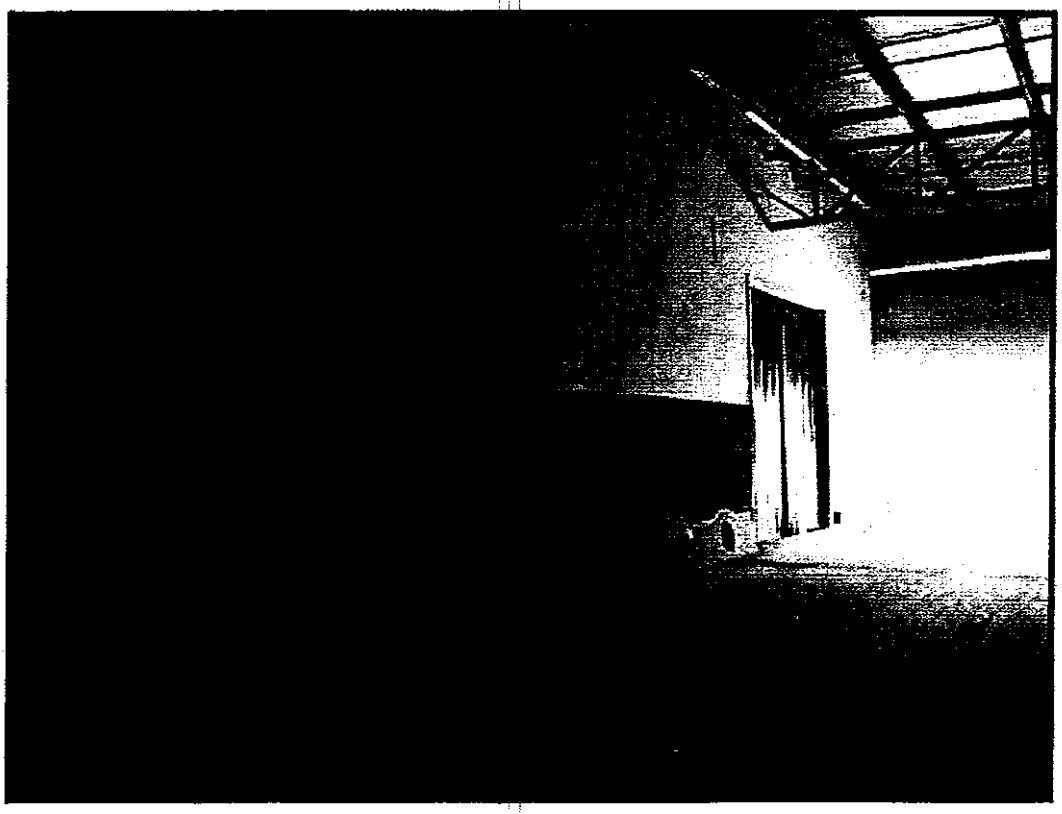

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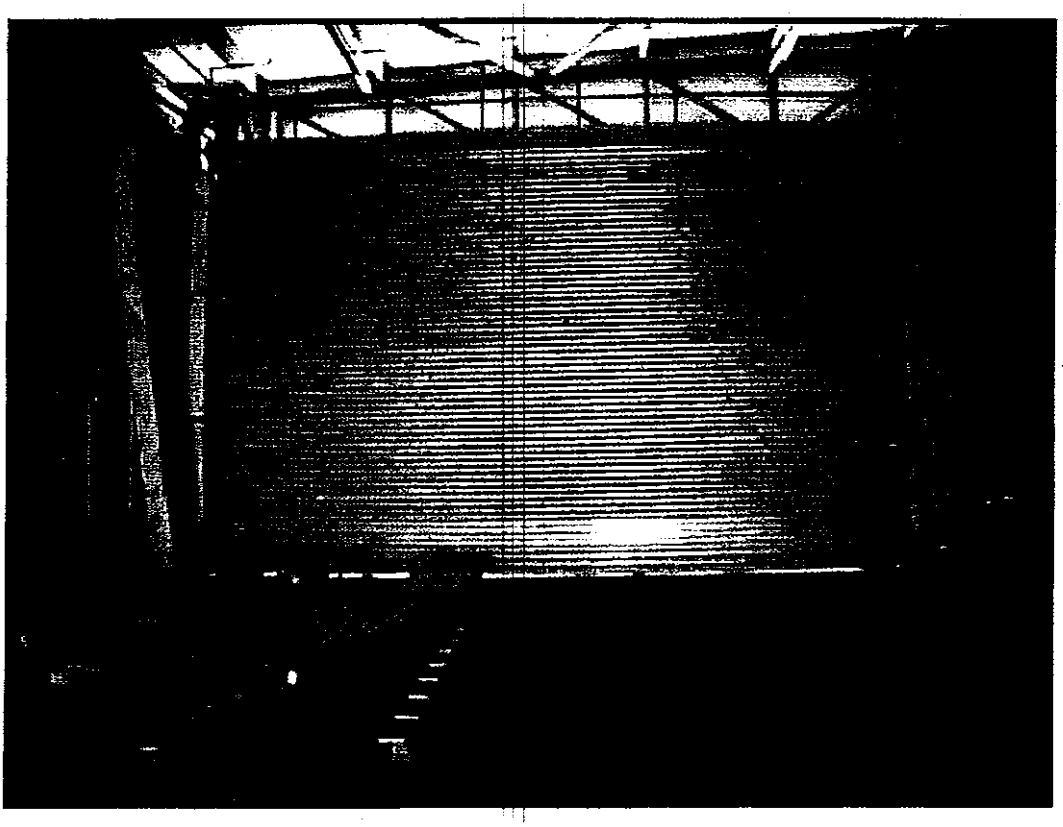

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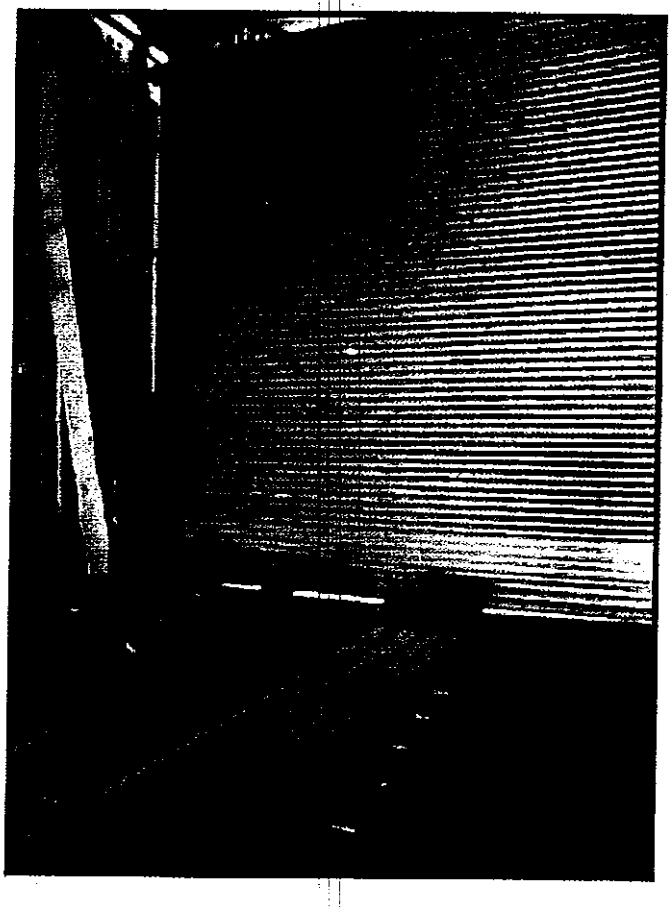

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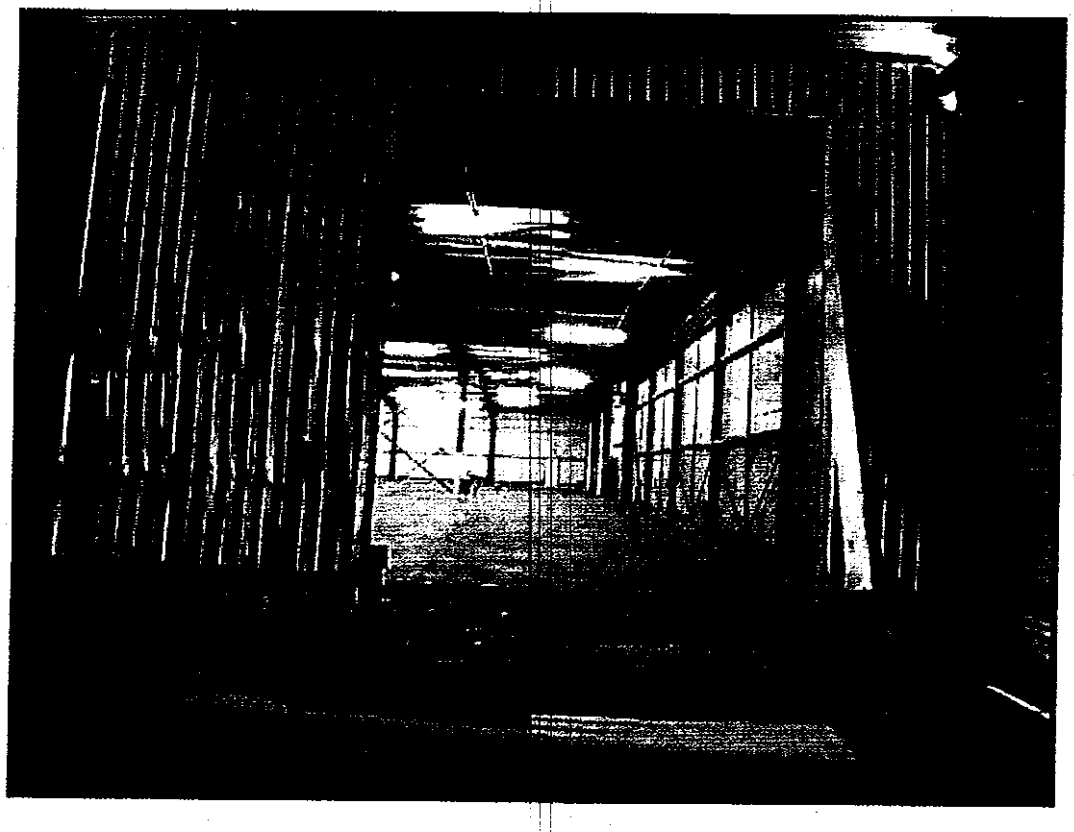

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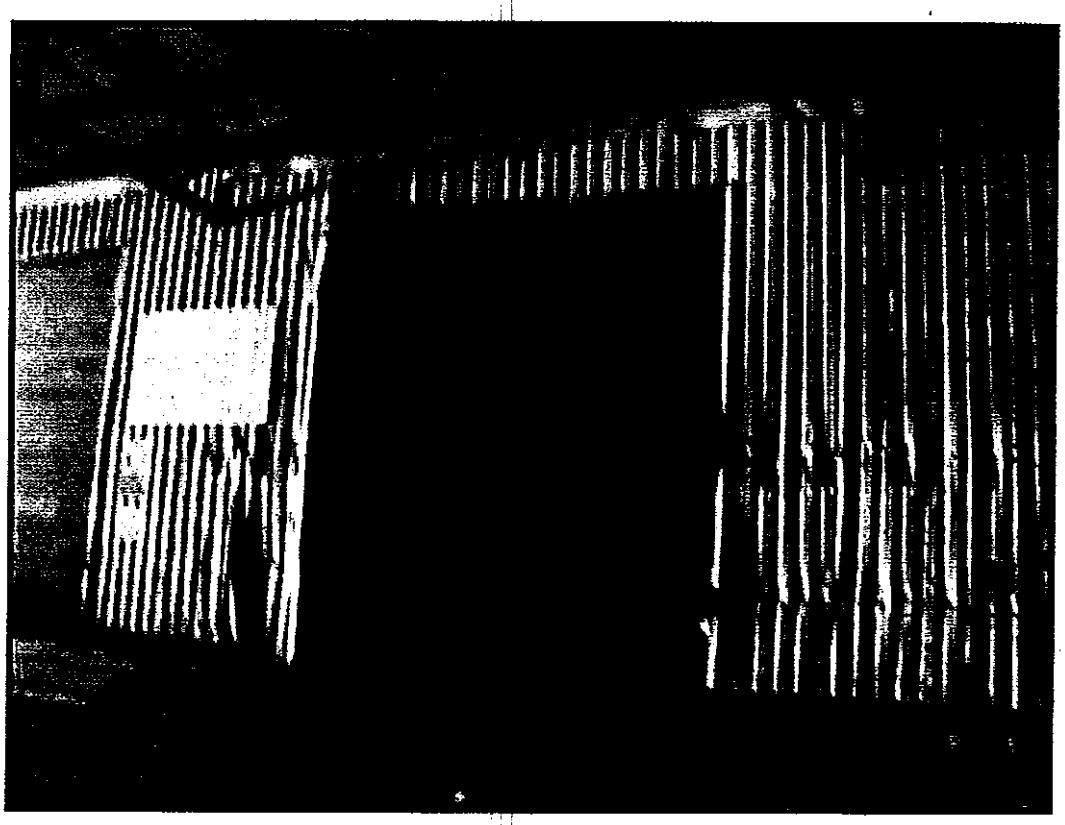

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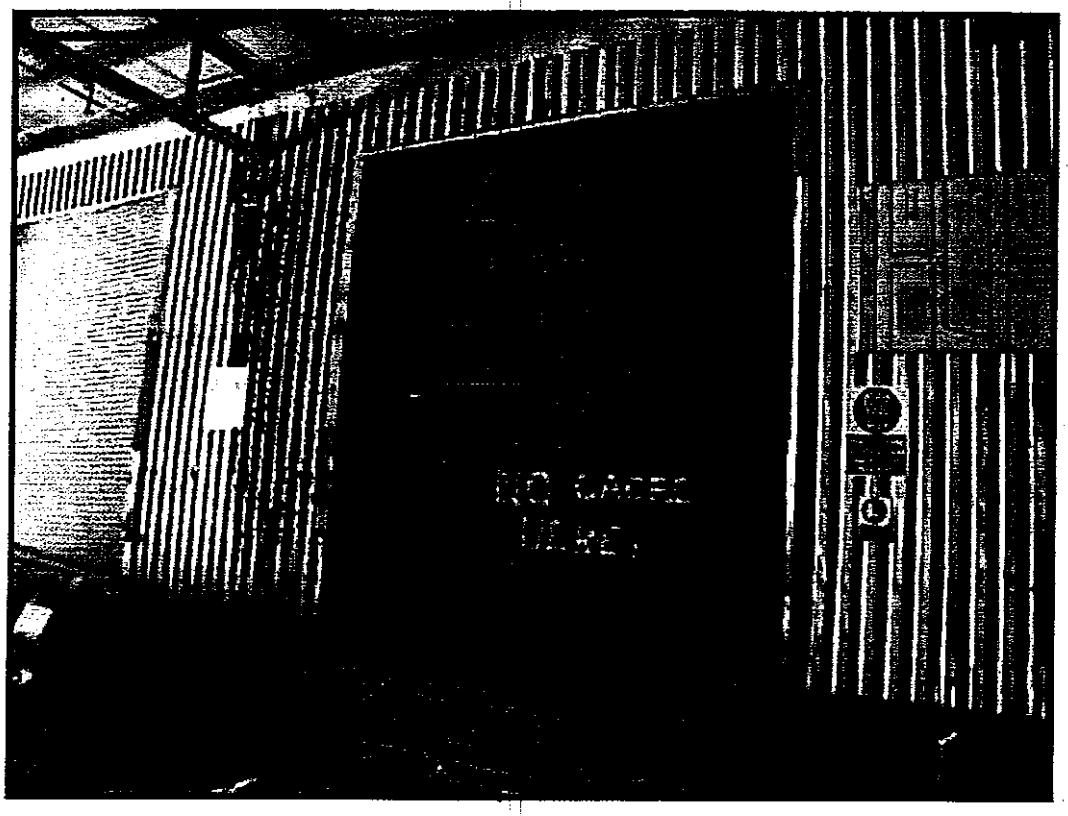

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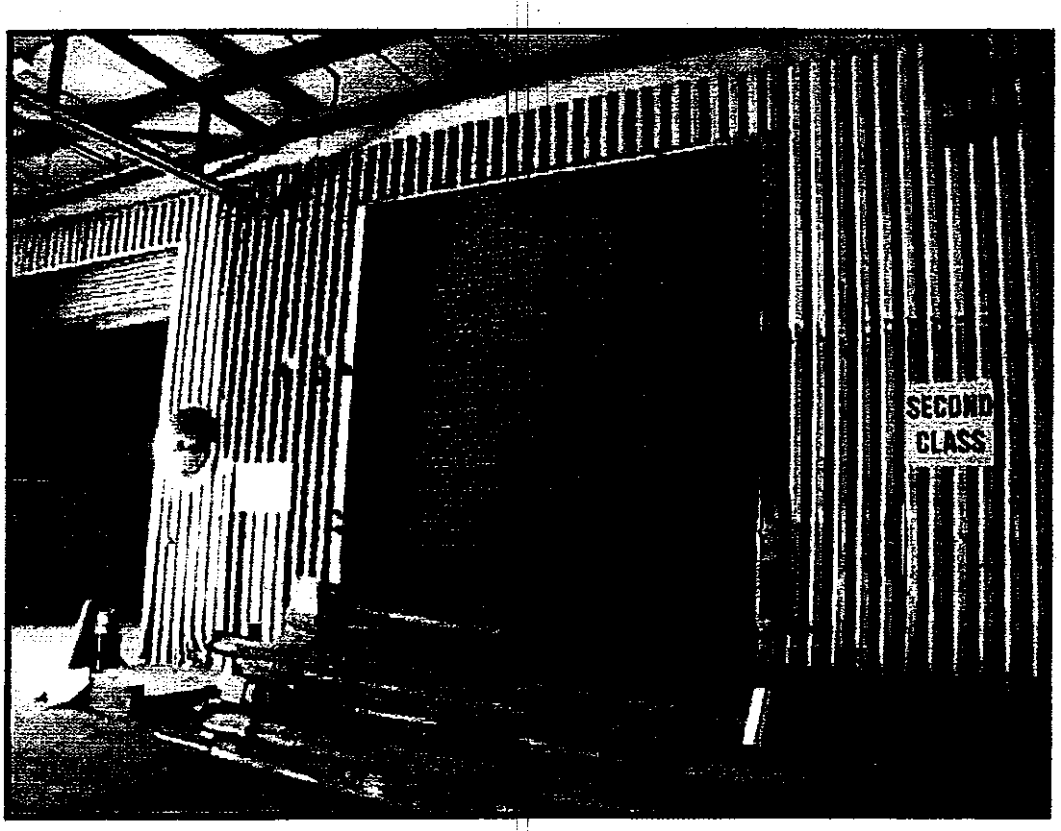

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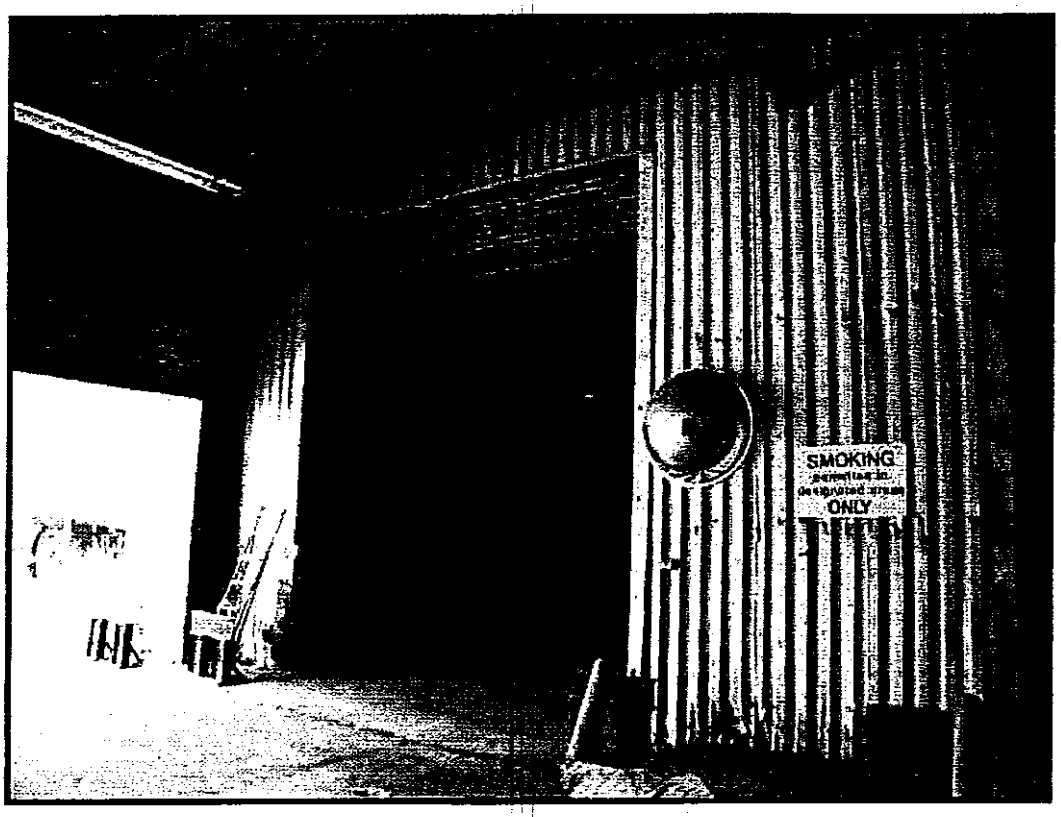

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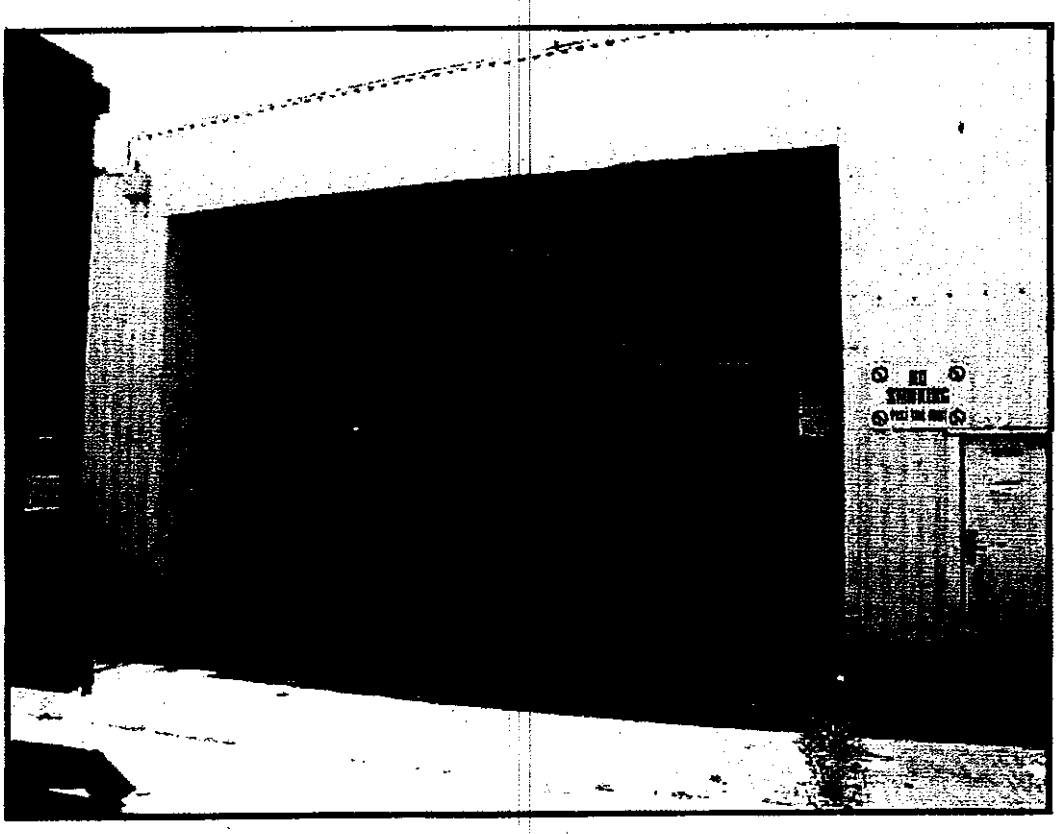

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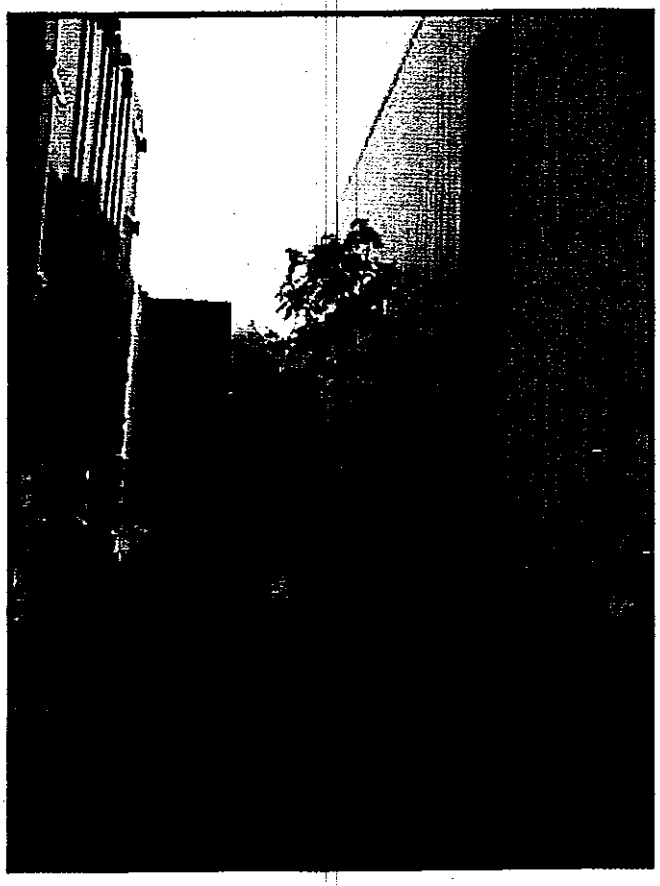

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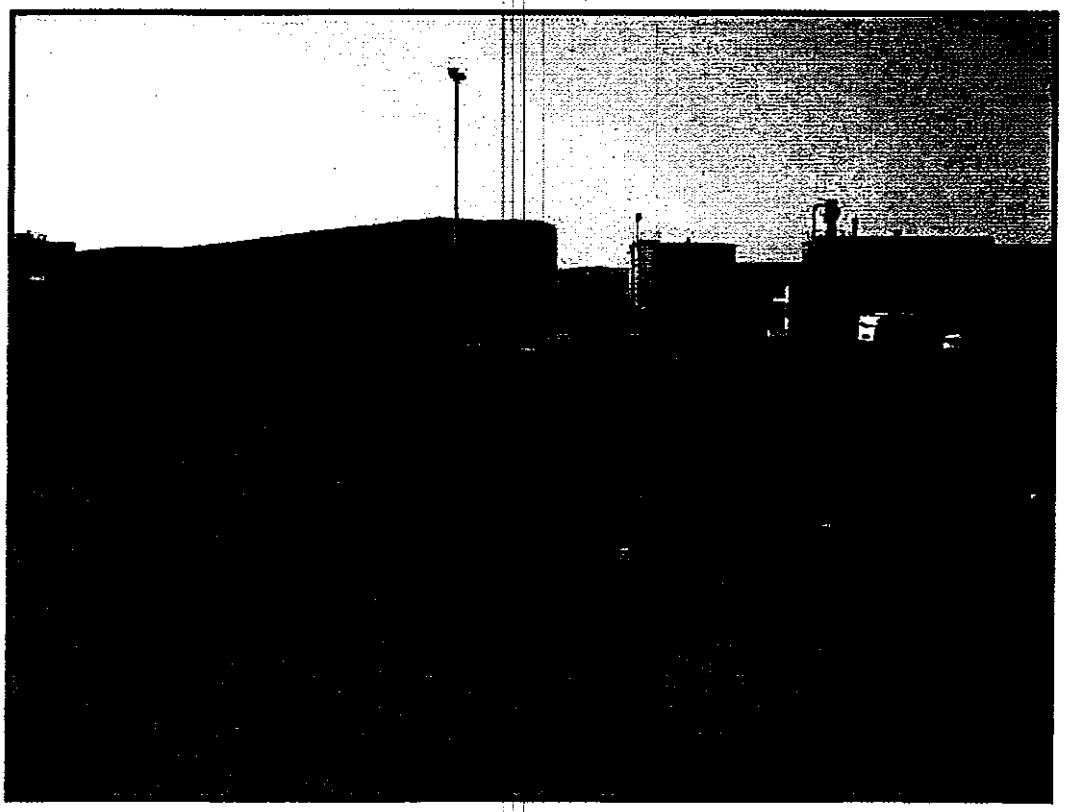

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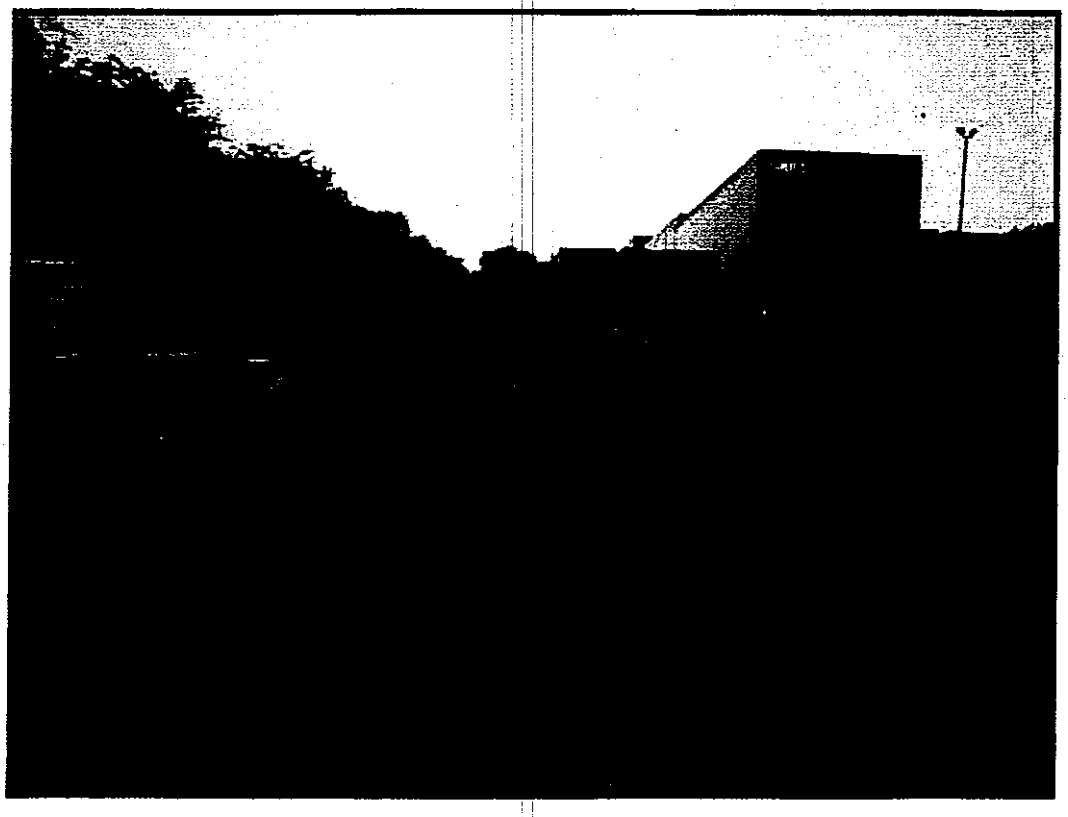

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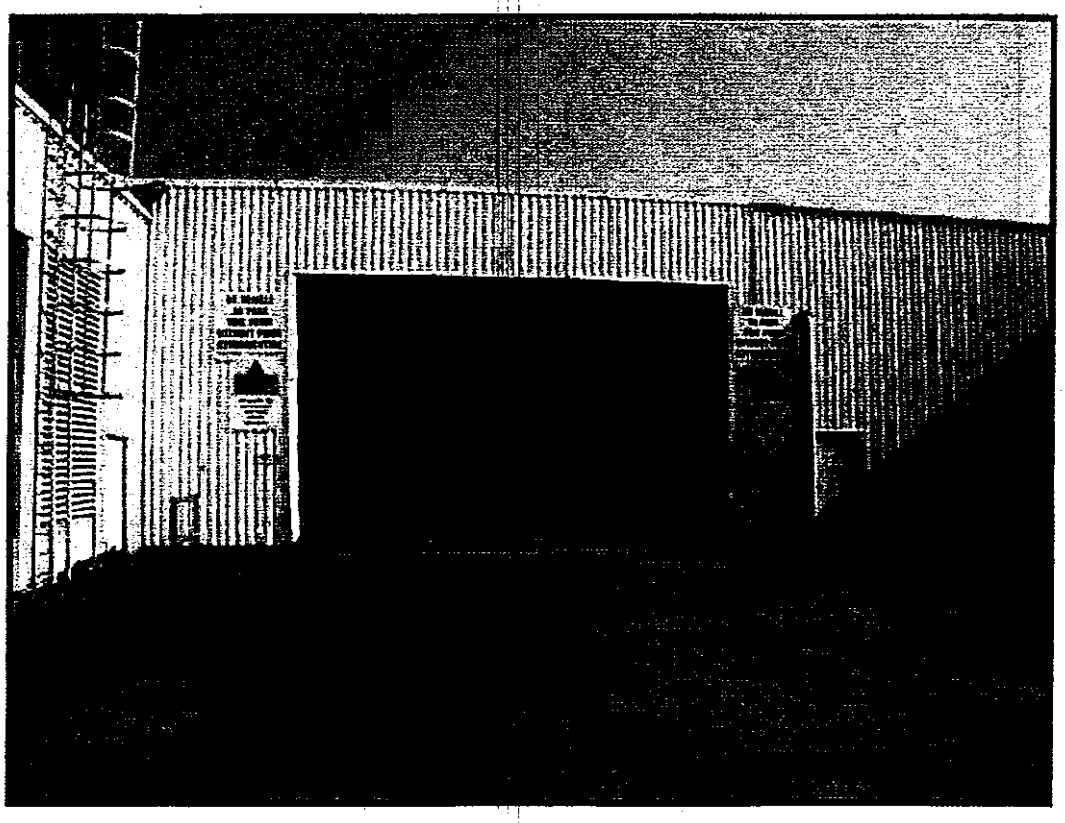

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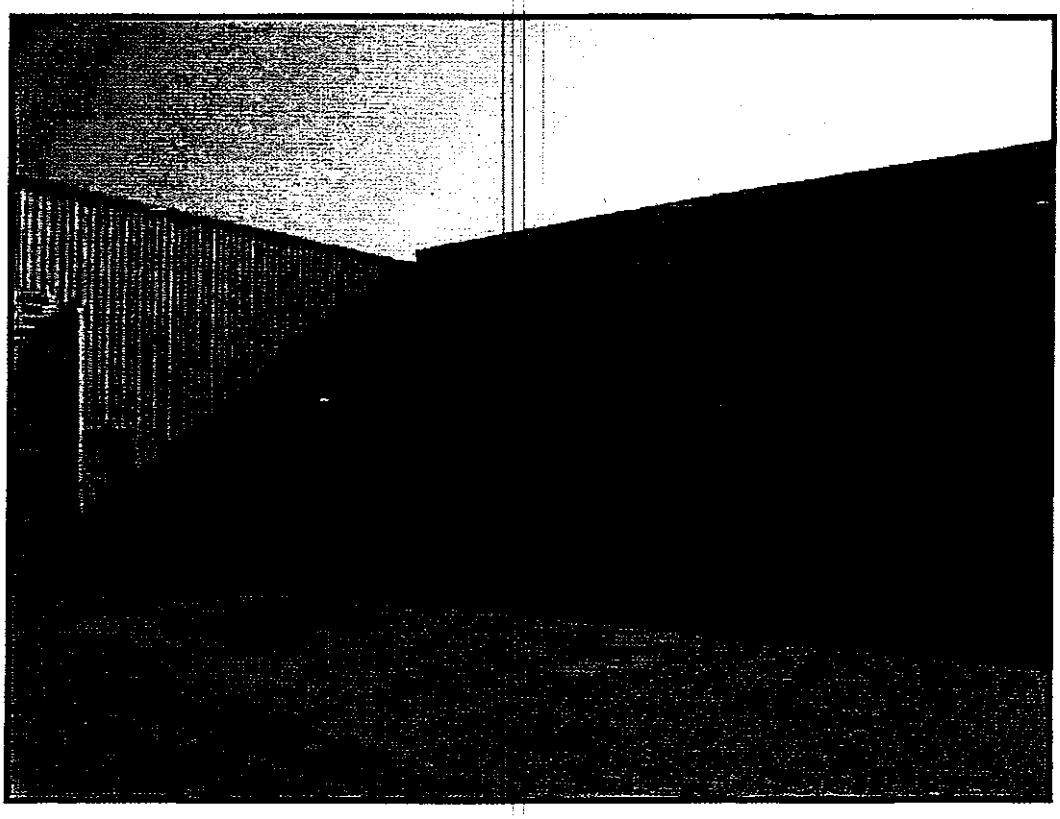

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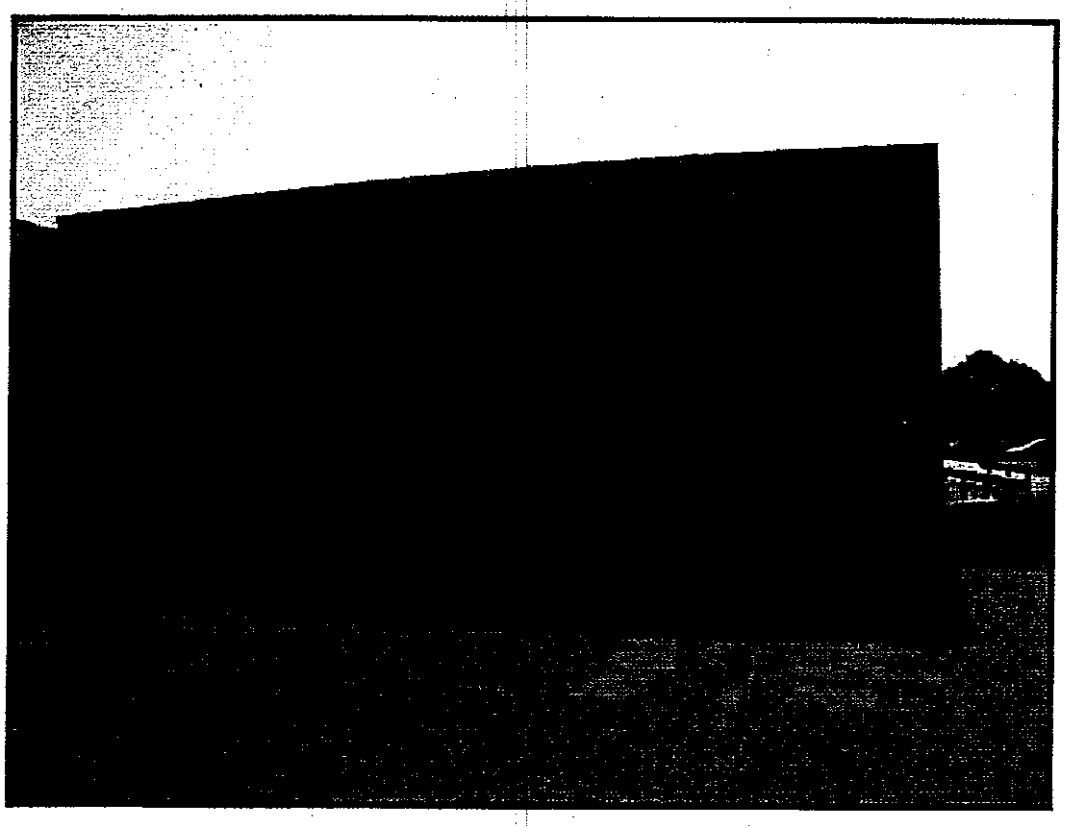

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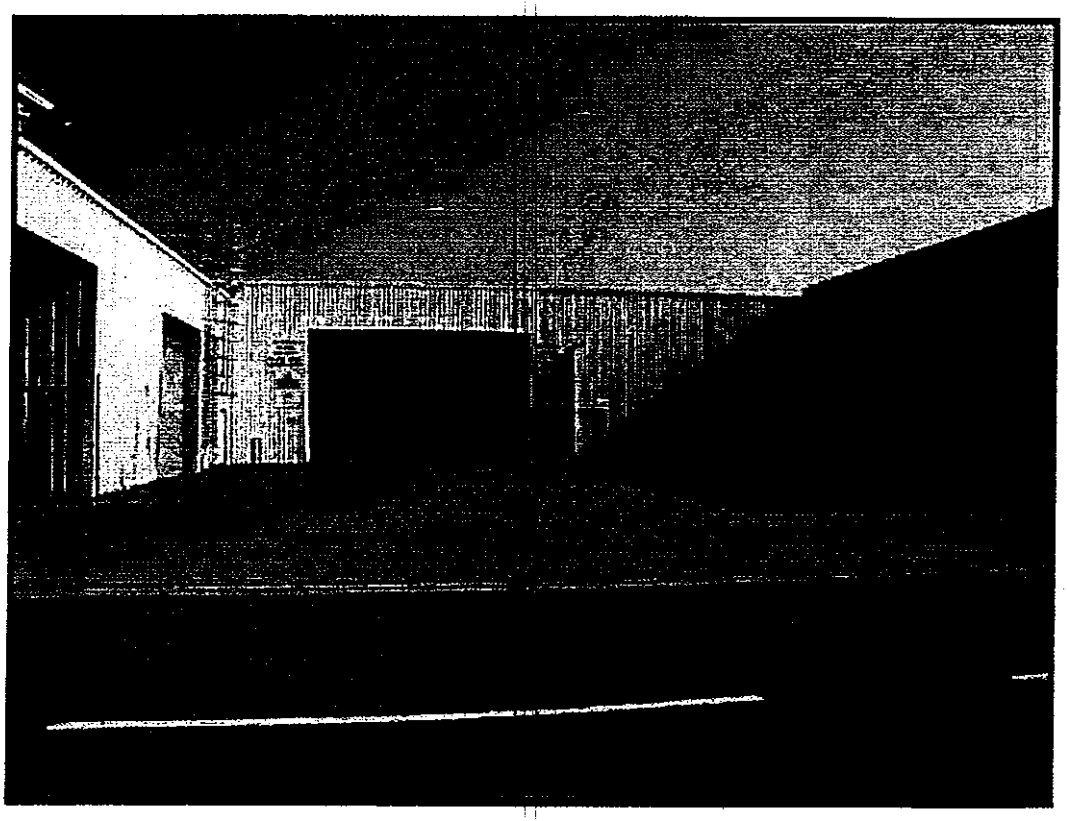

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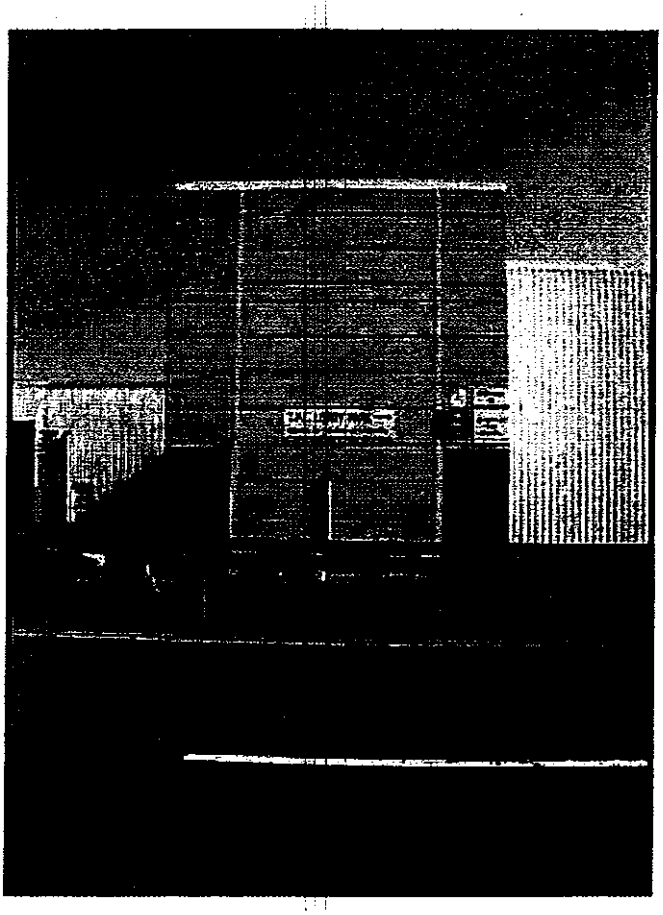

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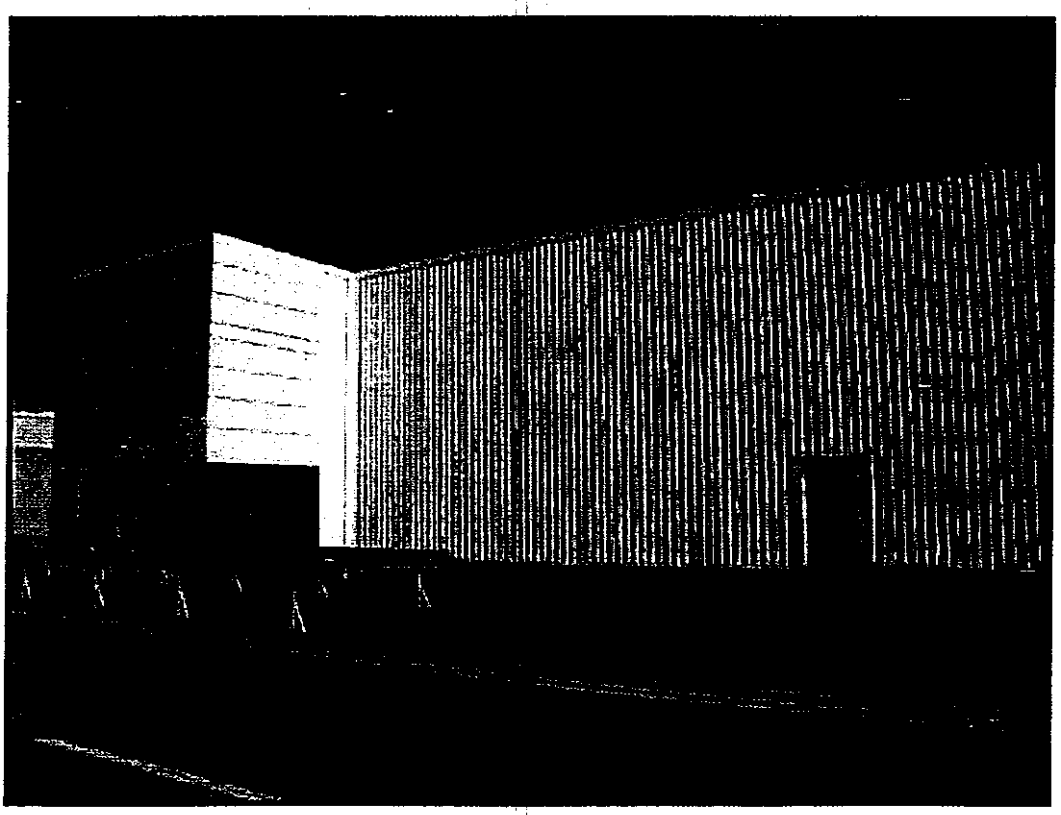

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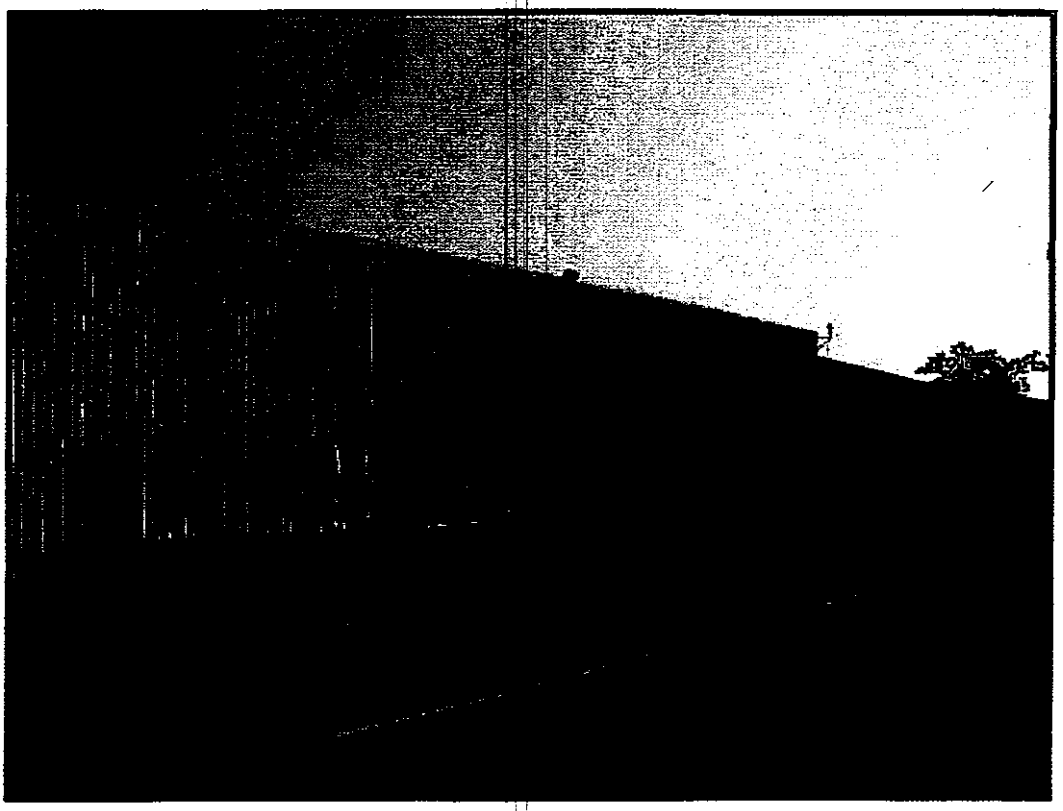

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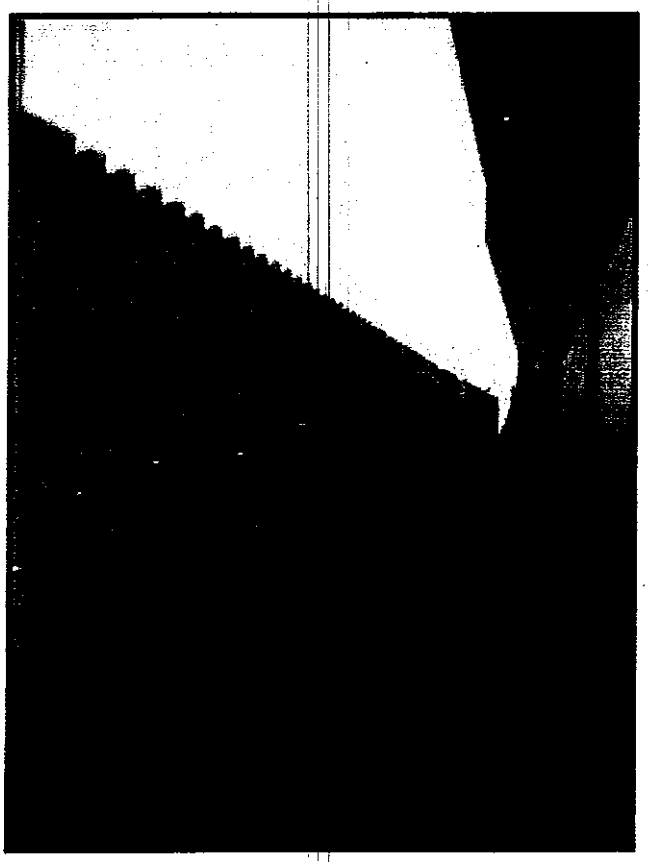

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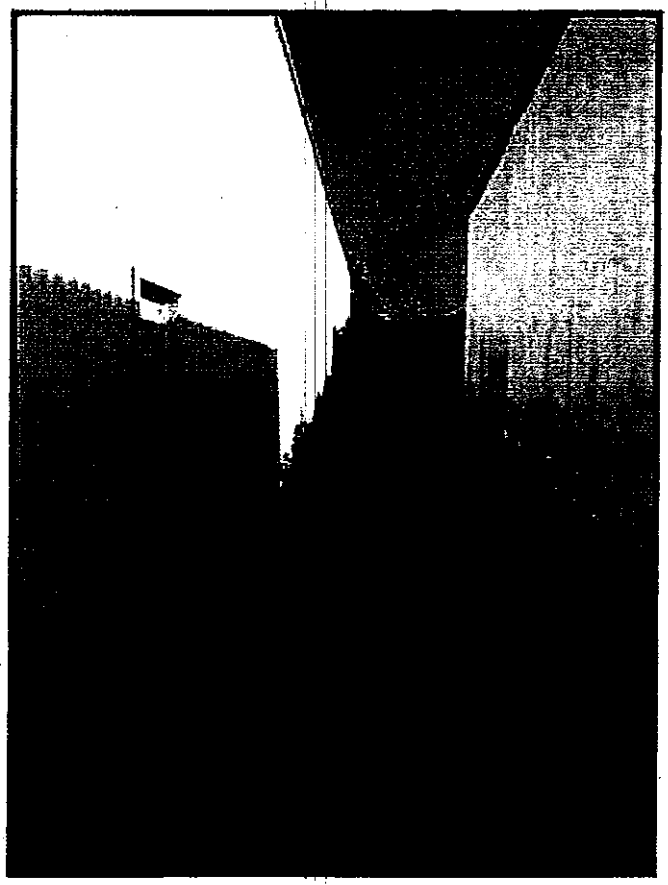

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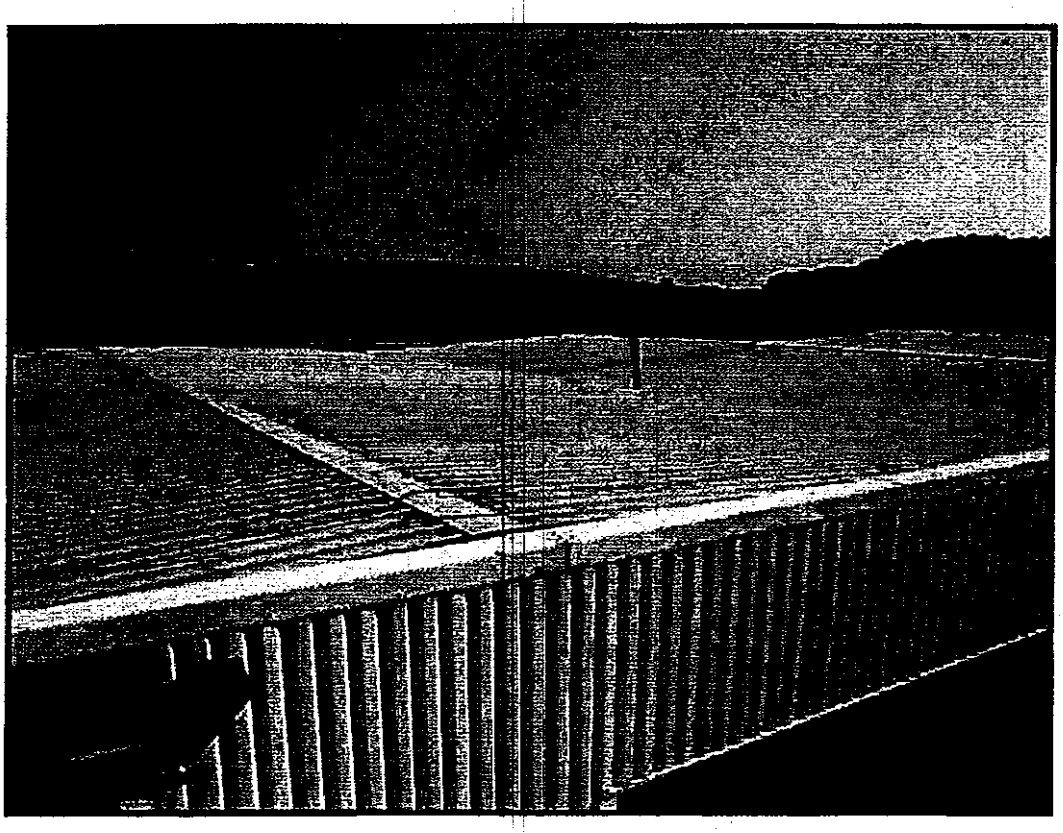

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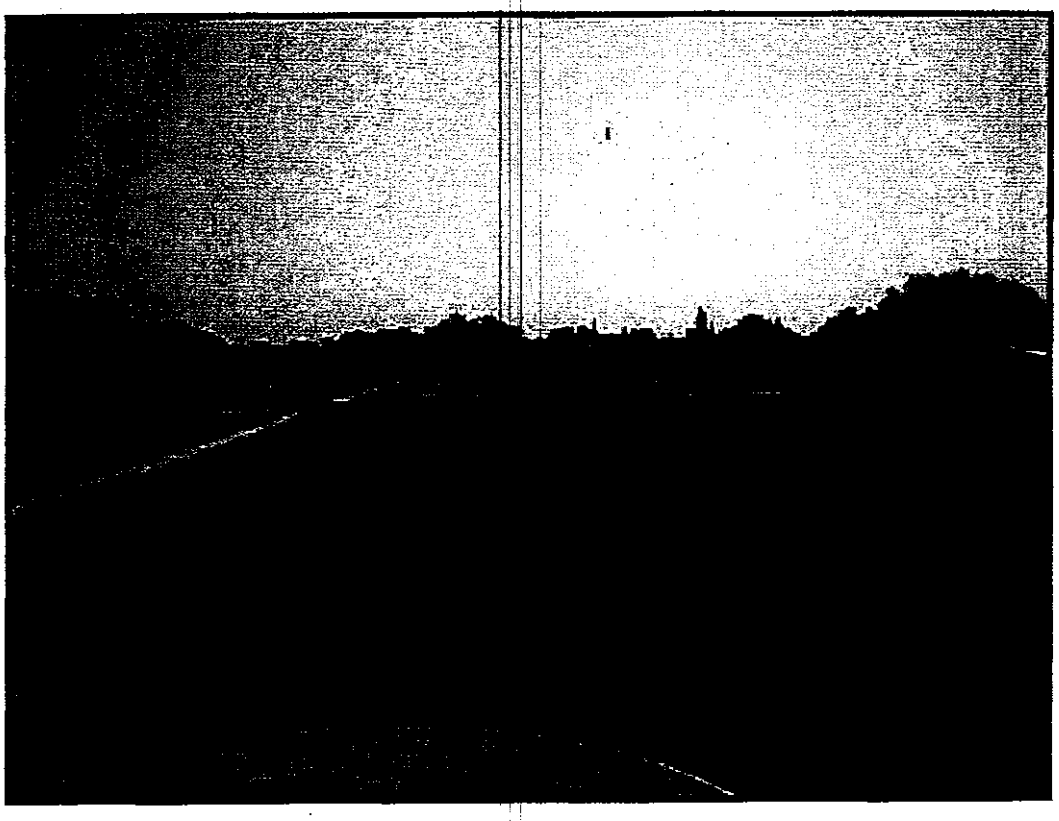

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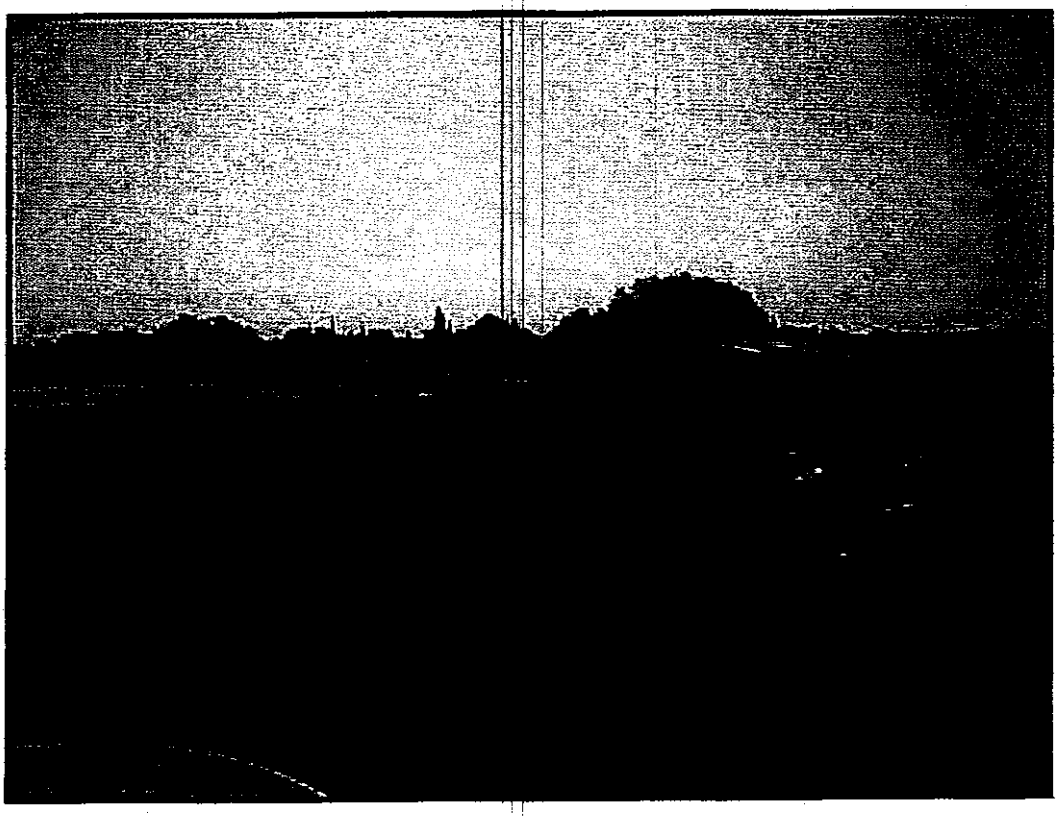

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Appendix J - Insurers Requirements - ACE Technical Lines

Title	**Energy from Waste (EfW) / Waste To Energy (WtE) Fire Protection Requirements**	
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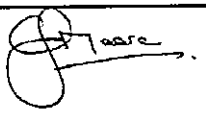
Reviewed Engineering	Chris Moore 04 March 2009	
References	NFPA 2001, 850, 750, 664, 230, 214, 204, 80A, 80, 72, 70, 69, 68, 24, 20, 15, 14, 13, 12, 11, 10	
	BS 5306, 5839, Part 1 – 2002, 14520	
	FM 6-4, 6-13, 7-98, 8-27, 8-28	
	GAP.17.9, 17.5.0	

Revision History

Filename	Version	Date	Comment
EIB_GD_WTE_Fire_Protection _040709.doc	1.0	09 July 2004	Original issue
	2.0	14 September 2004	First update
	3.0	02 June 2006	Second update
	4.0	31 October 2006	Section 3.2.9 updated
	5.0	18 June 2007	Reorganised and expanded to cover biomass and other alternative fuels
	6.0	04 March 2009	General update

Distribution	Date	Comment
TLEI	04 March 2009	Issued

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Jerry Douglas
Senior Engineer – Technical Risks

Contents

Waste to Energy Fire Prevention Guidance

These guidelines present ACE Group suggested requirements for property damage fire prevention for Energy from Waste plants. The guidelines are generic and based on Best Engineering Practice. Health and Safety issues are not specifically addressed. Feedback, queries, comment or qualification in respect of these guidelines should be addressed to jeremy.douglas@acegroup.com

Issue 6 is a rationalisation of the referenced standards and clarification in some areas – no fundamental change has been made to the intent of the document.

Jerry Douglas
Senior Engineer – Technical Risks

1.0 Construction

Construction should be in accordance with National Fire Protection Association NFPA 850 *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations* 2005 Edition (NFPA 850:2005), in particular Chapter 9 Alternative Fuels.

1.1 Materials of Construction

All construction materials should be non combustible, including all building thermal insulation.

1.2 Designing for Dust

Accumulation of combustible dust in enclosed buildings should be reduced by designing structural members such that their shape or method of installation minimizes the surface area where dust can settle. Consideration should be given to installing structural members exterior to the enclosure. Access should be provided to facilitate cleaning of all areas.

1.3 Fire Segregation

See 3.2 Exterior Fuel Stores below regarding exterior fuel storage fire separation criteria.

Fire areas should be separated from each other by fire barriers, spatial separation or other approved means.

Fire barriers separating fire areas should be a minimum of 2 hour fire resistance rating.

If a fire area is defined as a detached structure, it should be separated from other structures by a minimum of 15 m or a greater distance as defined in NFPA 80A *Recommended Practice for Protection of Buildings from Exterior Fire Exposures, 2007 Edition*.

Fire areas to be defined as:

- Indoor fuel receiving / tipping floor and storage area
- Processing area including Materials Recovery Facilities (MRF)
- Processed fuel storage area including Refuse Derived Fuel (RDF) storage
- Each Shredder of the hammer mill or flail mill type and associated dust collection equipment from every other shredder, and from other equipment
- Slow speed Shredders from other equipment
- Cable spreading room(s) and cable tunnel(s) from adjacent areas
- Control Room, Computer Room, or combined Control/Computer Room from adjacent areas
- Rooms with major concentrations of electrical equipment, such as switchgear room and relay room, from adjacent areas
- Battery rooms from adjacent areas
- Maintenance shop(s) from adjacent areas
- Fire pumps from adjacent areas
- Warehouses from adjacent areas
- Emergency diesel generators from each other and from adjacent areas
- Auxiliary boiler(s) from adjacent areas
- Fuel oil pumping, fuel oil heating facilities, or both, used for continuous firing of the boiler from adjacent areas

- Storage areas for flammable and combustible liquid tanks and containers from adjacent areas (this includes lubrication oil tanks)
- Office buildings from adjacent areas
- Telecommunication rooms from adjacent areas
- Adjacent turbine generators beneath the underside of the operating floor

1.4 Penetrations and Openings in Fire Barriers

All openings in fire barriers should be provided with fire door assemblies, fire dampers, penetration seals (fire stops), or other approved means having a fire protection rating consistent with the designated fire resistance rating of the barrier. Windows in fire barriers (e.g., Control Rooms or Computer Rooms) should be provided with a fire shutter or automatic water curtain. (See also under 3.14 Control Room).

Fire door assemblies, fire dampers, and fire shutters used in 2 hour rated fire barriers should be rated not less than 1 1/2 hour. (See NFPA 80 *Standard for Fire Doors and Fire Windows, 2007 Edition*)

It is common for boiler Forced Draft (FD) fans and ultimately the Induced Draft (FD) fans, to take their air supply from the fuel bunker area in order to reduce off site odours. As the bunker wall is a fire separation wall, a fire damper is required in the penetration formed by the fan air supply. In this situation, a bypass system is needed to prevent possible boiler implosion in the event of fire dampers in the fan supply closing – alternatively timers and interlocks can be used to automatically trip the fans when it is safe to do so and then close the FD duct fire dampers during a fire situation.

1.5 Steel Column Protection

Any exposed steel columns located at the front of the fuel pits should be protected against structural damage caused by heat (fire). This protection could include concrete encasement, water spray, or other suitable alternatives and should extend from the base of the column to the roof of the refuse pit enclosure. Care should be taken to protect fireproofing from mechanical damage.

1.6 Hot Load Areas

Specific hot-load unloading areas should be designated and separated from other areas (preferably outdoors) so that loads containing smouldering or other suspect constituents can be segregated. Such areas should be properly monitored, and equipped to promptly extinguish incipient fires before recombining with other combustible material.

1.7 Drainage

Provisions should be made in all fire areas of the plant, for removal of all liquids directly to safe areas or for containment in the fire area without flooding of equipment and without endangering other areas. This includes transformer bays.

One or more of the following should accomplish drainage and prevention of equipment flooding:

- Floor drains
- Floor trenches
- Open doorways or other wall openings
- Curbs for containing or directing drainage
- Equipment pedestals

- Pits, sumps, and sump pumps

The provisions for drainage and any associated drainage facilities should be sized to accommodate all of the following:

- The spill of the largest single container of any flammable or combustible liquids in the area
- The maximum expected number of fire hose lines 1 890 lpm minimum operating for a minimum of 10 minutes
- The maximum design discharge of fixed fire suppression systems operating for a minimum of 10 minutes

2.0 Automatic Fire Detection

2.1 Internal Fire Detection

Fire detection should be installed in all buildings in accordance with BS 5839, Part 1 - 2002 and amendments to give level P1 coverage or equivalent coverage under NFPA 72 *National Fire Alarm Code, 2007 Edition*.

P1 coverage under BS 5839, Part 1 – 2002 basically means fire detection in all areas. In some areas of the plant it may be difficult to fit fire detection which will provide meaningful coverage and not false alarm frequently. Such areas can be discussed on a case by case basis with the provision of sprinklers being pertinent here.

NB The term "automatic fire detection" covers smoke, heat and flame detection – the type of detection chosen in any particular circumstance will depend on the conditions – dust, etc.

2.2 External Fire Detection

External fuel stores, biofilters and the like should be covered by video smoke detection systems, flame detection or other suitable means of raising the alarm in the event of fire.

3.0 Fire Protection

Fire protection should be installed in accordance with National Fire Protection Association NFPA 850 *Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations, 2005 Edition (NFPA 850:2005)*, in particular Chapter 9, Alternative Fuels.

All fire products and services should be Approved and supplied from Approved suppliers such as the UK Loss Prevention Certification Board's List (LPCB) of Approved Fire and Security Products and Services, <FM> or UL approved equipment. Companies having achieved the LPCB Quality systems certification or equivalent should carry out their design, manufacture and installation.

3.1 Fire Water Supplies

3.1.1 Flow and Duration

The water supply for the fire protection installation should be based on providing a 2 hour supply (or such a longer period as required under 3.2 Exterior Fuel Stores below) for both items (1) and (2) as follows:

(1) Either of items below, whichever is larger:

- The largest fixed fire suppression system demand
- Any fixed fire suppression system demands that could reasonably be expected to operate simultaneously during a single event [e.g., turbine under floor protection in conjunction with other fire protection system(s) in the turbine area; fuel conveyor protection in conjunction with protection for related fuel handling structures during a conveyor fire]

(2) The hose stream demand of not less than 1 890 lpm

If the hydrant system does not take its water supply from the pumped fire water supply – the hose stream allowance is not required.

NB. No allowance is permitted for infill of water supply tanks during a fire situation in arriving at the water supply duration above.

3.1.2 Fire Pumps

The following fire pumps should be provided:

A minimum of one electric motor driven fire pump and one diesel engine driven automatic starting fire pump, complying with NFPA 20 *Standard for the Installation of Stationary Pumps for Fire Protection, 2007 Edition.*

3.1.3 Flow Testing Facilities

Full flow testing facilities should be provided for all the main fire pumps in order that the fire pump performance can be tested and demonstrated on a routine basis.

3.2 Exterior Fuel Stores

3.2.1 Overhead Power Lines

Reroute all overhead power lines to prevent them from passing over any fuel storage area.

3.2.2 Log Piles

Log piles should comply with FM8-28 *Pulpwood and Outdoor Log Storage.*

3.2.3 External Wood Chip Piles

External wood chip piles should comply with FM8-27 *Storage of Wood Chips.*

3.2.3.1 Temperature Monitoring

Thermocouples should be installed during pile build up, or other means for measuring temperatures within the pile with regular (normally weekly) reports provided to management.

3.2.4 Scrap Rubber Tyre Piles

3.2.4.1 General

The fire hazard potential inherent in scrap rubber tyre storage operations can best be controlled by an aggressive fire prevention program. The method of storage should be solid piles in an orderly manner and should include the following:

(1) Driveways to separate piles and to provide access for effective fire-fighting operations should be a minimum of 18 m in accordance with Table 3.2.4.6, below.;

(2) Separation of yard storage from buildings, vehicles, flammable materials, and other exposures should be a minimum of 60 m.

(3) The area within 60 m of a pile should be totally void of trees, plants, or vegetation.

(4) Topography is a factor in determining the manner of tyre fire tactics and environmental mediation.

(5) Tyres should not be stored on wetlands, flood plains, ravines, canyons, or steeply graded surfaces. Scrap tyre storage preferably should be on a level area. The preferred surface for the storage area is concrete or hard packed clay, not asphalt or grass.

(6) Smoking should be prohibited within the tyre storage area. Other types of potential ignition sources such as cutting and welding, heating devices, and open fires should be prohibited. Suitable safeguards should be provided to minimize the hazard of sparks from such equipment as refuse burners, boiler stacks, and vehicle exhaust.

(7) Piles should not be permitted beneath power lines or structures.

(8) Lightning protection systems that conform to local and state codes should be located at the facility but away from the tyre piles.

(9) Piles should be at least 15 m from the fences. Lanes should be kept clear of debris or vegetation.

3.2.4.2 Fire Department Access to Site

Each tyre storage yard should be provided with fire access routes as follows:

(1) Each tyre storage yard or pile should be provided with emergency vehicle access routes, such that no portion of the pile is more than 45 m from an access road or fire break.

(2) All roads and accesses should be designed to support the loads imposed by fire-fighting equipment.

(3) All bridges and structures, including drainage structures on access roads, should be capable of carrying a minimum design load of HS-20 in accordance with AASHTO *Standard Specifications for Highway Bridges*. The design and as-built plans for all bridges should be certified by a licensed structural engineer. Routes should be surfaced with material designed to allow accessibility under all climatic conditions.

(4) All emergency vehicle accesses should have an unobstructed vertical clearance of not less than 4.1 m, or as is needed to allow for the passage of large fire-fighting equipment, with a minimum outside turning radius of 13.7 m provided for emergency vehicle access.

(5) All dead-end accesses in excess of 45 m should be provided with a turn-around area.

(6) Accesses should be well maintained and should remain accessible to the fire department at all times. The fire chief can allow the use of alternative materials or processes to provide equivalent fire protection.

3.2.4.3 Site Security

Appropriate steps should be taken to limit access to the tyre storage area as follows:

(1) The facility should have a chain-link fence at least 3 m high with intruder controls on top (in accordance with local laws).

(2) Gates should protect each access point (a minimum of one on each side). Such gates should be capable of being locked when the facility is not open for business.

(3) All gates should have a 6.1 m open width and should remain unobstructed at all times.

(4) Gates should have rapid entry design that is compatible with local fire department requirements.

(5) Gates should have an optimum activation system or the equivalent and a compatible system approved by the local government. All electrically activated gates should have the capability to default to the unlocked position.

(6) A certified security attendant or site manager should be on site at all times when the facility is open.

(7) Clearly visible signs that indicate business hours and regulations should be posted near the facility entrance.

3.2.4.4 Pre-Incident Planning

Pre-incident plans are developed by fire departments to identify special features and hazards at a particular site or property and to specify the department operational plan. Pre-incident plans are specific to a location.

Analytical forecasting of the types of emergencies that can be encountered complement the readiness efforts that are generally employed to manage emergency incidents.

It is strongly recommended that the fire department adopt a model incident management system that is published, taught to all members, and regularly utilized. Neighbouring (mutual aid) departments and outside agencies with whom the department interacts should be familiar with the department's model incident management system. Operational drills at the scrap tyre facility that involve mutual aid companies and related agencies are useful in evaluating shortfalls in the department's response capability and fireground effectiveness.

A thorough survey of the area under the jurisdiction of the fire department should be undertaken to detect the existence of scrap tyre piles. In many areas, piles are remotely and illegally dumped. Once the area has been surveyed and the existence of scrap tyre piles has been identified, the magnitude of the problem should be assessed, and an appropriate fire prevention methodology should be developed.

Topographical maps and detailed area plot plans should be compiled, noting all features of the terrain and property, hydrants and water supply sources, accesses, interior lanes or passages, and fuel load configuration.

Ingress and egress plans should be developed for apparatus and equipment. The development of additional access points, pre-incident or post-incident, should be analyzed and planned, and the means of maintaining or expanding accesses should be provided. Lists of emergency incident contact personnel (names, addresses, and telephone / pager numbers), appropriate agencies, contractors, mutual aid agreements, and so forth, should be obtained. Such lists should be updated on a semiannual basis. A water supply use plan with the estimated litres per minute (lpm) required should be developed.

3.2.4.5 Water Supplies

A public or private fire main and hydrant system should be provided. A water system should be provided to supply a minimum of 4 000 lpm for less than 20 000 units storage [1 416 m^3], or 8 000 lpm for 20 000 units storage or more for a duration of 6 hours. If there is access to a lake, stream, pond, or other body of water in the vicinity of the storage area, a fire department suction connection should be provided.

3.2.4.6 Pile Geometry and Spacing

Maximum pile height should be 6 m, maximum pile width should be 15 m, and maximum length should be 75 m without a separation in accordance with Table 3.2.4.6 Representative Minimum Exposure Separation Distances. *(See Figure 3.2.4.6 Pile Geometry and Spacing, below.)*

The width limitation of 15 m means that, as the exposed face exceeds 30 m, the pile takes on the appearance of a wind row, and there is little likelihood that the entire face would be burning all at once. Thus, in Table 3.2.4.6, the minimum exposure separation distances are held constant for exposed face dimensions greater than 30 m.

For 500 tyres or less the minimum separation distance between scrap rubber tyres and structures should be 7.6 m or as reduced by NFPA 80A, *Recommended Practice for Protection of Buildings from Exterior Fire Exposures, 2007 Editon*.

In order for storage piles of more than 500 tyres to be considered isolated piles, the minimum separation distance between piles should be in accordance with Table 3.2.4.6.

The width of the exposing fire should be assumed to be the combined width of piles facing the exposed building, disregarding the nominal separation between piles provided by narrow access aisles and roadways.

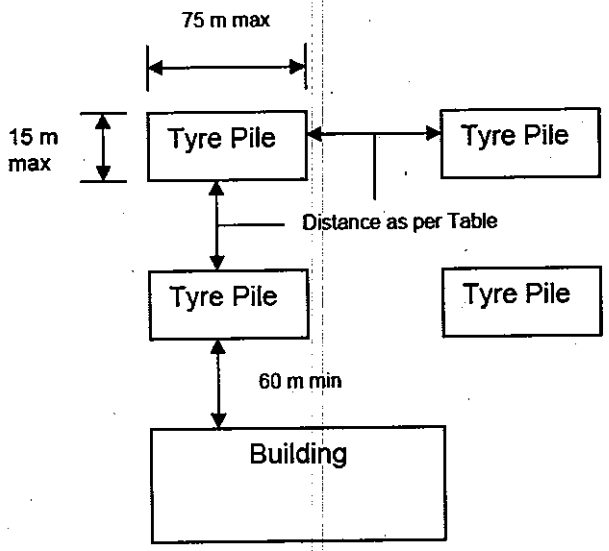
Because of the extensive fire expected in scrap tyre storage, some form of exposure protection for adjoining properties should be considered. If the clear space as recommended in Table 3.2.4.6 cannot be provided, a dirt berm one and one-half times the height of the tyre storage should be provided, or other protection that meets the requirements of the authority having jurisdiction should be provided. The storage of baled tyres should be vertical rather than horizontal. Under fire conditions, the bands release, allowing for sudden, drastic movement of burning tyres.

Table 3.2.4.6 Representative Minimum Exposure Separation Distances

Exposed Face Dimension (m)	Tyre Storage Pile Height (m)						
	2.4	3 0	3.7	4.3	4.9	5.5	6.1
7.6	17.1	18.9	20.4	22.3	23.5	25.0	25.9
15.2	22.9	25.6	28.3	30.5	32.6	34.4	36.0
30.5	30.5	35.4	39.0	41.8	44.5	47.2	50.0
45.7	30.5	35.4	39.0	41.8	44.5	47.2	50.0
61.0	30.5	35.4	39.0	41.8	44.5	47.2	50.0
76.2	30.5	35.4	39.0	41.8	44.5	47.2	50.0

Source: Separation distances are based on the "by Robert Brady Williamson, Ph.D. and Robert Allen Schroeder, M.S.

Figure 3.2.4.6 Pile Geometry and Spacing



3.2.4.7 Outdoor Tyre Pile Fire-Fighting Tactics and Strategy

These guidelines are based on the collective experience of fire service professionals who have managed major scrap tyre fires. They are presented as an adjunct to the strategic and tactical practices of an incident command system. Conventional fire suppression tactics are ineffective for scrap tyre fires. Fire fighting tactics and strategies for the suppression of fires in whole tyres differ from those for processed tyres. The unique shape of whole tyres allows the storage of enough air to support combustion throughout the pile, and it is difficult to reach all burning surfaces. Because of such complications, tyre fires can continue for weeks, and even months, despite aggressive fire suppression tactics.

The foundation of fire suppression should be based on the data collected before a fire occurs. By establishing a pre-incident plan that uses a model incident command system, decisions regarding size-up, tactics, strategies, and overhaul can be resolved quickly. Familiarity with plans that have been successful in fighting tyre fires throughout the country also aids in the decision-making process. Such decisions should be based on an understanding of the dynamics and behaviour of a tyre fire.

The environmental consequences of all suppression techniques should be evaluated carefully. Communication between the incident commander and the on-scene environmental specialist is critical. The following provide tactics and strategies for fighting whole-tyre and processed-tyre fires.

(1) *Tactics / Strategies for Whole-Tyre Fires.* Important tactical considerations include protecting exposures, separating burning tyres from the rest of the inventory, and forecasting. Forecasting for an effective location for separation should include arrival time of equipment and time necessary to develop the needed firebreak. Heavy equipment can be used to accomplish these tasks.

Protection of exposures is an important tactical decision. The initial approach to a tyre fire should be to isolate the tyre inventory from the fire. Creating firebreaks in a large pile of scrap tyre is a time consuming process. However, it can be accomplished with heavy machinery and front-end loaders.

Bulldozers, front-end loaders, and similar equipment can be used to move tyres that are not yet involved in the fire to create breaks in the tyre pile or to cover burning tyres with soil. Equipment breakdowns — scrap tyres caught between the wheels, tracks, and undercarriage of heavy equipment — have been reported. Firelines should be deployed to provide protection to operators and equipment alike.

Recognized strategy options are as follows:

(a) *Let-It-Burn (Burn-It).* Allowing a tyre pile to burn has its merits. Factors that influence this decision include, but are not limited to, level of fire involvement, resources available, location of the fire, and environmental and economic impacts. Soil and water pollution, as well as clean-up costs, can be drastically reduced when many of the products of combustion are consumed. A precedent for the let-it-burn strategy appears in fire responses to chemical fires. The fire service is responsible for managing and controlling the burn process. Protecting exposures and separating tyres from the burn area is a tactical priority.

(b) *Bury-It.* The decision to bury a tyre pile also has merits. Materials as diverse as the soil that is on site, cement kiln dust, sand, gravel, and even crushed coral have been employed to cover the burning material. The bury-it strategy can be employed in areas that have a minimal water supply or in areas that are densely populated. The decision to bury a tyre fire should take into consideration reduction of the toxic smoke for the sake of public health. Geological considerations play an important role in the bury-it strategy. While the tyre fire is entombed, tyres can pyrolize, and oil can be generated and released into the soil or underground water sources.

(c) *Drown-It.* The drown-it strategy is best employed with forethought and careful preplanning. Familiarity with the topography, available water supply, and exposure hazards to aboveground water sources will be critical. Planning for the control and containment will facilitate this tactic. The drown-it strategy also has some drawbacks. Cooling the fire will increase the air emissions as the combustion process is slowed down. An inordinate amount of water runoff combined with pyrolitic oil can result from the drown-it tactic.

(2) *Tactics / Strategies for Processed-Tyre Fires.* Important tactical considerations include protecting exposures, separating burning tyres from the rest of the inventory, and forecasting. Heavy equipment can be used to accomplish these tasks.

To effectively combat a processed tyre fire, a fogging of water or other fire retardant should be applied. Cooling the plane of fire should put the fire out. Using a mist also reduces the amount of water used and the subsequent runoff that can be generated. Under no circumstances should a processed tyre pile be broken open or doused with streams of high-pressure water that are directed into the piles. Water actually increases the severity and duration of the fire by introducing oxygen into the pile and by breaking up the pile, causing a burst of flames that emits incompletely burned hydrocarbons and other contaminants to the atmosphere.

Once the surface fire is put out, the cooled chips should be removed, allowing water or fire retardant to reach under layers that are hot and still burning. This process should be repeated until the chips are no longer smouldering or hot.

(3) *Ancillary Issues.* Ancillary issues include fire dynamics, stages of combustion, size-up, and environmental concerns. Refer to *Guidelines for the Prevention and Management of Scrap Tyre Fires.*

3.2.5 Bailed Biomass Fuel

Store baled fuel in warehouses sprinklered in accordance with NFPA 13 *Standard for the Installation of Sprinkler Systems, 2007 Edition*. Where this is not feasible and yard storage must be used, take the following precautions

- Limit the size of individual piles to 15.3 m × 45.8 m
- Limit the height of piles to 4.6 m
- Separate piles from plant buildings and other structures by a minimum of 61 m
- Protect all yard storage with hydrants spaced no more than 91.5 m apart
- Cover long-term yard storage completely with flame-proofed tarpaulins
- Strictly prohibit smoking and cutting or welding in or near the yard storage, and post large signs around the perimeter of the storage area
- Provide adequate lighting and guard patrol tour stations throughout the storage site

3.3 Tipping Hall, MSW and RDF Bunkers

Tipping / receiving buildings MSW and RDF Bunkers should be provided with automatic sprinkler protection throughout to protect the entire roof area against structural damage. Systems should be designed for a minimum of 10.2 mm/min over the most remote 279 m^2 (increase by 30% for dry pipe systems) of floor area with the protection area per sprinkler not to exceed 12.0 m^2. High temperature sprinklers 121°C to 149°C should be used.

Exposed steel column protection should be provided, should be designed in accordance with NFPA 15 *Standard for Water Spray Fixed Systems for Fire Protection, 2007 Edition*, and can be connected to the overhead sprinkler system. Due to the distance between the bottom of the refuse pit and the sprinkler system, manual hoses and monitor nozzles should be considered as the primary means of fighting a MSW storage pit fire.

In addition to sprinkler protection, the MSW and RDF Bunkers should be provided with monitor nozzle protection designed to furnish a minimum of 946 lpm at 6.89 bar at the tip. Monitors should be located so as to allow for coverage of all pit areas with at least two (2) streams operating simultaneously. Due to frequency of use and potential for operator fire exposure, oscillating monitor nozzles with manual override should be provided and the monitors should be capable of remote operation from the central Control Room. The fire water monitors should not be installed in any area where they can affect the operation or maintenance of the refuse cranes and should be protected by steel frameworks to avoid damage from the waste grabs.

3.4 Biomass Stores

Biomass storage silos, bins and sheds or other enclosures with capacities of 1 415 m^3 or more should be provided with automatic sprinkler protection in accordance with Table 3.4 below.

Table 3.4 Sprinkler Protection Requirements for Biomass Silos, Bins, and Sheds or Other Enclosures

Type of Sprinkler System	Sprinkler Temperature Rating °C	Density mm/min	Area of Demand m^2
Wet	100-141	8	278.7
Wet	71	8	371.6
Dry	100-141	8	371.6
Dry	71	8	464.7

3.5 Rubber Tyre Pits

Scrap rubber tyre pits should be provided with foam-water spray protection throughout. The system(s) should be designed for a minimum of 9.8 mm/min over the entire pit area, with the protection area per nozzle not to exceed 9.3 m^2. Due to the extreme hazard, clearance between the top of storage and foam water spray systems should be minimized.

In addition to the foam water spray protection, the storage pit should be provided with monitor nozzle protection designed to furnish a minimum of 946 lpm at 6.89 bar at the tip. Monitors should be located so as to allow for coverage of all pit areas with at least two streams operating simultaneously. Due to the potential for operator fire exposure, oscillating monitor nozzles with manual override should be provided.

3.6 Processing Building including MRF

3.6.1 Fire Protection System

Processing buildings should be provided with automatic sprinkler protection throughout. Systems should be designed for a minimum of 10.2 mm/min over the most remote 279 m^2 (increase by 30% for dry pipe systems) of floor area with the protection area per sprinkler not to exceed 12.0 m^2. Sprinklers to cover all areas under conveyors and other obstructions to the overhead sprinklers in accordance with NFPA 13 *Standard for the Installation of Sprinkler Systems, 2007 Edition*. This is in addition to the requirement for protection within the shredders.

If MRF facilities are provided – sprinklers should be provided inside all rooms within the MRF to the same densities as above. Sprinklers to cover all areas under conveyors, inside bins bunkers and all other areas in the Processing Building not covered by the roof level system, in accordance with NFPA 13 *Standard for the Installation of Sprinkler Systems, 2007 Edition*.

3.6.2 Dust Suppression

The process should be designed to minimize the production of dust. Dust collected in a dust collection systems, baghouses, or cyclones should be discharged downstream of the collection system, back to the conveying system, or back to the residue or waste stream.

Install portable or fixed pipe vacuum cleaners of a type approved for dust hazardous locations or low velocity water spray nozzles and hose. Cleaning methods such as vigorous sweeping of dust or blowing down with steam or compressed air should not be used since these methods can produce an explosive atmosphere.

3.6.3 Explosion Protection

Units utilizing equipment capable of producing explosive concentrations of gases or dusts should be provided with explosion venting or explosion suppression systems. (Refer to NFPA 68 *Guide for Venting of Deflagrations, 2007 Edition*; NFPA 69 *Standard on Explosion Prevention System*; *2008 Edition* and NFPA 664 *Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities, 2007 Edition*, for further guidance.)

3.7 Conveyors

Conveyor belts carrying combustible materials should be of material designed to resist ignition. U.S. Mine Safety and Health Administration and Canadian Bureau of Mines Standards for fire-retardant conveyor belt materials should be used as a guide.

All belt conveyors require some form of fire protection unless they not critical to continuous plant operation.

Automatic water spray or sprinkler systems should be provided for enclosed conveyors carrying combustible materials and for all conveyors carrying combustible materials located outside of sprinklered buildings. Coverage should be provided at all transfer points. Overhead sprinklers within buildings should cover all other conveyors. Sprinklers should be designed for a minimum of 10.2 mm/min density over 186 m^2 of enclosed area or the most remote linear 30 m of conveyor structure up 186 m^2. For water spray design criteria, see NFPA 15 *Standard for Water Spray Fixed Systems for Fire Protection, 2007 Edition*.

3.8 Tunnels

Tunnels or other construction beneath fuel piles should be provided with automatic water spray or sprinkler systems. Sprinklers should be designed for a minimum of 10.2 mm/min density over 186 m^2 of enclosed area or the most remote linear 30 m of conveyor structure up 186 m^2. For water spray design criteria, see NFPA 15 *Standard for Water Spray Fixed Systems for Fire Protection, 2007 Edition*.

3.9 Shredders

In view of the difficulties in preventing and controlling all types of shredder explosions, it is important to isolate the shredder and surrounding enclosure from vulnerable equipment and occupied areas in the plant. Consideration should be given to the protection of operating personnel or visitors from the potential blast zone.

There is an increased potential fire and explosion hazard with the use of hammer mill and flail mill type shredders and associated dust collection equipment. During the size-reduction process, flammable or explosive materials in the waste stream can be ignited. Slow speed shredders are a lower risk.

In addition to the requirement to fire segregate each hammer mill and flail mill type shredder from all other such shredders and from other equipment (as in 1.3 Fire Segregation above), each such shredder and any associated dust collectors should be located within an enclosure of damage limiting construction.

Shredder enclosures should be provided with automatic sprinkler or water spray protection. Systems should be designed for a minimum of 10.2 mm/min over the most remote 279 m^2 (increase by 30% for dry pipe systems) of floor area with the protection area per sprinkler not to exceed 9.3 m^2. Water spray protection should also be provided within the shredder housings at intake and discharge chutes and within vent shafts.

All types of shredders, shredder enclosures, and openings into the enclosure should be designed so that, by a combination of venting and wall strength, they will resist a postulated worst credible case explosion. It is recommended that designers seek guidance from those having specialised experience in the analysis of such hazards, including specification and construction of explosion venting and shredder enclosures.

See also 3.6.3 Explosion Protection above.

Electrical equipment located inside the shredder enclosure should be rated for use in both hazardous vapour and dust atmospheres in accordance with NFPA 70 *National Electrical Code, 2009 Edition*.

3.10 Classifiers / Trommels

Classifiers / trommels, such as rotating screens, should be provided with automatic water spray protection to prevent fire from propagating downstream through the screen. Systems should be designed for a minimum of 10.2 mm/min of the entire screen area with nozzles no more than 3.0 m on centre. Consideration should be given to avoiding physical damage from mobile equipment operation in the area and from the material being processed.

3.11 Boiler Fuel Supply System

Solid boiler fuel feed system areas, including bins, hoppers, chutes, conveyors, etc., should have automatic sprinkler protection designed for a minimum of 8.1 mm/min over the most remote 186 m^2 (increase by 30% for dry pipe systems) of floor area with the protection area per sprinkler not to exceed 12.0 m^2 – unless covered by a higher specification fire protection system as defined elsewhere is this document. Internal, as well as external, protection should be fitted.

3.12 Boiler Auxiliary Firing

The boiler front area by any auxiliary oil firing points, including any waste oil firing, should be protected with automatic sprinkler, water spray, foam, or foam-water sprinkler systems covering the burner front oil hazard. Boiler front fire protection systems should be designed to cover the fuel oil burners and igniters, adjacent fuel oil piping and cables, a 6.1 m distance from the burner and igniter including structural members and walkways at these levels. Additional coverage should include areas where oil may collect. Sprinkler and water spray systems should be designed for a density of 10.2 mm/min over the protected area.

Boiler auxiliary burners should have installed a wire and fusible link system or heat detector and solenoid valve such that in the event of an external fire, the fuel supply (oil or gas) is automatically shut off. The fuel shutoff valves should be located in the boiler room on the suction side of the pump. The fusible link or heat detector for the valves should be located at the boiler burner front. The valves should be tested periodically to be sure that the weights will close the valves or that the solenoid valve closes as appropriate.

Gas detection should be fitted to the boiler front area if gas firing is fitted. The detection should be linked to close the gas valve on detection of gas and raise the alarm.

3.13 Hydraulic Systems

Hydraulic equipment, reservoirs, coolers, and associated oil filled equipment should be provided with automatic sprinkler or water spray protection. Sprinklers or spray nozzles should be over oil containing equipment and for 6.1 m beyond in all directions. A density of 10.2 mm/min should be provided.

Exceptions: Where a listed Fire Resistant Fluid (FRF)[1] is used, protection is not needed.

Where there is no normal presence of ignition sources within 6 m of any part of the hydraulic system during equipment operation. These include hot surfaces above the auto ignition temperature of the oil, open flames, or spark producing equipment.

Sprinklers may be omitted over a single small (<380 l total oil capacity) hydraulic system or multiple adjacent small systems, i.e., within 6 m of each other.

3.13.1 Hydraulic Systems – Fire Interlocks

Provide an automatically actuated means for shutting down the oil pump and shutting off flow from accumulators for hydraulic systems with individual reservoirs containing more than 380 l of petroleum-base hydraulic oil. Automatic shutdown of hydraulic systems may be accomplished through the use of a sprinkler water flow switch; a thermally actuated fire detector / device rated at least 30°C above the highest anticipated operating environment temperature, located directly above the hydraulically operated equipment; or an oil reservoir liquid level switch electrically interlocked with the power supply to the oil pump. The oil reservoir liquid level switch arrangement should be used only where the hydraulic oil system release can be limited to 25 l or less.

3.14 Control Room

The glass partition in the Control Room / Crane Cabin, in addition to being 2 hour fire rated, should be cooled by automatically initiated externally fitted fixed water spray nozzles as the fire may be dug out by the crane grab and cooled by the firewater cannons, in the event of a fire being detected in the waste bunker area.

Air conditioning for the Control Room should provide a pressurised environment to preclude the entry of smoke in the event of a fire outside the Control Room.

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[1] There is an issue of compatibility of some FRF with some elastomers used in hydraulic systems seals – See Listed (<FM> Approved) Fire Resistant Fluid in Appendix

3.15 Turbine Generator

All areas beneath the turbine generator operating floor that are subject to oil flow, oil spray, or oil accumulation should be protected by an automatic sprinkler or foam-water sprinkler system. This coverage normally includes all areas beneath the operating floor in the turbine building. The sprinkler system beneath the turbine generator should take into consideration obstructions from structural members and piping and should be designed to a density of 12.2 mm/min over a minimum application of 464 m^2.

Lubricating and control oil lines above the turbine operating floor should be protected with an automatic sprinkler system covering those areas subject to oil accumulation including the area within the turbine lagging (skirt). The automatic sprinkler system should be designed to a density of 12.2 mm/min.

Turbine generator bearings should be protected with closed head sprinklers utilising directional nozzles. Fire protection systems for turbine generator bearings should be designed for a density of 10.2 mm/min over the protected area.

Accidental water discharge on bearing points and hot turbine parts should be considered. If necessary, these areas may be permitted to be protected by shields and encasing insulation with metal covers.

Automatic actuation is preferable to manual action. If turbine generator bearings are protected with a manually operated sprinkler system, the following should be provided:

(a) Manual activation should be from the Control Room or a readily accessible location not exposing the operator to the fire condition. Staffing of plant should be sufficient to promptly handle this function as well as other responsibilities during an emergency of this nature
(b) Documented procedures should be in place with authorised approval given to operators to activate the system if necessary in a fire condition
(c) Periodic training should be given to operators regarding the need for prompt operation of the system

If the turbine generator is housed in an enclosure, an automatic total flooding water mist system to NFPA 750 *Standard on Water Mist Fire Protection Systems, 2006 Edition*, or gaseous fire suppression system to NFPA 12 *Standard on Carbon Dioxide Extinguishing Systems, 2008 Edition*, NFPA 2001 *Standard on Clean Agent Fire Extinguishing Systems, 2008 Edition* or *BS ISO 14520-1:2000 Gaseous fire-extinguishing systems* may be used as an alternative to sprinkler systems.

3.16 Electrical Rooms

Total flooding gaseous fire extinguishing systems should be fitted in electrical rooms, MCC rooms, DCS rack room, UPS and battery room, crane Control Room and instrument rooms. Coverage to include beneath raised floors and above false ceilings that contain cables. Individual equipment and cabinet protection can be considered in lieu of total flooding systems.

Automatic gaseous fire suppression systems to comply with NFPA 12 *Standard on Carbon Dioxide Extinguishing Systems, 2008 Edition*, NFPA 2001 *Standard on Clean Agent Fire Extinguishing Systems, 2008 Edition or BSISO14520-1:2000 Gaseous fire-extinguishing systems.*

3.17 Transformers

3.17.1 Transformer Type

All oil filled transformers and reactors should preferably be located outdoors. Dry type transformers are preferred for indoor installations. Less flammable liquid or non flammable fluid insulated transformers are preferred to oil filled transformers.

3.17.2 Transformer Fire barriers (Indoor)

Oil insulated transformers of greater than 379 l oil capacity **installed indoors** should be separated from adjacent areas by fire barriers of 3 hour fire resistance rating.

Transformers operating at greater than 35 kV, insulated with a less flammable liquid or non flammable fluid and **installed indoors** should be separated from adjacent areas by fire barriers of 3 hour fire resistance rating.

Where transformers are protected by an automatic fire suppression system and **installed indoors**, the fire barrier fire resistance rating may be permitted to be reduced to 1 hour.

3.17.3 Fixed Fire Protection

Oil filled **Main, Station Service**, and **Start Up** transformers not meeting separation or fire barrier recommendations below should be protected with automatic water spray in accordance with NFPA 15 *Standard for Water Spray Fixed Systems for Fire Protection , 2007 Edition* or foam-water spray systems in accordance with NFPA 11 *Standard for Low-, Medium-, and High-Expansion Foam 2005 Edition*.

Transformer protection should provide complete water spray impingement on all exposed exterior surfaces. The water should be applied at a net rate not less than 10.2 mm/m² of projected area of rectangular prism envelope for the transformer and its appurtenances, and not less than 6.1 mm/m² on the expected non absorbing ground surface area of exposure.

Water spray application should include the conservator tanks, pumps, etc.

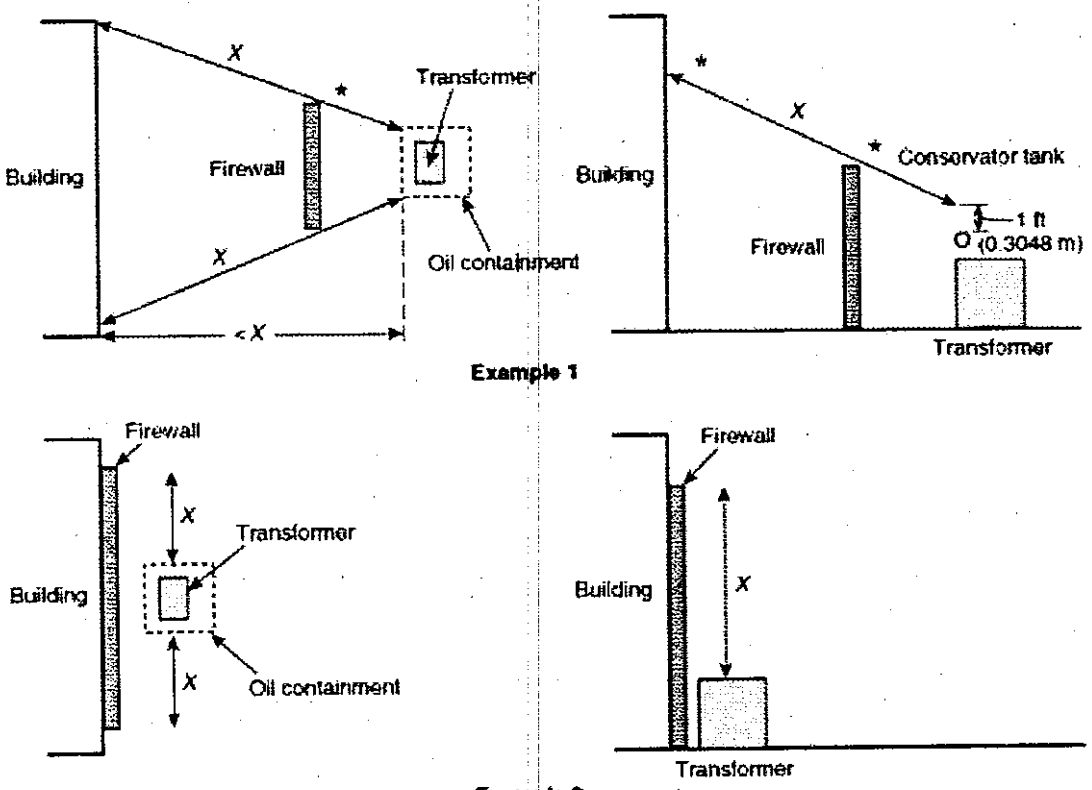
3.17.4 Transformer Fire Barriers (Outdoor)

Any **outdoor** oil-insulated transformers containing 1 893 l or more of oil should be separated from each other and from adjacent structures by a 2 hour rated fire barrier or by spatial separation in accordance with Table 3.17.4, below (basically for transformers with >1 890 l oil content, a 15 m clear line of site spacing between any oil filled transformer and any other structure or plant.)

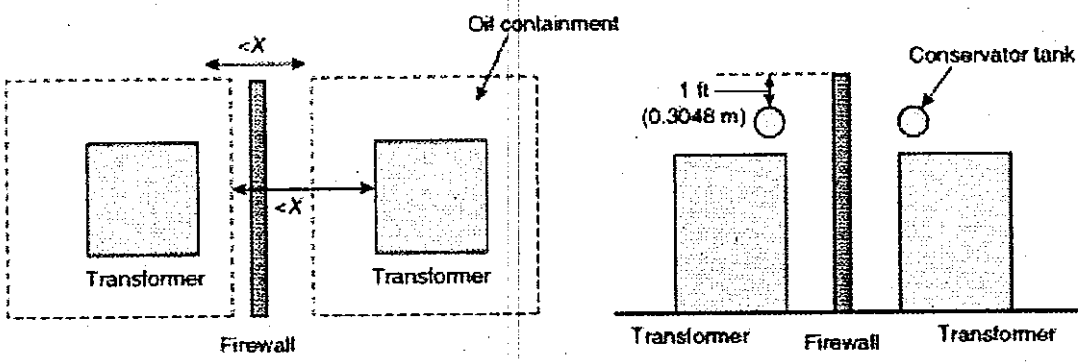
Table 3.17.4 Outdoor Oil Insulated Transformer Separation Criteria

Transformer Oil Capacity	Minimum (Line-of-Sight) Separation without Firewall
1 893 l to 18 925 l	7.6 m
Over 18 925 l	15 m

Figure 3.17.4 Illustration of Oil-Insulated Transformer Separation Recommendations



X = Minimum separation distances from Table 3.17.4



Fire barriers between transformers should extend at least 0.31 m above the top of the transformer casing and oil conservator tank and at least 0.61 m beyond the width of the transformer and cooling radiators. Where a fire barrier is provided between structures and a transformer, it should extend vertically and horizontally as indicated in Figure 3.17.4 above. Fire barriers should be designed to withstand the effects of exploding transformer bushings or lightning arrestors.

* If columns supporting the turbine building roof at the exterior wall have a 2-hour fire-resistive rating above the operating floor, the firewall need not be higher than required to obtain line-of-sight protection to the height of the operating floor.

  A higher noncombustible shield can be permitted to be provided to protect against the effects of an exploding transformer bushing.

3.18 Cable Spreading Room and Cable Tunnels

Cable spreading rooms and cable tunnels should be protected with automatic sprinkler, water spray, or automatic gaseous extinguishing systems. Automatic sprinkler systems should be designed for a density of 12.2 mm/min 232 m^2 or the most remote 30 m of cable tunnels up to 232 m^2.

3.19 Diesel Engines

Emergency diesel engine driven generators, and all other diesel engines located within main plant structures, should be protected by automatic sprinkler, water spray, foam-water sprinkler, or gaseous type extinguishing systems. Sprinkler and water spray protection systems should be designed for 10.2 mm/min density over the fire area.

3.20 Cooling Towers

Cooling towers of combustible construction that are essential to continued plant operations should be protected by automatic sprinkler or water spray systems in accordance with NFPA 214 *Standard on Water Cooling Towers, 2005 Edition*.

3.21 Flue Gas Treatment Plant

3.21.1 Flue Gas Bag-Type Dust Collectors

Flue gas bag type dust collectors should be equipped with bags that have an operating temperature limit exceeding 204°C should be subdivided into compartments by non combustible partitions. The partitions should extend through the flue gas bag area. The filter bag area provided in each compartment should be such that the fabric filter systems will not limit boiler load with one compartment fully isolated to repair damaged filter bags. The pressure drop across the fabric filter system should not increase significantly when one compartment is isolated.

Collectors equipped with other types of bags should be subdivided into compartments by partitions of 30 minute fire resistance if no automatic sprinkler protection is provided or by non combustible partitions if sprinklers are provided. Partitions should extend from the hopper, through the bag area to the clean air plenum.

If automatic sprinkler protection is provided, structural design of the collector should take into consideration maximum water loading. A method should be provided for drainage of water from the hoppers.

Each compartment should be equipped with a heat detection system, arranged to alarm in a constantly attended area at a temperature 28°C above normal operating temperature.

One of the following should be provided to prevent high temperature inlet flue gas from damaging the bags:

(1) Where permitted by local environmental legislation, for emergency conditions, an automatic isolation valve and bypass duct to divert inlet gas streams around the flue gas bag collector.

(2) A flue gas tempering water spray system in the duct between the boiler and the flue gas bag collector.

Manual fire fighting equipment should be available to personnel performing maintenance on a collector. A standpipe system should be provided such that each compartment is accessible by at least one hose system.

Access doors or hatches for manual fire fighting and viewing ports should be provided for all compartments.

3.21.2 Electrostatic Precipitators

Temperature sensors should be provided in the inlet and outlet ducts of electrostatic precipitators. Alarms should be provided in the Control Room to indicate abnormal operating temperatures.

3.21.3 Scrubbers and Exhaust Ducts

3.21.3.1 General

Fires have occurred in scrubbers with combustible lining, combustible packing, or both. The fires occurred during outages and were caused by cutting and welding. Attempts to manually fight the fires were not successful since smoke and heat prevented access to the scrubber. Where scrubbers were located in buildings, there has been extensive smoke and heat damage to the building. A fire also can occur in ducts with plastic or rubber lining.

3.21.3.2 Scrubber Buildings

Where scrubbers have plastic or rubber linings, one of the following methods of protection for the building should be provided:

(1) Automatic sprinkler protection at ceiling level sized to provide 8.1 mm/min. The area of operation should be the area of the building or 930 m^2. Where draft curtains are provided, the area of operation can be reduced to the largest area subdivided by draft curtains.

(2) The roof deck and supporting steel should be protected with a 1-hour fireproof coating. Building columns should be protected with a 2-hour fireproof coating from the roof to 6.1 m below the roof. Columns adjacent to scrubber openings should be protected from the roof to below the scrubber opening. Automatic or remotely actuated heat venting should be provided with a vent area of 0.09 m^2 per 4.6 m^2 of floor area.

3.21.3.3 Scrubbers

During construction and during outages, all of the following should be done:

(3) Cutting, welding, and other hot work is the most likely cause of ignition. Thus, strict controls should be enforced. Packing should be covered with fire-resistant blankets over sheet metal. Blankets should be kept wet. A charged hose and fire watch should be provided at the work area.

(4) All equipment lined with combustible material should be identified with warning signs or placards.

(5) The scrubber reservoir should be maintained full if possible or returned to service as quickly as possible during an outage.

(6) The absorber inlet and outlet damper should be closed during cutting, welding, or other hot work to reduce the induced draft. When the scrubber outlet damper is open no work should be permitted in the downstream duct or stack.

A fire protection system should be provided during outages for absorber vessels containing combustible packing or lining and should include the following:

(1) The fire protection system can be the spray system designed for normal scrubber operation or a specially designed fire protection system. Water spray systems should be designed such that spray patterns cover the lining and packing. Where scrubber spray systems are used for fire protection, system components internal to the scrubber should be noncombustible. The water supply should be from a reliable source available during the outage.

(2) Duct systems. A fire protection system should be provided during maintenance operations. A fixed protection system on the scaffolding is recommended. The system should be designed to protect the work platform and twice the area that can be reached by workers on the platform.

(3) Due to the unique design and operating features of scrubbers, fire protection designers should consult with the scrubber manufacturer for guidance as to material selection for internal fire protection systems and specific protection design features.

(4) Standpipes should be provided such that 3.8 cm hose is available at scrubber access hatches that are open during outages.

(5) Combustible materials in the scrubber should be limited and controlled during maintenance and inspection outages.

3.22 Fire Mains and Hydrants

Yard mains and outdoor fire hydrants should be installed on the plant site. (See NFPA 24 *Standard for the Installation of Private Fire Service Mains and Their Appurtenances, 2007 Edition,* or BS 5306-0:1986 *Fire extinguishing installations and equipment on premises. Guide for the selection of installed systems and other fire equipment.*)

Internal hydrant spacing in the main plant areas should be a maximum of 10 m.

External hydrant spacing should be a maximum of 100 m. (unless modified by 3.2 Exterior Fuel Stores below).

External hydrants should be located not less than 12.2 m from the buildings to be protected.

The supply mains should be looped around the main power block and should be of sufficient size to supply the flow requirements determined by NFPA 14 *Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems, 2007 Edition,* to any point in the yard loop considering the most direct path to be out of service. Pipe sizes should be designed to encompass any anticipated expansion and future water demands.

3.22.1 Internal Hose Stations

Hose stations designed in accordance with NFPA 14 *Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems, 2007 Edition,* should be located throughout fuel materials storage (tipping building), charging floor, firing floor, hydraulic area, and residue building. Due to the high frequency of use, the following points should be considered:

(1) Location and physical protection so as to avoid potential damage due to traffic patterns
(2) Size and number to be determined for unique plant geometry (e.g., push walls)
(3) Ease of use, maintenance, and storage, such as through the use of continuous flow, non collapsible hose reels
(4) Protection from freezing in unheated areas

3.23 Extinguishers

Extinguishers of suitable types should be installed in all parts of the facility to NFPA 10 *Standard for Portable Fire Extinguishers, 2007 Edition* or BS 5306 Part 8*: 2000 Code of Practice for the Selection and installation of portable fire extinguishers.*

3.24 Fuel and Lubrication Oil Tanks

Bulk fuel oil tanks, including waste oil, should be bunded to 110% of the maximum tank capacity and located away from the main buildings.

External fuel oil handling and storage areas should be provided with hydrant protection. See above under 3.23 Fire Mains and Hydrants.

Lubrication oil tanks should be bunded to 110% of the maximum tank capacity and be fire segregated as in 1.2 Fire Segregation above.

3.25 Smoke Venting

Automatic smoke venting in accordance with NFPA 204 *Standard for Smoke and Heat Venting, 2007 Edition,* should be fitted in the refuse bunker roof, boiler house roof and turbine hall roof. Local manual operation should also be provided. Remote operation from the Control Room should be provided with provisions made to prevent premature operation, which can be accomplished using thermal interlocks or administrative controls. The design and operation of the smoke vents should take into account the operation of the sprinkler and other fire protection systems.

3.26 Interlocks

The actuation of any fire suppression system should cause equipment it protects to shut down. With the shutdown of the equipment, the upstream feed conveyors should also shut down to stop feeding combustible material to the fire, while downstream conveyors should be stopped to prevent the spread of the fire. A manual override should be provided.

Under certain circumstances, continued running of equipment is desirable following detection of a fire - this should be allowed for in the interlock system design.

3.27 Vehicles

Diesel or petrol fuelled vehicles that operate in fuel storage areas, (yards or piles), should be equipped with fixed fire-extinguishing systems of a type approved for off-road vehicles.

4.0 Appendices

4.1 Listed (<FM> Approved) Fire Resistant Fluid

Listed (<FM> Approved) Fire Resistant Fluids do exist with the following characteristics:

- Based on synthetic organic esters and additives to achieve hydraulic fluid performance
- Containing no water, mineral oil or phosphate ester
- Miscible and compatible with nearly all mineral oil type hydraulic fluids
- Properly maintained, has a useful life comparable to that of mineral oil fluids
- Offers the lubrication level of premium, anti-wear hydraulic oils
- Can be used with hydraulic components from all major manufacturers
- Compatible with some elastomers used on seals of hydraulic systems – see below
- Compatible with iron and steel alloys and most nonferrous metals and their alloys but is not compatible with lead, cadmium, zinc, and alloys containing high levels of these metals
- Systems previously using mineral oil types of fluids can be converted by draining and recharge - fire resistance is retained as long as at least 95% of the oil-based fluid is removed

4.2 Elastomer Compatibility of Synthetic FRFs

The chart below contains the manufacturer's recommendations regarding the use of one of the Listed synthetic FRFs with commonly used elastomers.

Three categories of elastomer applications are listed:

- "Static" refers to trapped non-moving seals such as O-rings in valve subplates and rigid, low pressure hose connections
- "Mild-Dynamic" applications include accumulator bladders and hose linings where the hoses are exposed to high pressure and light flexing
- "Dynamic" refers to cylinder rod seals, pump shaft seals and constantly flexing hydraulic hose

Table 4.2 Elastomer Compatibility

ISO 162 Designation	*Description*	*Static*	*Mild-Dynamic*	*Dynamic*
NBR	Medium to high nitrile rubber (Buna N, >30% acrylonitrile)	C	C	C
NBR	Low nitrile rubber (Buna N, <30% acrylonitrile)	S	N	N
FPM	Fluoroelastomer (Viton®)	C	C	C
CR	Neoprene	S	S	S
IIR	Butyl rubber	S	N	N
EPDM	Ethylene propylene rubber	N	N	N
AU	Polyurethane	C	C	C
PTFE	Teflon®	C	C	C

C = Compatible

S = Satisfactory for short-term use, but replacement with a completely compatible elastomer is recommended at the earliest convenience

N = Not compatible

Appendix K – Environmental Permit

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Severn Waste Services Limited

Mercia EnviRecover
Off Oak Drive
Hartlebury Trading Estate
Hartlebury
Kidderminster
Worcestershire
DY10 4JB

Permit number

EPR/XP3935TX

Mercia EnviRecover Facility Hartlebury
Permit Number EPR/XP3935TX

Introductory note

This introductory note does not form a part of the permit

This permit controls the operation of an installation, whose purpose is the disposal of waste with energy recovery in an incineration plant. The relevant listed activity is Section 5.1 Part A1(c) - The incineration of non-hazardous waste in an incineration plant with a capacity of 1 tonne per hour or more. The permit implements the requirements of the EU Directives on Integrated Pollution Prevention and Control and Waste Incineration.

The main features of the permit are as follows:

EnviRecover Facility is situated on the Hartlebury Trading Estate , some 2Km South East of Hartlebury . The main purpose of the facility is to burn non-hazardous municipal, commercial and industrial waste and to recover energy by producing steam. The steam is then used to produce electricity for export to the grid. There is also the capability for further heat export to local consumers. The installation includes waste receipt and storage, one waste combustion unit with associated waste heat boilers and exhaust gas abatement systems, on-site storage of residues and all systems for controlling and monitoring incinerator operation. The plant is designed to process approximately 25 tonnes of waste per hour in a combustion unit which equates to 200,000 tonnes of waste per annum at 8000 hours hours of operation per annum. Typically the heat produced would be used to generate 15.5 MW of electricity.

The incoming waste is loaded into the furnace via a feed hopper from the reception hall, where the waste vehicles deposit their loads into the storage bunker. After entering the combustion chamber via the refuse feed ram the waste is allowed to fall onto the grate in a controlled manner. The moving grate mechanisms are used to agitate the waste as it progresses down to the ash discharger. As the waste moves along, primary air is introduced from beneath the grate causing the waste to go through a series of drying and burning areas. Secondary air is introduced from above the grate for combustion control. An auxiliary oil fired burner is located in the combustion chamber to both establish minimum temperature on start up and to maintain the combustion gas temperature at a minimum of 850°C for 2 seconds in the combustion chamber before passing to the boiler, economiser and abatement plant. The furnace is equipped with a water tube boiler raising steam at 40 bar and 400 °C. An economisers is fitted down stream of the boiler unit to pre-heat the incoming feed water.

The furnace is fitted with aqueous ammonia injection system in order to reduce the facility's emissions of NO_x to air through selective non-catalytic reduction. A dry hydrated lime flue gas treatment system is used to neutralise acid flue gases with the injection of lime reagent into the reaction chamber. Activated carbon is injected into the flue gas stream in order to reduce the concentrations of heavy metals and dioxins in the combustion gases emitted to air. Bag filtration is used to separate out the resulting particulate matter from the cooled and treated gases. The facility has a 75m stack equipped with a Continuous Emission Monitoring System (CEMS) which continuously monitor for particulates, carbon monoxide (CO), sulphur dioxide (SO_2), ammonia (NH_3), hydrogen chloride (HCl), oxygen (O_2), nitrogen oxides (NO_x) and volatile organic compounds (VOC).

There is no discharge of process liquids to controlled waters. Uncontaminated surface and roof waters are discharged to the surface water drainage system via a series of interceptors, attenuation lagoons and isolation valves.

Bottom ash from the incinerator grate is quenched with water and then conveyed via a metals extraction system to a concrete storage area prior to removal from site. Air pollution control residues from the bag filter systems are collected continuously and stored in two dedicated silos prior to removal from the site.

A more detailed process description can be found at section 4.1.2 of the decision document.

The status log of the permit sets out the permitting history, including any changes to the permit reference number:

Status Log of the permit		
Detail	**Date**	**Comments**
Application EPR/XP3935TX/A001	Duly made 22/07/10	
Additional Information Received	14/09/10	
Permit determined	18/04/11	

End of Introductory Note

Permit

Permit number
EPR/XP3935TX

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

Severn Waste Services Limited ("the operator"),

whose registered office is

The Marina
Kings Road
Evesham
Worcestershire
WR11 3XZ

company registration number **03618688**

to operate an installation at

Mercia EnviRecover
Off Oak Drive
Hartlebury Trading Estate
Hartlebury
Kidderminster
Worcestershire
DY10 4JB

to the extent authorised by and subject to the conditions of this permit.

Name	Date
A.J. Nixon	18 April 2011

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

1.1.1 The operator shall manage and operate the activities:

(a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and

(b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

1.2.1 The operator shall:

(a) take appropriate measures to ensure that energy is recovered with a high level of energy efficiency and energy is used efficiently in the activities

(b) review and record at least every four years whether there are suitable opportunities to improve the energy recovery and efficiency of the activities; and

(c) take any further appropriate measures identified by a review.

1.2.2 The operator shall provide and maintain steam and/or hot water pass-outs such that opportunities for the further use of waste heat may be capitalised upon should they become practicable.

1.2.3 The operator shall review the practicability of Combined Heat and Power (CHP) implementation at least every 2 years. The results shall be reported to the Agency within 2 months of each review.

1.3 Efficient use of raw materials

1.3.1 The operator shall:

(a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;

(b) maintain records of raw materials and water used in the activities;

(c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and

(d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall take appropriate measures to ensure that:

(a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and

(b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and

(c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.1.2 Waste authorised by this permit in condition 2.3.3 shall be clearly distinguished from any other waste on the site.

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

2.3 Operating techniques

2.3.1 (a) The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.

(b) If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan specified in schedule 1, table S1.2 or otherwise required under this permit, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.

2.3.2 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.

2.3.3 Waste shall only be accepted if:

(a) it is of a type and quantity listed in schedule 2 table S2.2; and

(b) it conforms to the description in the documentation supplied by the producer or holder; and

(c) if having been separately collected for recycling, it is contaminated and otherwise destined for landfill.

2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:

(a) the nature of the process producing the waste;

(b) the composition of the waste;

(c) the handling requirements of the waste;

(d) the hazardous property associated with the waste, if applicable; and

(e) the waste code of the waste.

2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.3.6 Waste shall not be charged, or shall cease to be charged, if:

(a) the combustion chamber temperature is below, or falls below, 850°C; or

(b) any continuous emission limit value in schedule 3 table S3.1(a) is exceeded; or

(c) any continuous emission limit value in schedule 3 table S3.1 is exceeded, other than under WID abnormal operating conditions ; or

(d) monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3 table S3.1 are unavailable other than under WID abnormal operating conditions.

2.3.7 The operator shall have at least one auxiliary burner in each line at start up or shut down or whenever the operating temperature falls below that specified in condition 2.3.6 (a), as long as incompletely burned waste is present in the combustion chamber. Unless the temperature specified in condition 2.3.6 (a) is maintained in the combustion chamber, such burner(s) may be fed only with fuels which result in emissions no higher than those arising from the use of gas oil, liquefied gas or natural gas.

2.3.8 The operator shall record the beginning and end of each period of "WID abnormal operation".

2.3.9 During a period of "WID abnormal operation", the operator shall restore normal operation of the failed equipment or replace the failed equipment as rapidly as possible.

2.3.10 Where, during "WID abnormal operation", any of the following situations arise, the operator shall, as soon as is practicable, cease the burning of waste until normal operation can be restored:

(a) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1 due to disturbances or failures of the abatement systems, or continuous emission monitor(s) are out of service, as the case may be, for a total of 4 hours uninterrupted duration;

(b) the cumulative duration of "WID abnormal operation" periods over 1 calendar year exceeds 60 hours on an incineration line;

(c) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1 (a) due to disturbances or failures of the abatement systems;

(d) the alternative techniques to demonstrate compliance with the "WID abnormal operation" emission limit value(s) for particulates, TOC and / or CO in Schedule 3 table S3.1(a), as detailed in the application or as agreed in writing with the Environment Agency, are unavailable.

2.3.11 The operator shall interpret the end of the period of "WID abnormal operation" as the earliest of the following:

(a) when the failed equipment is repaired and brought back into normal operation;

(b) when the operator initiates a shut down of the waste combustion activity, as described in the application or as agreed in writing with the Environment Agency;

(c) when a period of four hours has elapsed from the start of the "WID abnormal operation";

(d) when, in any calendar year, an aggregated period of 60 hours "WID abnormal operation" has been reached for a given incineration line.

2.3.12 Bottom ash and APC residues shall not be mixed.

2.4 Improvement programme

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

2.5 Pre-operational conditions

2.5.1 The activities shall not be brought into operation until the measures specified in schedule 1 table S1.4 have been completed.

3 Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1 except in "WID abnormal operation", when there shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1(a).

3.1.2 The limits given in schedule 3 shall not be exceeded.

3.1.3 Wastes produced at the site shall, as a minimum, be sampled and analysed in accordance with schedule 3 table S3.3. Additional samples shall be taken and tested and appropriate action taken, whenever:

(a) disposal or recovery routes change; or

(b) it is suspected that the nature or composition of the waste has changed such that the route currently selected may no longer be appropriate.

3.2 Emissions of substances not controlled by emission limits

3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.2.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan;

(b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.

3.3.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan;

(b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

(a) point source emissions specified in tables S3.1 and S3.1(a)

(b) process monitoring specified in table S3.2;

(c) residue quality in table S3.3

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate) unless otherwise agreed in writing by the Environment Agency. Newly installed CEMs, or CEMs replacing existing CEMs, shall have MCERTS certification and have an MCERTS certified range which is not greater than 1.5 times the daily emission limit value (ELV) specified in schedule 3 table S3.1. The CEM shall also be able to measure instantaneous values over the ranges which are to be expected during all operating conditions. If it is necessary to use more than one range setting of the CEM to achieve this requirement, the CEM shall be verified for monitoring supplementary, higher ranges.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1 and S3.1(a) unless otherwise agreed in writing by the Environment Agency.

3.5.5 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3 table S3.1; the Continuous Emission Monitors shall be used such that;

(a) the values of the 95% confidence intervals of a single measured result at the daily emission limit value shall not exceed the following percentages:

- Carbon monoxide 10%
- Sulphur dioxide 20%
- Oxides of nitrogen (NO & NO_2 expressed as NO_2) 20%
- Particulate matter 30%
- Total organic carbon (TOC) 30%
- Hydrogen chloride 40%

(b) valid half-hourly average values shall be determined within the effective operating time (excluding the start-up and shut-down periods) from the measured values after having subtracted the value of the confidence intervals in condition 3.5.5 (a);

(c) where it is necessary to calibrate or maintain the monitor and this means that data are not available for a complete half-hour period, the half-hourly average shall in any case be considered valid if measurements are available for a minimum of 20 minutes during the half-hour period. The number of half-hourly averages so validated shall not exceed 5 per day;

(d) daily average values shall be determined as the average of all the valid half-hourly average values within a calendar day. The daily average value shall be considered valid if no more than five half-hourly average values in any day have been determined not to be valid;

(e) no more than ten daily average values per year shall be determined not to be valid.

4 Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) off-site environmental effects; and

(ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 Report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

(b) the annual production /treatment data set out in schedule 4 table S4.2; and

(c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

(d) the functioning and monitoring of the incineration plant in a format agreed with the Environment Agency. The report shall, as a minimum requirement (as required by Article 12(2) of the Waste Incineration Directive) give an account of the running of the process and the emissions into air and water compared with the emission standards in the WID.

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 4 table S4.1;

(b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.2.5 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.3 Notifications

4.3.1 The Environment Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution;

(b) the breach of a limit specified in the permit; or

(c) any significant adverse environmental effects.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.

4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

Where the operator is a registered company:

(a) any change in the operator's trading name, registered name or registered office address; and

(b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

(a) any change in the operator's name or address; and

(b) any steps taken with a view to the dissolution of the operator.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

(a) the Environment Agency shall be notified at least 14 days before making the change; and

(b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.

4.4.2 In this permit references to reports and notifications mean written reports and notifications; except where reference is made to notification being made "without delay", in which case it may be provided by telephone.

Schedule 1 - Operations

Table S1.1 activities		
Activity listed in Schedule 1 of the EP Regulations	**Description of specified activity**	**Limits of specified activity**
S5.1 A1 (c)	The incineration of non-hazardous waste in an incineration plant with a capacity of 1 tonne per hour or more.	From receipt of waste to emission of exhaust gas and disposal of waste arising. Waste types and quantities as specified in Table S2.2 of this permit.
Directly Associated Activity		
Electricity Generation	Generation of electrical power, using a steam turbine, from energy recovered from the flue gases.	The electricity is used on-site and exported the grid.

Table S1.2 Operating techniques		
Description	**Parts**	**Date Received**
Application	Details provided in Section 3 – Form EPB of the Application	22/07/10
Response to Schedule 5 Notice dated 27/08/10	Questions 1,2,3, and 5	14/09/10

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC1	The Operator shall submit a written report to the Environment Agency on the implementation of its Environmental Management System and the progress made in the accreditation of the system by an external body or if appropriate submit a schedule by which the EMS will be subject to accreditation.	Within 12 months of the date on which waste is first processed
IC2	The Operator shall submit a written report to the Environment Agency on the commissioning of the installation. The report shall summarise the environmental performance of the plant as installed against the design parameters set out in the Application. The report shall also include a review of the performance of the facility against the conditions of this permit and details of procedures developed during commissioning for achieving and demonstrating compliance with permit conditions.	Within 4 months of the completion of commissioning.
IC3	The Operator shall carry out checks to verify the residence time, minimum temperature and oxygen content of the exhaust gases in the furnace whilst operating under the anticipated most unfavourable operating conditions. The results shall be submitted in writing to the Environment Agency.	Within 4 months of the completion of commissioning.

Table S1.3 Improvement programme requirements		
Reference	**Requirement**	**Date**
IC4	The Operator shall submit a written report to the Environment Agency describing the performance and optimisation of the Selective Non Catalytic Reduction (SNCR) system and combustion settings to minimise oxides of nitrogen (NOx) emissions within the emission limit values described in this permit with the minimisation of nitrous oxide emissions. The report shall include an assessment of the level of NOx and N_2O emissions that can be achieved under optimum operating conditions.	Within 4 months of the completion of commissioning.
IC5	The Operator shall submit a written summary report to the Environment Agency to confirm by the results of calibration and verification testing that the performance of Continuous Emission Monitors for parameters as specified in Table S3.1 and Table S3.1(a) complies with the requirements of BS EN 14181, specifically the requirements of QAL1, QAL2 and QAL3.	Initial calibration report to be submitted to the Environment Agency within 3 months of completion of commissioning. Full summary evidence compliance report to be submitted within 18 months of commissioning.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO1	Prior to the commencement of commissioning, the Operator shall send a summary of the site Environment Management System (EMS) to the Environment Agency and make available for inspection all documents and procedures which form part of the EMS. The EMS shall be developed in line with the requirements set out in Section 1 of How to comply with your environmental permit – Getting the basics right. The documents and procedures set out in the EMS shall form the written management system referenced in condition 1.1.1 (a) of the permit.
PO2	Prior to the commencement of commissioning, the Operator shall send a report to the Environment Agency which will contain a comprehensive review of the options available for utilising the heat generated by the waste incineration process in order to ensure that it is recovered as far as practicable. The review shall detail any identified proposals for improving the recovery and utilisation of waste heat and shall provide a timetable for their implementation.
PO3	Prior to the commencement of commissioning, the Operator shall submit to the Environment Agency for approval a protocol for the sampling and testing of incinerator bottom ash for the purposes of assessing its hazard status. Sampling and testing shall be carried out in accordance with the protocol as approved.
PO4	Prior to the commencement of commissioning; the Operator shall provide a written commissioning plan, including timelines for completion, for approval by the Environment Agency. The commissioning plan shall include the expected emissions to the environment during the different stages of commissioning, the expected durations of commissioning activities and the actions to be taken to protect the environment and report to the Environment Agency in the event that actual emissions exceed expected emissions. Commissioning shall be carried out in accordance with the commissioning plan as approved.

Table S1.4 Pre-operational measures	
Reference	**Pre-operational measures**
PO5	The Operator shall submit a written report to the Environment Agency of the details of the computational fluid dynamic (CFD) modelling. The report shall demonstrate whether the design combustion conditions comply with the residence time and temperature requirements as defined by the Waste Incineration Directive.

Schedule 2 - Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	**Specification**
Fuel Oil	< 0.1% sulphur content
Low Mercury content sodium hydroxide.	< 0.1 mg/Kg

Table S2.2 Permitted waste types and quantities for incineration.	
Maximum quantity	**200,000 tonnes per annum**
Waste code	**Description**
02 01 03	Plant tissue waste
02 01 04	Waste plastic (except packaging)
02 01 07	Wastes from forestry
02 01 09	Agrochemical waste other than those mentioned in 02 01 08*
02 03 04	Materials unsuitable for consumption or processing
02 05 01	Materials unsuitable for consumption or processing
02 06 01	Materials unsuitable for consumption or processing
02 06 02	Wastes from preserving agents
03 01 01	Waste bark and cork
03 01 05	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04*.
03 03 01	Waste bark wood
03 03 07	Mechanically separated rejects from pulping of waste paper and cardboard
03 03 08	Wastes from sorting of paper and cardboard destined for recycling
03 03 10	fibre rejects, fibre-, filler- and coating-sludges from mechanical separation
07 02 13	waste plastic
15 01 01	Paper and cardboard packaging
15 01 02	Plastic packaging
15 01 03	Wooden packaging
15 01 05	Composite packaging
15 01 06	Mixed packaging
15 01 09	Textile packaging
15 02 03	Absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02*
16 01 19	plastic
17 02 01	Wood
17 02 03	Plastic
19 02 03	premixed wastes composed only of non-hazardous wastes
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 05 01	non-composted fraction of municipal and similar wastes
19 05 02	non-composted fraction of animal and vegetable waste
19 05 03	off-specification compost
19 06 04	Digestate from anaerobic treatment of municipal waste
19 06 06	Digestate from anaerobic treatment of animal and vegetable waste

Table S2.2 Permitted waste types and quantities for incineration.	
Maximum quantity	**200,000 tonnes per annum**
Waste code	**Description**
19 12 01	Paper and cardboard
19 12 04	Plastic and rubber
19 12 07	Wood other than that mentioned in 19 12 06*
19 12 08	Textiles
19 12 10	Combustible waste (refuse derived fuel)
19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11*
20 01 01	Paper and cardboard
20 01 02	glass
20 01 08	Bio-degradable kitchen and canteen waste
20 01 10	Clothes
20 01 11	Textiles
20 01 25	Edible oil and fat
20 01 28	paint, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 30	detergents other than those mentioned in 20 01 29
20 01 38	Wood other than that mentioned in 20 01 37* (i.e. other than that containing dangerous substances)
20 01 39	Plastics
20 01 40	Metals
20 01 41	wastes from chimney sweeping
20 02 01	Bio-degradable wastes
20 03 01	Mixed municipal wastes
20 03 02	Wastes from markets
20 03 03	Street cleaning residues
20 03 06	Waste from sewage cleaning
20 03 07	Bulky waste

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements

Emission point ref. & location	Parameter	Source	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
A1 as shown in Schedule 7	Particulate matter	Incineration gases via heat recovery boiler and APC plant	30 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Particulate matter	Incineration gases via heat recovery boiler and APC plant	10 mg/m^3	daily average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Total Organic Carbon (TOC)	Incineration gases via heat recovery boiler and APC plant	20 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Total Organic Carbon (TOC)	Incineration gases via heat recovery boiler and APC plant	10 mg/m^3	daily average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Hydrogen chloride	Incineration gases via heat recovery boiler and APC plant	60 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Hydrogen chloride	Incineration gases via heat recovery boiler and APC plant	10 mg/m^3	daily average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Hydrogen fluoride	Incineration gases via heat recovery boiler and APC plant	2 mg/m^3	periodic over minimum 1-hour period	Quarterly in first year. Then Bi-annual	BS ISO 15713
A1 as shown in Schedule 7	Carbon monoxide	Incineration gases via heat recovery boiler and APC plant	100 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Carbon monoxide	Incineration gases via heat recovery boiler and APC plant	50 mg/m^3	daily average	Continuous measurement	BS EN 15267-3

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1 as shown in Schedule 7	Sulphur dioxide	Incineration gases via heat recovery boiler and APC plant	200 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Sulphur dioxide	Incineration gases via heat recovery boiler and APC plant	50 mg/m^3	daily average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	Incineration gases via heat recovery boiler and APC plant	400 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Oxides of nitrogen (NO and NO_2 expressed as NO_2)	Incineration gases via heat recovery boiler and APC plant	200 mg/m^3	daily average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Cadmium & thallium and their compounds (total)	Incineration gases via heat recovery boiler and APC plant	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1 as shown in Schedule 7	Mercury and its compounds	Incineration gases via heat recovery boiler and APC plant	0.05 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 13211
A1 as shown in Schedule 7	Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	Incineration gases via heat recovery boiler and APC plant	0.5 mg/m^3	periodic over minimum 30 minute, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 14385
A1 as shown in Schedule 7	Ammonia (NH_3)	Incineration gases via heat recovery boiler and APC plant	No limit set	daily average	Continuous measurement	BS EN 15267-3
A1 as shown in Schedule 7	Nitrous oxide (N_2O)	Incineration gases via heat recovery boiler and APC plant	No limit set	periodic over minimum 1-hour period	Quarterly in first year. Then bi-annual	VDI 2469-1 / VDI 2469
A1 as shown in Schedule 7	Dioxins / furans (I-TEQ)	Incineration gases via heat recovery boiler and APC plant	0.1 ng/m^3	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN 1948 Parts 1, 2 and 3

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1 as shown in Schedule 7	Dioxin-like PCBs (WHO-TEQ Humans / Mammals)	Incineration gases via heat recovery boiler and APC plant	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A1 as shown in Schedule 7	Dioxin-like PCBs (WHO-TEQ Fish)	Incineration gases via heat recovery boiler and APC plant	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A1 as shown in Schedule 7	Dioxin-like PCBs (WHO-TEQ Birds)	Incineration gases via heat recovery boiler and APC plant	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A1 as shown in Schedule 7	Specific individual poly-cyclic aromatic hydrocarbons (PAHs), as specified in Schedule 6.	Incineration gases via heat recovery boiler and APC plant	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	Procedure shall use BS ISO 11338-1 and BS-ISO 11338-2.
A1 as shown in Schedule 7	Dioxins / furans (WHO-TEQ Humans / Mammals)	Incineration gases via heat recovery boiler and APC plant	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A1 as shown in Schedule 7	Dioxins / furans (WHO-TEQ Fish)	Incineration gases via heat recovery boiler and APC plant	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4
A1 as shown in Schedule 7	Dioxins / furans (WHO-TEQ Birds)	Incineration gases via heat recovery boiler and APC plant	-	periodic over minimum 6 hours, maximum 8 hour period	Quarterly in first year. Then Bi-annual	BS EN/TS 1948-4

Table S3.1(a) Point source emissions to air during abnormal operation of incineration plant – emission limits and monitoring requirements						
Emission point ref. & location	**Parameter**	**Source**	**Limit (including unit)**	**Reference period**	**Monitoring frequency**	**Monitoring standard or method**
A1 as shown in Schedule 7	Particulate matter	Incineration gases via heat recovery boiler and APC plant	150 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3 during abatement plant failure
A1 as shown in Schedule 7	Total Organic Carbon (TOC)	Incineration gases via heat recovery boiler and APC plant	20 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3 during abatement plant failure
A1 as shown in Schedule 7	Carbon monoxide	Incineration gases via heat recovery boiler and APC plant	100 mg/m^3	½-hr average	Continuous measurement	BS EN 15267-3 during abatement plant failure

Table S3.2 Process monitoring requirements				
Location or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
As identified in the Application	Wind Speed and Direction	Continuous	Anemometer	
Location close to the Combustion Chamber inner wall or as identified and justified in Application.	Temperature (° C)	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 as shown in Schedule 7	Exhaust gas temperature	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 as shown in Schedule 7	Exhaust gas pressure	Continuous	Traceable to national standards	As agreed in writing with the Agency.
A1 as shown in Schedule 7	Exhaust gas oxygen content	Continuous	BS EN 15267-3	
A1 as shown in Schedule 7	Exhaust gas water vapour content	Continuous	BS EN 15267-3	Unless gas is dried before analysis of emissions.

Table S3.3 Residue quality					
Emission point reference or source or description of point of measurement	**Parameter**	**Limit**	**Monitoring frequency**	**Monitoring standard or method ***	**Other specifications**
Bottom Ash	TOC	<3%	Monthly in the first year of operation. Then Quarterly	Environment Agency ash sampling protocol.	
Bottom Ash	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.		Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Environment Agency ash sampling protocol.	
Bottom Ash	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions		Before use of a new disposal or recycling route	Sampling and analysis as per Environment Agency ash sampling protocol.	
APC Residues	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs.		Monthly in the first year of operation. Then Quarterly	Sampling and analysis as per Environment Agency ash sampling protocol.	
APC Residues	Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions		Before use of a new disposal or recycling route	Sampling and analysis as per Environment Agency ash sampling protocol.	

* Or other equivalent standard as agreed in writing with the Environment Agency.

Schedule 4 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1	A1	Quarterly	1 Jan, 1 Apr, 1 Jul and 1 Oct
TOC Parameters as required by condition 3.5.1	Bottom Ash	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.5.1	Bottom Ash	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.5.1	Bottom Ash	Before use of a new disposal or recycling route	
Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) and their compounds, dioxins/furans and dioxin-like PCBs Parameters as required by condition 3.5.1	APC Residues	Quarterly (but monthly for the first year of operation)	1 Jan, 1 Apr, 1 Jul and 1 Oct
Total soluble fraction and metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc) soluble fractions Parameters as required by condition 3.5.1	APC Residues	Before use of a new disposal or recycling route	
Functioning and monitoring of the incineration plant as required by condition 4.2.2		Annually	1 Jan

Table S4.2: Annual production/treatment	
Parameter	**Units**
Total Municipal Waste Incinerated	tonnes
Total Commercial Waste Incinerated	tonnes
Electrical energy produced	KWhrs
Thermal energy produced e.g. steam	KWhrs
Electrical energy exported	KWhrs
Electrical energy used on installation	KWhrs
Waste heat utilised by the installation	KWhrs

Table S4.3 Performance parameters		
Parameter	**Frequency of assessment**	**Units**
Electrical energy exported, imported and used at the installation	Quarterly	KWhrs / tonne of waste incinerated
Fuel oil consumption	Quarterly	Kgs / tonne of waste incinerated
Mass of Bottom Ash produced	Quarterly	Kgs / tonne of waste incinerated
Mass of APC residues produced	Quarterly	Kgs / tonne of waste incinerated
Mass of Other solid residues produced	Quarterly	Kgs / tonne of waste incinerated
Ammonia consumption	Quarterly	Kgs / tonne of waste incinerated
Activated Carbon consumption	Quarterly	Kgs / tonne of waste incinerated
Lime consumption	Quarterly	Kgs / tonne of waste incinerated
Water consumption	Quarterly	Kgs / tonne of waste incinerated
Periods of WID abnormal operation	Quarterly	No of occasions and cumulative hours for current calendar year for each line.

Table S4.4 Reporting forms		
Media/parameter	**Reporting format**	**Date of form**
Air	Forms air 1-8 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Water & raw material usage	Form WU/RM1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Energy usage	Form Energy1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Ash composition	Form Ash 1&2 or other form as agreed in writing by the Agency	DD/MM/YY

Schedule 5 - Notification

These pages outline the information that the Operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	**EPR/XP3935TX**
Name of operator	**Severn Waste Services Limited**
Location of Facility	**Hartlebury Trading Estate, Hartlebury, Worcestershire**
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(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	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B - to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
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 dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator, Severn Waste Services Limited

Schedule 6 - Interpretation

"abatement equipment" means that equipment dedicated to the removal of polluting substances from releases from the installation to air or water media.

"accident" means an accident that may result in pollution.

"APC residues" means air pollution control residues

"application" means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

"authorised officer" means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

"background concentration" means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

"bi-annual" means twice per year with at least five months between tests;

"bottom ash" means ash falling through the grate, transported by the grate

"CEM" Continuous emission monitor

"CEN" means Commité Européen de Normalisation

"daily average" for releases of substances to air means the average of valid half-hourly averages over a calendar day during normal operation.

"*dioxin and furans*" means polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.

"disposal" means any of the operations provided for in Annex IIA to Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste.

"emissions to land" includes emissions to groundwater.

"EP Regulations" means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"emissions of substances not controlled by emission limits" means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit..

"groundwater" means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

"incineration line" means all of the incineration equipment related to a common discharge to air location.

"ISO" means International Standards Organisation.

"LOI" means loss on ignition a technique used to determine the combustible material by heating the ash residue to a high temperature

"MCERTS" means the Environment Agency's Monitoring Certification Scheme.

"PAH" means Poly-cyclic aromatic hydrocarbon, and comprises Anthanthrene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[b]naph(2,1-d)thiophene, Benzo[c]phenanthrene, Benzo[ghi]perylene, Benzo[a]pyrene, Cholanthrene, Chrysene, Cyclopenta[c,d]pyrene, Dibenzo[ah]anthracene, Dibenzo[a,i]pyrene Fluoranthene, Indo[1,2,3-cd]pyrene, Naphthalene

"PCB" means *Polychlorinated Biphenyl. Dioxin-like PCBs are the non-ortho and mono-ortho PCBs listed in the table below.*

"quarter" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"quarterly" for reporting/sampling means after/during each 3 month period, January to March; April to June; July to September and October to December and, when sampling, with at least 2 months between each sampling date.

"recovery" means any of the operations provided for in Annex IIB to Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste.

"shut down" is any period where the plant is being returned to a non-operational state or agreed in writing with the Environment Agency].

"start up" is any period, where the plant has been non-operational, after igniting the auxiliary burner until waste has been fed to the plant in sufficient quantity to cover the grate and to initiate steady-state conditions as described in the application or agreed in writing with the Environment Agency.

"TOC" means *Total Organic Carbon.* In respect of releases to air, this means the gaseous and vaporous organic substances, expressed as TOC. In respect of Bottom Ash, this means the total carbon content of all organic species present in the ash (excluding carbon in elemental form).

"Waste code" means the six digit code referable to a type of waste in accordance with the List of Wastes (England)Regulations 2005, or List of Wastes (Wales) Regulations 2005, as appropriate, and in relation to hazardous waste, includes the asterisk.

"Waste Incineration Directive" means Directive 2000/76/EC on the incineration of waste (O.J. L 332, 28.12.2000)

"WFD" means Waste Framework Directive (Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste).

"WID abnormal operation" means any technically unavoidable stoppages, disturbances, or failures of the abatement plant or the measurement devices other than continuous emission monitors for releases to air of particulates, TOC and/or CO, during which the concentrations in the discharges into air and the purified waste water of the regulated substances may exceed the normal emission limit values.

"year" means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

(a) in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or

(b) in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content

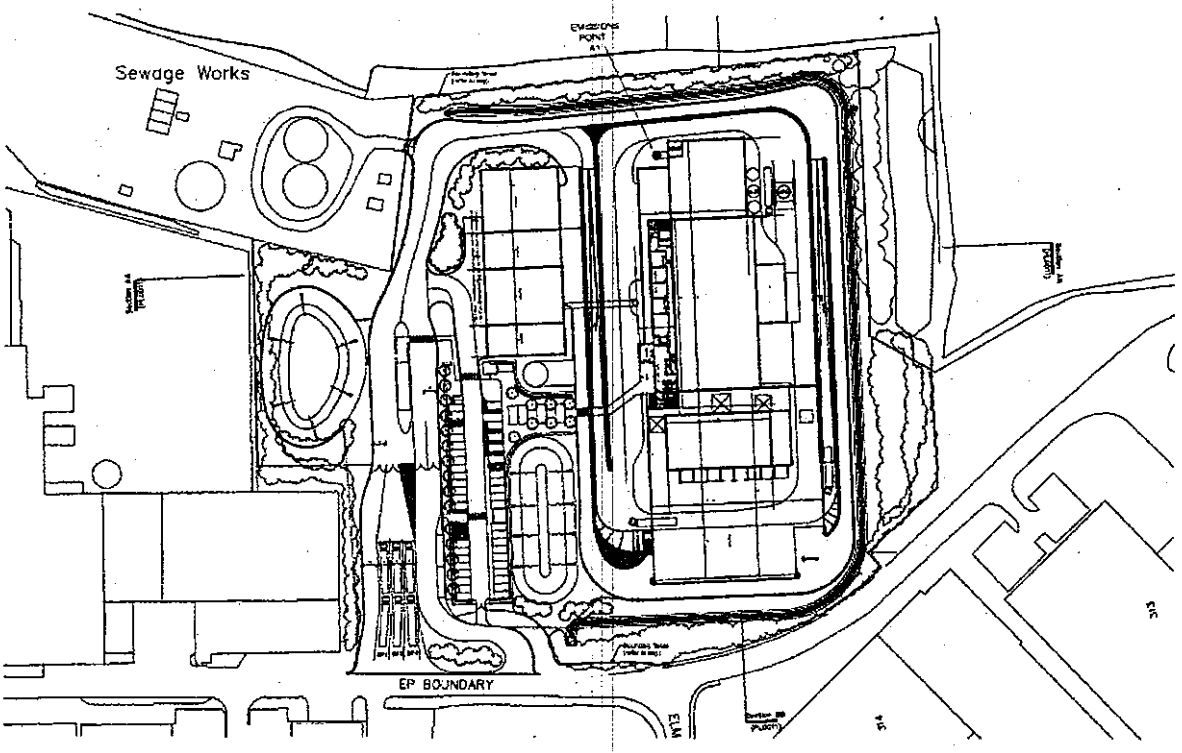
(c) in relation to gases from incineration plants other than those burning waste oil, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 11% dry.

(d) For dioxins/furans and dioxin-like PCBs the determination of the toxic equivalence concentration (I-TEQ, & WHO-TEQ for dioxins/furans, WHO-TEQ for dioxin-like PCBs) stated as a release limit and/ or reporting requirement, the mass concentrations of the following congeners have to be multiplied with their respective toxic equivalence factors before summing. When reporting on measurements of dioxins/furans and dioxin-like PCBs, the toxic equivalence concentrations should be reported as a range based on: all congeners less than the detection limit assumed to be zero as a minimum, and all congeners less than the detection limit assumed to be at the detection limit as a maximum.

TEF schemes for dioxins and furans				
Congener	*I-TEF*	*WHO-TEF*		
	1990	2005	1997/8	
		Humans / Mammals	*Fish*	*Birds*
Dioxins				
2,3,7,8-TCDD	*1*	*1*	*1*	*1*
1,2,3,7,8-PeCDD	*0.5*	*1*	*1*	*1*
1,2,3,4,7,8-HxCDD	*0.1*	*0.1*	*0.5*	*0.05*
1,2,3,6,7,8-HxCDD	*0.1*	*0.1*	*0.01*	*0.01*
1,2,3,7,8,9-HxCDD	*0.1*	*0.1*	*0.01*	*0.1*
1,2,3,4,6,7,8-HpCDD	*0.01*	*0.01*	*0.001*	*<0.001*
OCDD	*0.001*	*0.0003*	-	-
Furans				
2,3,7,8-TCDF	*0.1*	*0.1*	*0.05*	*1*
1,2,3,7,8-PeCDF	*0.05*	*0.03*	*0.05*	*0.1*
2,3,4,7,8-PeCDF	*0.5*	*0.3*	*0.5*	*1*
1,2,3,4,7,8-HxCDF	*0.1*	*0.1*	*0.1*	*0.1*
1,2,3,7,8,9-HxCDF	*0.1*	*0.1*	*0.1*	*0.1*
1,2,3,6,7,8-HxCDF	*0.1*	*0.1*	*0.1*	*0.1*
2,3,4,6,7,8-HxCDF	*0.1*	*0.1*	*0.1*	*0.1*
1,2,3,4,6,7,8_HpCDF	*0.01*	*0.01*	*0.01*	*0.01*
1,2,3,4,7,8,9-HpCDF	*0.01*	*0.01*	*0.01*	*0.01*
OCDF	*0.001*	*0.0003*	*0.0001*	*0.0001*

TEF schemes for dioxin-like PCBs			
Congener	*WHO-TEF*		
	2005	1997/8	
	Humans / mammals	*Fish*	*Birds*
Non-ortho PCBs			
3,4,4',5-TCB (81)	*0.0001*	*0.0005*	*0.1*
3,3',4,4'-TCB (77)	*0.0003*	*0.0001*	*0.05*
3,3',4,4',5 - PeCB (126)	*0.1*	*0.005*	*0.1*
3,3',4,4',5,5'-HxCB(169)	*0.03*	*0.00005*	*0.001*
Mono-ortho PCBs			
2,3,3',4,4'-PeCB (105)	*0.00003*	*<0.000005*	*0.0001*
2,3,4,4',5-PeCB (114)	*0.00003*	*<0.000005*	*0.0001*
2,3',4,4',5-PeCB (118)	*0.00003*	*<0.000005*	*0.00001*
2',3,4,4',5-PeCB (123)	*0.00003*	*<0.000005*	*0.00001*
2,3,3',4,4',5-HxCB (156)	*0.00003*	*<0.000005*	*0.0001*
2,3,3',4,4',5'-HxCB (157)	*0.00003*	*<0.000005*	*0.0001*
2,3',4,4',5,5'-HxCB (167)	*0.00003*	*<0.000005*	*0.00001*
2,3,3',4,4',5,5'-HpCB (189)	*0.00003*	*<0.000005*	*0.00001*

Schedule 7 - Site plan



END OF PERMIT

Appendix L – Planning Application

Provided as separate document

Appendix M –Planning Consent

Annex B

CONDITIONS

1) The development hereby permitted shall begin not later than three years from the date of this decision.

2) The development hereby approved shall only be carried out in accordance with the following documents and drawings, except for where measures are required by the conditions set out elsewhere in this permission which shall take precedence over those documents listed here.

Documents:

- The Planning Application Document Volume 1 and 2 – April 2010
- The Environmental Statement Volume 1 - Main Report and Volume 2 Technical Appendices – April 2010
- The Transport Assessment – April 2010

Drawings and Figures:

- Drawing Number 1204 PL0002 (Part 5 of the Planning Application Document Volume 2) – Planning Application Boundary Plan – April 2010
- Drawing Number 1204 PL0003 (Part 5 of the Planning Application Document Volume 2) – Proposed Site Plan – April 2010
- Drawing Number 1204 PL0004 (Part 2 of the Planning Application Document Volume 1 (Appendix 2 of the Design and Access Statement) – Proposed Traffic Plan – April 2010
- Drawing Number 1204 PL0005 (Part 5 of the Planning Application Document Volume 2) – Proposed Basement Floor Plans – April 2010
- Drawing Number 1204 PL0006 (Part 5 of the Planning Application Document Volume 2) – Proposed Ground Floor Plan – April 2010
- Drawing Number 1204 PL0007 (Part 5 of the Planning Application Document Volume 2) – Proposed First/Second Floor Plans – April 2010
- Drawing Number 1204 PL0008 (Part 5 of the Planning Application Document Volume 2) – Proposed Third / Fourth Floor Plans – April 2010
- Drawing Number 1204 PL0009 (Part 5 of the Planning Application Document Volume 2) – Proposed Roof Plan – April 2010
- Drawing Number 1204 PL0010 (Part 5 of the Planning Application Volume 2) -Visitor Centre Route Plans – April 2010
- Drawing Number 1204 PL 0011 (Part 5 of the Planning Application Document Volume 1) – Proposed Site Sections AA and BB – April 2010
- Drawing Number 1204 PL 0012 (Part 5 of the Planning Application Document Volume 1) – Proposed North Elevation – April 2010
- Drawing Number 1204 PL 0013 (Part 5 of the Planning Application Document Volume 1) – Proposed East Elevation – April 2010
- Drawing Number 1204 PL 0014 (Part 5 of the Planning Application Document Volume 2) – Proposed South Elevation – April 2010
- Drawing Number 1204 PL 0015 (Part 5 of the Planning Application Document Volume 2) – Proposed West Elevation – April 2010
- Drawing Number 1204 PL 0016 (Part 5 of the Planning Application Document Volume 2) – Proposed Turbine Building Elevations – April 2010
- Drawing Number 1204 PL 0017 (Part 5 of the Planning application Document Volume 2) – Proposed Weighbridge Plan and Elevations – April 2010

- Drawing Number 1202 PL0018 (Part 5 of the Planning Application Document Volume 1) – Virtual Samples Board – April 2010
- Drawing 900-01-001 Rev A - Landscape Proposal – April 2010, accompanying letter from Axis dated 15 November 2010
- Drawing 900-01-002 – Proposed Foul and Surface Water Drainage Layout (Part 5 of the Planning application Document Volume 2) – April 2010
- Drawing 900-01-003 – Site Features (Part 5 of the Planning Application Document Volume 2) – April 2010
- Drawing – Detailed Hard and Soft Landscape Scheme (900-01-004) –November 2010, accompanying letter from Axis dated 15th November 2010
- Figure 12 of the Transport Assessment – Proposed Site Access Arrangements & Internal HGV Queuing Space – April 2010

3 The operator shall ensure that the amount of wastes treated at the facility hereby approved does not exceed 200,000 tonnes per year.

4 The operator shall notify the County Planning Authority of the date of the start of each phase of development in writing at least 5 working days prior to each phase. The phases of development to be notified are: commencement; commissioning; and operation.

5 No material shall be accepted at the site directly from members of the public, and no retail sales of waste or processed materials to members of the public shall take place at the site.

Construction Environment Management Plan

6 No development hereby permitted shall commence until a Construction Environment Management Plan (CEMP) is submitted to and approved in writing by the County Planning Authority. The approved CEMP shall be implemented for the duration of the development prior to operation. The CEMP shall address the following issues:

Hours of working

i) A scheme (consistent with paragraph 5.8.5 of the Environmental Statement , Volume 1, Main Report (April 2010)) providing details of the construction operations, including the days and hours of working for construction of the development hereby approved, shall be submitted for the written approval of the County Planning Authority.

Travel Plan

ii) The route to be used for vehicular access during construction of the development hereby approved shall only be in accordance with a Travel Plan to be submitted to and approved in writing by the County Planning Authority.

Ecology

iii) A procedure to address the clearance of vegetation on site outside the bird breeding season (generally recognised to be late March — August inclusively) or under the supervision of a suitably qualified and experienced ecologist. No vegetation shall be cleared during the bird breeding season.

iv) A detailed procedure for the trapping and translocation of reptiles under the supervision of a suitably qualified and experienced ecologist; this should follow the recommendations set-out in the Reptile Survey and Mitigation Plan (Argus Ecology, July 2010).

v) Details of exclusion fencing around the site.
vi) Details for the protection of receptor sites and associated linking habitats throughout the construction stage. These should include retention of a works "biodiversity-log" to record any operations within or affecting the receptor areas.
vii) A procedure to ensure that during the construction phase all trenches / excavations / pipes are closed-off overnight, or if unavoidable, are fitted with wood or earth escape ramps, to allow any trapped wildlife to escape.
viii) A plan to identify all trees to be retained on site and details of their protection.
ix) Management of Japanese knotweed.
x) All ecological works prescribed in this condition shall incorporate any mitigation measures that have been proposed, agreed or implemented pursuant to condition 39).

Dust

xi) A scheme to demonstrate how the impacts of dust shall be minimised during the construction of the development and during extraction of the clay and removal off site.
xii) A scheme to demonstrate that no mud, dust or debris shall be deposited on the public highway.

Noise

xiii) A scheme to minimise and mitigate the impacts of noise and vibration (including on-site vehicles, plant and machinery) during the construction phase of the development.

Visual Impact

xiv) A scheme to show how construction works on site will be managed to mitigate their visual impact, including keeping the site tidy and details for the storage of materials.

Ground Water/ Contaminated Land

xv) A Method Statement providing details of the data that will be collected in order to demonstrate that the investigative and remediation works set out in the Environmental Statement Volumes 1 and 2 are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action. The Plan shall include results of any additional sampling and monitoring carried out to support the construction phase.
xvi) A Validation Report confirming that the site remediation criteria set out in the Method Statement have been satisfactorily met and any additional investigation results.

Land Drainage

xvii) Details of the foul and surface water management during the construction phase.

Highway Safety and Access

7 The only means of access and egress to the site shall be from Oak Drive as shown in Drawing Number 1204 PL0003 (Figure 5.1 of the Environmental Statement) – Proposed Site Plan and in Figure 12 - Proposed Site Access Arrangements & Internal HGV Queuing Space of the Transport Assessment.

8 The route to be used for vehicular access during operation of the development hereby approved shall only be in accordance with a Travel Plan to be

submitted to and approved in writing by the County Planning Authority prior to the operation of development.

9 All loads of waste materials carried on HGV into and out of the development hereby approved shall be enclosed or covered so as to prevent spillage or loss of material at the site or on to the public highway.

10 Heavy goods vehicles associated with operation of the development hereby approved shall only enter or exit the site between 06:00 hours and 19:00 hours.

11 No development hereby permitted shall operate until the driveway, parking for site operatives and visitors and vehicular turning spaces (marked on the ground for cars and commercial vehicles to turn so that they may enter and leave the site in a forward gear), are consolidated, surfaced and drained in accordance with details that shall have been submitted to and approved in writing by the County Planning Authority. These areas shall thereafter be retained and kept available for those uses at all times.

Materials, Design and Layout

12 Notwithstanding the submitted details, no development hereby approved shall commence until a detailed scheme for the external appearance of the buildings including the chimney stack hereby approved have been submitted to and approved in writing by the County Planning Authority. Such scheme shall include details of:

i) the type and colours of all external construction materials; and
ii) the design and layout of all external cladding materials.

The approved details shall be implemented for the duration of the development.

Landscaping

13 Notwithstanding the submitted details, no development hereby approved shall commence until a detailed scheme for landscaping of the site has been submitted to and approved in writing by the County Planning Authority. Such scheme shall include details of:

i) hard landscaping, including surface treatment finishes and colours;
ii) how the existing trees that are to be retained are to be protected during the construction operations (to be in accordance with BS5837:2005);
iii) the position, species, density and initial sizes of all new trees and shrubs;
iv) the interface with the surface water drainage scheme as set out in condition 33);
v) the interface with the nature conservation schemes as set out in conditions 6) and 17);
vi) details of the design and the height of the security fencing and gates along the site's boundaries;
vii) the programme of implementation of the approved scheme; and
viii) the arrangements for ongoing management of the scheme and subsequent maintenance;
ix) The works prescribed in this condition shall incorporate any mitigation measures that have been proposed, agreed or implemented pursuant to condition 39). The approved details shall be implemented for the duration of the development.

14 The landscaping details as shown on drawing reference 900-01-001 Rev A and dated April 2010 and/or as supplemented/updated by the details approved pursuant to condition 13 above shall be implemented within the first available planting season (the period between 31 October in any one year and 31 March in the following year) following the commissioning of the development. All planting and seeding undertaken in accordance with the scheme approved under condition 13 above shall be maintained and any plants which within five years of planting or seeding die, are removed, damaged or diseased shall be replaced in the next planting season with others of a similar size and species, unless otherwise agreed in writing by the County Planning Authority.

15 All areas of soft landscaping shall be created in accordance with a soil management plan that shall be submitted to and approved in writing by the County Planning Authority prior to commencement of the development. The soil management plan shall include details of the soil materials to be used, including their source, depth of application and suitability as a growing medium

Lighting

16 Prior to the commissioning of the facility details of all external lighting and other illumination proposed at the site shall be submitted to the County Planning Authority for approval in writing. These details shall include the height of all lighting, the intensity of lighting (specified in Lux levels), spread of light, including approximate light spillage levels (in metres), and any measures proposed to minimise impact of the floodlighting or disturbance through glare (such as shrouding) and the times when such lighting will be used. The approved scheme shall be implemented for the duration of the development. No lighting or illumination shall be affixed to or emitted from the chimney stack higher than the level of the boiler house roof. Any lighting that is fixed to the chimney stack shall relate to emissions monitoring only and shall be switched off when not in use.

Nature Conservation Management Plan

17 No development shall commence on site until details of a Nature Conservation Management Plan (NCMP) have been submitted to and approved in writing by the County Planning Authority. The approved NCMP shall be implemented for the duration of the development. The NCMP shall address the following issues:

i. A habitat management strategy which addresses the ongoing maintenance schedule of the site (including receptor habitats) for the benefit of biodiversity.

ii. Particular reference shall be made to address the enrichment of the receptor sites for reptiles (e.g. through the provision of compost piles to encourage invertebrate prey for slow-worms) in order to maintain flower-rich grassland in preference to nettle and scrub. Particular reference to be made to management procedures to maintain favourable habitat for slow-worms in the linking habitat corridor across the Sewage Treatment Site access.

iii. A lighting strategy to demonstrate minimisation of light pollution from the development with regards to foraging/commuting bats.

iv. An ongoing management strategy to ensure the functional integrity of the buffer area including the rows of poplar trees on the eastern portion of the site: to include tree management/planting measures to ensure Middle Covert is protected.

v. Details of all biodiversity monitoring.
vi. The works prescribed in this condition shall incorporate any mitigation measures that have been proposed, agreed or implemented pursuant to condition 39).

Pollution

18 If during development or site remediation, contamination not previously identified in the site investigation report is found to be present at the site then no further development shall be carried out until the developer has submitted an addendum to the Method Statement of the CEMP (refer condition 6) and obtained written approval from the County Planning Authority for it. This addendum to the Method Statement shall detail how this unsuspected contamination shall be dealt with and the timescales within which those works will be undertaken and shall be implemented as approved.

19 Within three months of completion of the remediation detailed in the Method Statement of the CEMP (and addendum, as applicable) a report shall be submitted to the County Planning Authority that provides verification that the required contamination remediation works have been carried out in accordance with the approved Method Statement(s). Post remediation sampling and monitoring results shall be included in the report to demonstrate that the required remediation has been fully met. Future monitoring proposals and reporting shall also be detailed in the report and implemented as approved in writing by the County Planning Authority. The development hereby approved shall not be operated unless this condition is discharged in writing by the County Planning Authority.

20 Clean, uncontaminated rock, subsoil, brick rubble, crushed concrete and ceramic only shall be permitted as infill materials.

Emissions

21 Prior to the operation of the development hereby approved, details of the type of vehicle alarms to be used by on-site plant and vehicles shall be submitted to and approved in writing by the County Planning Authority. Only such approved alarms shall be used for the duration of the development.

22 All vehicles, plant and machinery operated solely within the site shall be maintained in accordance with the manufacturer's specification at all times, this shall include the fitting and use of effective silencers.

23 Prior to the operation of the development hereby approved a scheme for the management and mitigation of dust shall be submitted in writing for the written approval of the County Planning Authority. The approved scheme shall be implemented for the duration of the development.

24 All doors to the building shall be kept closed except to allow entry and exit.

25 No handling, deposit, processing, storage or transfer of waste shall take place outside the confines of the buildings hereby approved.

Noise

26 Throughout duration of operations of the development hereby approved noise from the site shall not exceed the levels set out below at the receptor locations

identified at Figure 12.1 of the Environmental Statement, Volume 1, Main Report when measured in terms of an LAeq 1 hr level (free field) based on the BS4142 rating levels plus 5dB, between the hours of 07.00 and 22.00:

- Manor Lane: LAeq, 1-hour 37 dB.
- Crown Lane: LAeq, 1-hour 46 dB.
- Walton Road: LAeq, 1-hour 39 dB.
- Ryeland Lane: LAeq, 1-hour 35 dB.

27 Throughout operation of the development hereby approved noise from the site shall not exceed the levels set out below at the receptor locations identified at Figure 12.1 of the Environmental Statement, Volume 1, Main Report when measured in terms of night time criteria levels (5-minutes), based on the BS4142 rating level plus 5dB between the hours of 22.00 and 07.00:

- Manor Lane: LAeq, 5-min 35dB
- Crown Lane: LAeq, 5-min 39dB
- Walton Road: LAeq, 5 min 35dB.
- Ryeland Lane: LAeq, 5-min 35 dB.

28 Noise compliance monitoring shall be undertaken at the four noise sensitive locations identified in conditions 26 and 27 in accordance with the methodology set out in BS4142: 1997 'Method for rating industrial noise affecting mixed residential and industrial areas'. Any prediction calculations necessary to show compliance must report the method of calculation in detail and the reason for using it. The development hereby approved shall not be operated unless a scheme setting out arrangements for such monitoring, including relevant timescales and reporting procedures has been submitted to and approved in writing by the County Planning Authority.

Drainage

29 There shall be no discharge of foul or contaminated drainage from the development hereby permitted into either the groundwater or any surface waters, whether direct or via soakaways.

30 Surface water from vehicle parking and hard standing areas shall be passed through an interceptor of adequate capacity prior to discharge. Roof drainage shall not be passed through any interceptor.

31 Soakaways shall only be used in areas on site where they would not present risk to groundwater.

32 Water pipes used to serve the development shall not be susceptible to residual contamination on the site and buried services must be laid within a 0.5m surround of clean sand in areas of ash and graphite fill.

33 Notwithstanding the submitted details, no development hereby approved shall commence until details for surface water run-off limitation, surface water drainage and foul water drainage to be implemented throughout the operation of the development have been submitted to and approved in writing by the County Planning Authority. The drainage works shall be completed in accordance with the details and timetable agreed. The surface water drainage channel shall be designed to cope with 1 in 100 year (+30% for climate change) event. In addition, in designing the surface water drainage scheme reference

should be made to the Wychavon District Council Supplementary Planning Document that deals with the use, harvesting and disposal of surface water.

34 The development hereby approved shall not operate unless a scheme of maintenance for any ordinary watercourse, culvert or drainage ditch has been submitted to and approved in writing by the County Planning Authority. Such approved scheme of maintenance shall be implemented for the duration of the development.

Other Matters

35 The development hereby approved shall not operate until the operator has demonstrated, in writing, to the County Planning Authority that the connection to the district network has been made to enable electricity generated by the facility to be supplied to the district network.

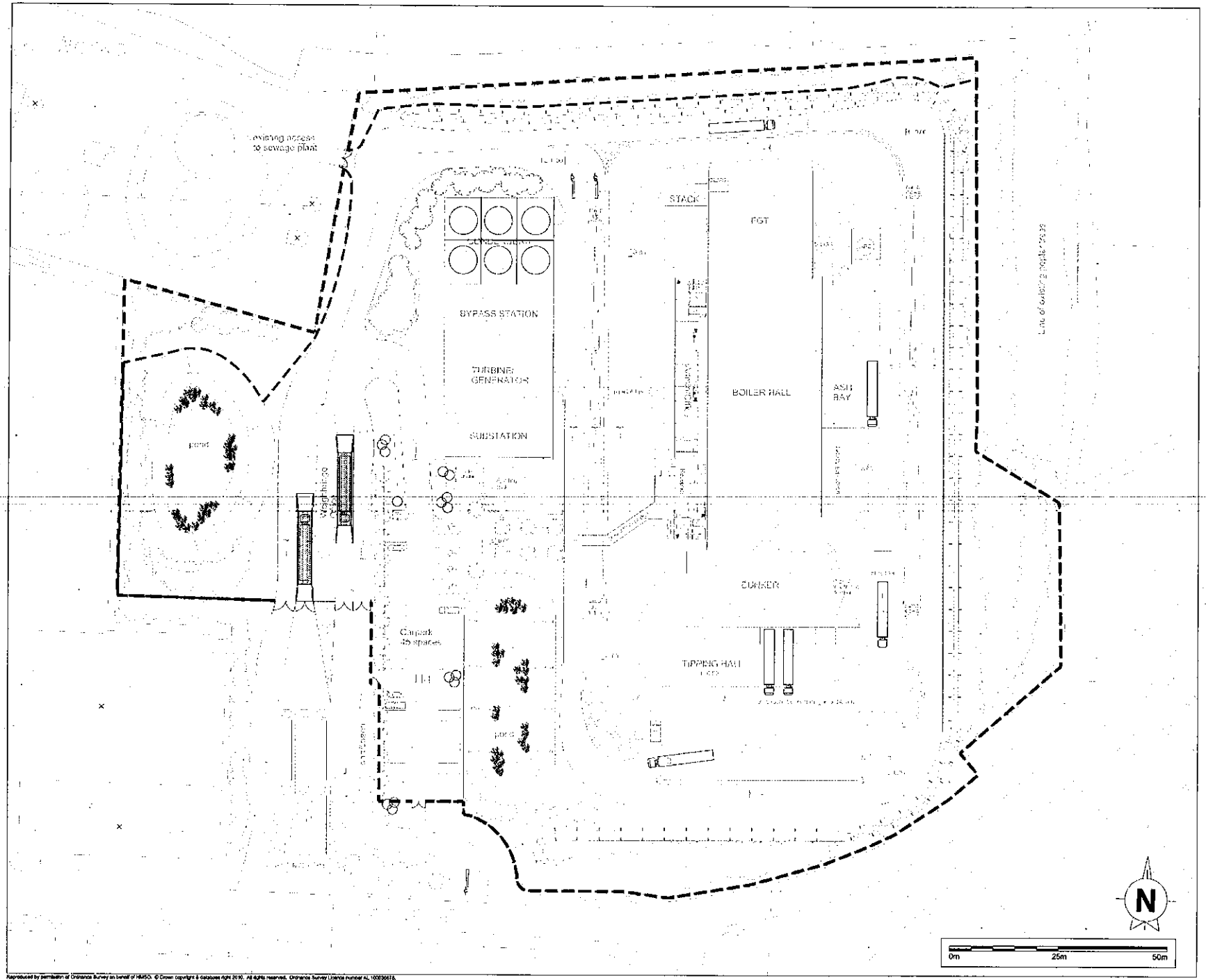
36 No development hereby approved shall commence until details of clay extraction and consequent management of the extracted materials (associated with the creation of the reduced level development platform) have been submitted to and approved in writing by the County Planning Authority. The clay extraction works shall be completed in accordance with the approved details.

37 No development hereby approved shall commence until details of clay extraction and consequent management of the extracted materials (associated with the creation of the reduced level development platform) have been submitted to and approved in writing by the County Planning Authority. This shall include the levels (above ordnance datum) of the base of the reduced level platform. The clay extraction works shall be completed in accordance with the submitted and approved details.

38 On permanent cessation of the development hereby approved, the operator shall inform the County Planning Authority within 30 days in writing that all operations have ceased. Thereafter the site shall be restored within a period of 24 months in accordance with a scheme to be submitted for the written approval of the County Planning Authority prior to the cessation of operations. This shall include for the removal of all buildings, chimney stack, associated plant, machinery, waste and processed materials from the site.

39 A great crested newt mitigation strategy (the GCN Strategy) shall be submitted to the County Planning Authority for approval in writing prior to the commencement of works on site. The GCN Strategy shall be designed to satisfy Regulation 44(3) (b) of the Habitats Regulations to ensure no negative impact on the local great crested newt population and to provide compensation by small-scale relocation and exclusion of newts, combined with habitat creation or enhancement on-site. This should include details of how great crested newts will be safely removed from the development footprint prior to construction; how the habitats within the site will be enhanced for use by great crested newt and details of a monitoring programme. Implementation of the GCN Strategy shall not be taken as commencement of the development.

Appendix N – Proposed Fencing Arrangement Drawings



Revision History	Date

Existing Proposed Perimeter Fence

Proposed New Perimeter Fence

merida waste management

axis

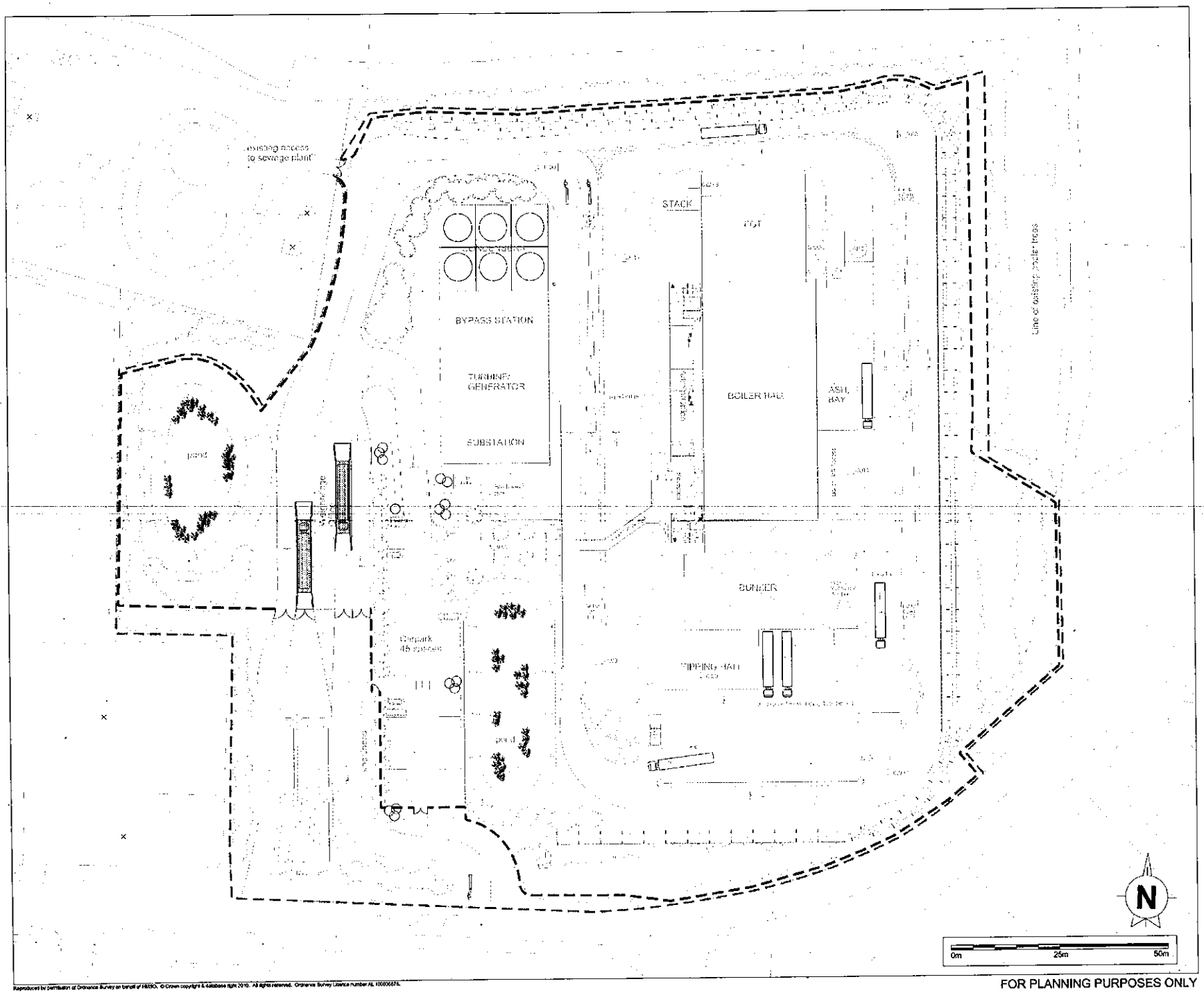
client: Merida Waste Management

project: Merida EnviRecover

drawing title: PERIMETER FENCING

date: March 2012	drawn by: SM	checked: AR
drawing number: 900-01-007	status: Planning	
scale: 1:400@A1	rev:	

planning environment design



Revision History	Date

Proposed Amphibian Fencing

Proposed New Perimeter Fence

mercia waste management

axis

client: Mercia Waste Management

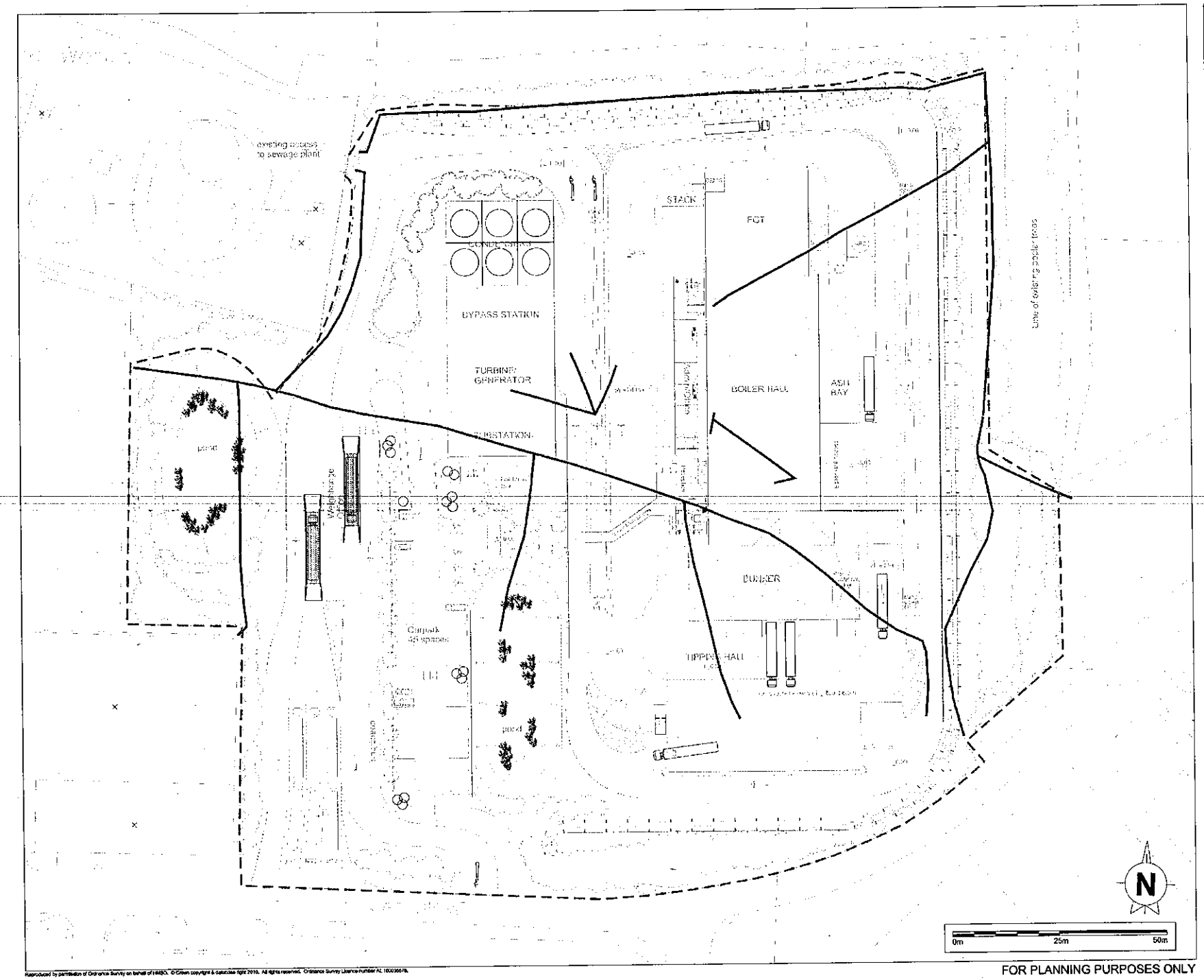
project: Mercia EnviRecover

drawing title: PROPOSED FENCING ARRANGEMENT

date: March 2012	drawn by: RSJ	checked: AR
drawing number: 900-01-006	status: Planning	
scale@A1: 1:400	rev:	

planning environment design

FOR PLANNING PURPOSES ONLY



Revision	History	Date

Proposed Amphibian Fencing

Existing Amphibian Fencing

mercia waste management

axis

client: Mercia Waste Management

project: Mercia EnviRecover

drawing title: PROPOSED AMPHIBIAN FENCING

date: March 2012	drawn by: TAS	checked: AP
drawing number: 900-01-008	status: Planning	
scale@A1: 1:400	rev: -	

planning environment design

FOR PLANNING PURPOSES ONLY

Appendix O - Hill and Moor Landfill Site Permit

ENVIRONMENT AGENCY

Variation Notice with introductory note

Pollution Prevention and Control (England & Wales) Regulations 2000

Hill and Moor Landfill Site

Severn Waste Services Ltd
Throckmorton Road
Lower Moor
Nr Pershore
Worcestershire
WR10 2PW

Variation Notice Number
TP3634UR

Permit number
ZP3933LD

Hill and Moor Landfill Site
Permit Number ZP3933LD

Introductory note

This introductory note does not form a part of the permit

The following notice is issued under regulation 17 of The Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I.2000 No. 1973 (as amended) (the Regulations) to vary the conditions of a permit issued under the Regulations to operate an installation. The notice comprises schedule 1 containing conditions to be deleted, schedule 2 conditions to be amended and schedule 3 conditions to be added.

The variation has been made in response to a meeting held between the Area Environment Management Team and Severn Waste Services Limited. It was highlighted that the monitoring suites for groundwater, surface water and landfill gas needed updating in light of site specific data and to avoid placing unnecessary cost on the operator. The improvement condition table in Schedule 1 to the permit has also been updated as some conditions have now been discharged. It was considered appropriate to remove all discharged conditions to avoid confusion. The original technical decisions made during determination of the application have not been revisited.

The main features of the installation remain the same:

Hill & Moor Landfill Site is located 1 km west of the village of Throckmorton at grid ref. SO 969 484, and is approximately 3km north-east of Pershore, Worcestershire. The landfill is developed partly on land that was formally part of Throckmorton Airfield and covers an area of approximately 76ha. The site is bounded by agricultural land on three sides with the disused airfield (now containing industrial and commercial units) to the north. The nearest residential properties are between 250m to 500m from the Installation boundary.

The underlying groundwater is considered a non-aquifer and the site is not within a source protection zone (SPZ). The installation is within 2km of Avon Valley which is designated a Site of Special Scientific Interest (SSSI).

There are three Listed Activities carried out at the site. These are the disposal of waste by landfilling, the treatment of the leachate extracted from the landfill and the extraction and combustion of landfill gas generated at the landfill.

The installation is permitted to accept non hazardous at a rate of 356,000 tonnes per annum. It has been determined that there is a total void space of 8.7 Mm3 of which approximately 3.9Mm3 has yet to be filled. The landfill operates in a phase manner with a total of 6 phases.

Leachate generated at the site is treated at the on site Leachate Treatment Plant before discharge to the River Avon. The permit sets Emission Limit Values (ELV's) on specific substances discharged into the river to ensure the activity will not cause pollution . These values are determined by an environmental assessment.

Landfill gas generated at the site is either utilised for energy production at the on site Gas Utilisation Plant or burnt off through an enclosed flare. The running and maintenance of the utilisation plant is currently sub-contracted to Summerleaze RE-Generation Ltd. The operator is required to employ appropriate measures to ensure it is will not cause pollution and specific emission limit values for both the utilisation plant and the flare are set out in the permit.

The directly associated activities at the site are the flaring of landfill gas, water discharges to controlled waters and fuel storage. Emission limits are set within the permit for the flare and the discharge points to controlled waters which must be monitored for and complied with.

The composting facility, wood shredding and the household waste activity at the site are operated under Waste Management Licence 48174, which used to cover the landfill, itself. These activities remain under the waste management licence. There is also one registered exemption at the site, which is the MRF (REGIS ref. No. BB1/E/L/MER008) - exempt activity under paragraphs 11, 17 and 18 notified in 2001. This will remain as an exempt activity and will not be covered by the permit.

Hydrogeological, Landfill Gas, Stability and Nuisance Risk Assessments have been completed in support of the application which justify both the design of the site and the operational controls. The operator has developed a series of monitoring and management procedures for the site and has achieved both ISO 9001 and ISO 14001 accreditation.

Status Log of the Permit

Detail	Date	Response Date
Application ZP3933LD	Received 04 January 2006	
Response to request for information	Letter dated 06/03/06	Letter dated 22/03/06
	Schedule 4 Notice dated 07/06/06	Letter dated 07/07/06 & Attachments
	E mail dated 31/08/06	Letter dated 12/09/06
	E mail dated 04/09/06	E mail dated 11/09/06
	E mail dated 11/09/06	E mail dated 02/10/06
Permit determined	02 January 2007	
Variation notice TP3634UR issued	07 June 2007	

Superseded or Partially Superseded Licences/Authorisations/Consents relating to this installation

Holder	Reference Number	Date of Issue	Fully or Partially Superseded
Severn Waste Services Ltd	EAWML48174	25/03/1998	Partially superseded
Severn Waste Services Ltd	EAWML48169	05/03/1993	Fully superseded
Severn Waste Services	S/17/25928/T	17/04/2002	Fully superseded
Severn Waste Services Ltd	S/17/26616/T01	19/04/2006	Fully superseded
Severn Waste Services Ltd	S/17/20885/T	17/04/2002	Fully superseded

Other existing Licences/Authorisations/Registrations relating to this site

Holder	Reference Number	Date of issue
Severn Waste Services Ltd	EAWML48174	25/03/1998

End of Introductory Note

Variation Notice

Permit number
ZP3933LD

Variation number
TP3634UR

The Environment Agency (the Agency) in exercise of its powers under Regulation 17 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (SI 2000 No 1973) hereby varies the permit held by you
Severn Waste Services Limited ("the operator"),

whose registered office is
106 High Street
Evesham
Worcestershire
WR11 4EL

Company registration number 3618688

to operate an installation at
Hill and Moor Landfill Site
Throckmorton Road
Lower Moor
Near Pershore
Worcestershire
WR10 2PW

to the extent set out in schedules 1 to 3 of this variation notice .

The notice shall take effect from 07 June 2007

Signed	Date
[redacted]	07 June 2007

[redacted] **– Acting Team Leader, Strategic Permitting Group, Bristol**

Authorised to sign on behalf of the Agency

SCHEDULE 1 – CONDITIONS TO BE DELETED

1. All conditions and schedules are deleted

SCHEDULE 2 – CONDITIONS TO BE AMENDED

2. None

SCHEDULE 3 – CONDITIONS TO BE ADDED

3. The following conditions and schedules are added to the permit

Conditions

1. Management

1.1 General management

1.1.1 The activities shall be managed and operated:

(a) in accordance with a management system, which identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents and non-conformances and those drawn to the attention of the operator as a result of complaints; and

(b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Accidents that may cause pollution

1.2.1 The operator shall:

(a) maintain and implement an accident management plan;

(b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;

(c) make any appropriate changes to the plan identified by a review.

1.3 Finance

1.3.1 The financial provision for meeting the obligations under this Permit set out in the Operator's letter dated 02/01/2007 shall be maintained by the Operator throughout the subsistence of this Permit and the Operator shall produce evidence of such provision whenever required by the Agency.

1.3.2 The operator shall ensure that the charges it makes for the disposal of waste in the landfill cover the cost of operating the landfill, as far as possible the cost of the financial provision required by condition 1.3.1 and thus the estimated costs for the closure and aftercare of the landfill.

1.4 Energy efficiency

1.4.1 The operator shall:

(a) Review and record at least every 4 years whether there are suitable opportunities to improve the energy efficiency of the activities; and

(b) Implement any appropriate measures identified by a review.

1.5 Site security

1.5.1 Site security measures shall prevent unauthorised access to the site, as far as practicable.

2. Operations

2.1 Permitted activities

2.1.1 The operator is authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.2 The site

2.2.1 The activities shall not extend beyond the site, being the land shown edged in red on the site plan at schedule 2 to this permit.

2.3 Operating techniques

2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1 table S1.2, unless otherwise agreed in writing by the Agency.

2.4 Off-site conditions

2.4.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake monitoring for the parameters, at the locations and at not less than the frequencies specified, in the following tables in schedule 4 to this permit

(a) surface water specified in table S4.9.

2.5 Improvement programme

2.5.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Agency.

2.5.2 Except in the case of an improvement which consists only of a submission to the Agency, the operator shall notify the Agency within 14 days of completion of each improvement.

2.6 Pre-operational conditions

2.6.1 The operations specified in schedule 1 table S1.4B shall not commence until the measures specified in that table have been completed.

2.7 Engineering

2.7.1 No construction of any new cell shall commence until the operator has submitted construction proposals and the Agency has confirmed that it is satisfied with the construction proposals.

2.7.2 The construction of a new cell shall take place only in accordance with the approved construction proposals unless:

(a) any change to the approved construction proposals would have no impact on the performance of any element of the design; or

(b) a change has otherwise been agreed in writing by the Agency.

2.7.3 No disposal of waste shall take place in a new cell until the operator has submitted a CQA Validation Report and the Agency has confirmed that it is satisfied with the CQA Validation Report.

2.7.4 No construction of landfill Infrastructure shall commence until the operator has submitted relevant construction proposals or a written request to use previous construction proposals and the Agency has confirmed that it is satisfied with the construction proposals.

2.7.5 The construction of the landfill Infrastructure shall take place only in accordance with the approved construction proposals unless:

(a) any change to the approved construction proposals would have no impact on the performance of any element of the design; or

(b) a change has otherwise been agreed in writing by the Agency.

2.7.6 The operator shall submit a CQA Validation Report as soon as practicable following the construction of the relevant landfill Infrastructure.

2.7.7 Where pollution controls are immediately necessary to prevent an incident or accident, then conditions 2.7.4 and 2.7.5 do not apply and the relevant landfill Infrastructure may be constructed, provided that the construction proposals are submitted to the Agency as soon as practicable.

2.7.8 For the purposes of conditions 2.7.1, 2.7.3 and 2.7.4, the Agency shall be deemed to be satisfied where it has not, within the period of 4 weeks from the date of receipt of the relevant construction proposals or CQA Validation Report, either:

(a) confirmed whether or not it is satisfied; or

(b) informed the operator that it requires further information.

2.8 Waste acceptance

2.8.1 Wastes shall only be accepted for disposal if:

(a) they are listed in schedule 3, and

(b) they are non- hazardous waste, and

(c) they are not whole used tyres (other than bicycle tyres and tyres with an outside diameter of more than 1400mm), and

(d) they are not shredded used tyres, and

(e) from 30th October 2007 they are not liquid waste (including waste waters but excluding sludge, and

(f) they are not chemical substances from research and development or teaching activities, for example laboratory residues, which are unidentified and/or which are new and whose effects on man and/or the environment are unknown, and

(g) all the relevant waste acceptance procedures set out in schedule 1 of the Landfill Regulations have been completed, and

(h) they fulfil the relevant waste acceptance criteria, and

(i) they have not been diluted or mixed solely to meet the relevant waste acceptance criteria, and

(j) from 30th October 2007 they are wastes which have been treated, except for: inert wastes for which treatment is not technically feasible; or it is waste other than inert waste and treatment would not reduce its quantity or the hazards which it poses to human health or the environment, and

(k) any code beginning with 07 05 and 16 03 shall exclude waste medicinal products and pharmaceutically active waste materials arising from their manufacture

2.8.2 The operator shall visually inspect:

(a) without unloading it, waste that is not in an enclosed container or enclosed vehicle on arrival at the landfill; and

(b) waste at the point of deposit;

and shall satisfy itself that it conforms to the basic characterisation documentation submitted by the holder.

2.8.3 Where the operator has taken samples to establish that the waste is in conformity with the documentation submitted by the holder then the samples taken shall be retained for at least one month and results of any analysis for at least two years.

2.8.4 The operator on accepting each delivery of waste shall provide a receipt to the person delivering it.

2.8.5 The total quantity of waste that shall be deposited in the landfill shall be limited by the pre-settlement levels shown on drawing ESID4.

2.8.6 The quantity of waste that is deposited in the landfill in any year shall not exceed the limits in schedule 1 table S1.5.

2.8.7 The operator shall maintain and implement a system which ensures that a record is made of the quantity, characteristics, date of delivery and, where practicable, origin of any waste that is received for disposal or recovery and of the identity of the producer, or in the case of municipal waste and multiple collection vehicles, of the collector of such waste. Any information regarded by the operator as commercially confidential shall be clearly identified in the record.

2.9 Leachate levels

2.9.1 The limits for the level of leachate listed in schedule 4 table S4.1 shall not be exceeded.

2.10 Closure, aftercare and decommissioning

2.10.1 The operator shall maintain and operate the activities so as to prevent or where that is not practicable, to minimise, any pollution risk on closure and decommissioning.

2.10.2 The operator shall maintain a site closure plan which demonstrates how the activities can be decommissioned to avoid any pollution risk and return the site of operation to a satisfactory state.

2.10.3 The operator shall carry out and record a review of the site closure plan at least every 4 years.

2.10.4 The site closure plan (or relevant part thereof) shall be implemented on final cessation or decommissioning of the activities or part thereof.

2.11 Site protection and monitoring programme

2.11.2 The operator shall implement and maintain the Site Protection and Monitoring Programme in relation to all areas which will not comprise permanent deposits of waste and shall carry out and record a review of it at least every 4 years commencing from the date the Site Protection and Monitoring Programme was received.

3. Emissions and monitoring

3.1 Emissions to water, air or land

3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 4 tables S4.2 and S4.3.

3.1.2 The limits given in that schedule shall not be exceeded, save that compliance with an emission limit shall include incorporation of the uncertainty allowance stated in Agency guidance LFTGN 05 and LFTGN 08.

3.2 Emissions to groundwater

3.2.1 There shall be no emission from the activities into groundwater of any substance in List I (as defined by the Groundwater Regulations) contrary to those regulations.

3.2.2 There shall be no emission from the activities into groundwater of any substance in List II (as defined in the Groundwater Regulations) so as to cause pollution (as defined in those regulations).

3.2.3 The trigger levels for emissions into groundwater for the parameter(s) and monitoring point(s) set out in schedule 4 Table S4.4 shall not be exceeded.

3.2.4 The operator shall submit to the Agency a review of the Hydrogeological Risk Assessment:

(a) between 9 and 6 months prior to the fourth anniversary of the granting of the permit ZP3933LD, and

(b) between 9 and 6 months prior to every subsequent 4 years after the fourth anniversary of the granting of the permit ZP3933LD.

3.3 Fugitive emissions of substances

3.3.1 Fugitive emissions of substances (excluding odour, noise and vibration) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures have been taken to prevent or where that is not practicable, to minimise, those emissions.

3.3.2 Litter or mud arising from the activities shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures have been used to prevent or where that is not practicable to minimise, the litter and mud.

3.3.3 Litter or mud arising from the activities shall be cleared from affected areas outside the site as soon as practicable.

3.3.4 All liquids, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3.5 The limits for landfill gas arising from the installation set out in schedule 4, table S4.5 shall not be exceeded.

3.4 Odour

3.4.1 Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures to prevent or where that is not practicable to minimise the odour.

3.5 Noise and vibration

3.5.1 Emissions from the activities shall be free from [noise and] vibration at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures to prevent or where that is not practicable to minimise the noise and vibration.

3.6 Monitoring

3.6.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the monitoring specified in the following tables in schedule 4 to this permit:

(a) Leachate specified in tables S4.1 and S4.8;

(b) Point source emissions specified in tables S4.2 and S4.3;

(c) Groundwater specified in tables S4.4 and S4.10;

(d) Landfill gas specified in tables S4.5, S4.6 and S4.7; and

(e) Surface water specified in table S4.9.

3.6.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.6.3 A topographical survey of the site referenced to ordnance datum shall be carried out:

(a) annually, and

(b) prior to the disposal of waste in any new cell or new development area of the landfill, and

(c) following closure of the landfill or part of the landfill.

The topographical survey shall be used to produce a plan of a scale adequate to show the surveyed features of the site.

3.6.4 Within 6 months of the issue of Permit ZP3933LD (unless otherwise agreed in writing by the Agency) the site reference data identified in the Site Protection and Monitoring Programme shall be collected and submitted to the Agency.

4. Information

4.1 Records

4.1.1 All records required to be made by this permit shall:

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and

(d) be retained, unless otherwise agreed in writing by the Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:

(i) the results of groundwater monitoring;

(ii) the Site Protection and Monitoring Programme;

(iii) sub-surface landfill gas monitoring;

(iv) leachate levels, quality and quantities;

(v) landfill gas generation and collection;

(vi) waste types and quantities;

(vii) topographical surveys; and

(viii) the specification and as built drawings of the basal, sidewall and capping engineering systems

4.1.2. Any records required to be made by this permit shall be supplied to the Agency within 14 days where the records have been requested in writing by the Agency.

4.2 Reporting

4.2.1 A report or reports on the performance of the activities over the previous year shall be submitted to the Agency by 31 January (or other date agreed in writing by the Agency) each year. The report(s) shall include as a minimum:

(a) a review of the results of the monitoring and assessment carried out in accordance with this permit against the relevant assumptions, parameters and results in the risk assessments submitted with the application;

(b) where the operator's management system encompasses annual improvement targets, a summary report of the previous year's progress against such targets;

(c) the energy consumed at the site, reported in the format set out in schedule 5 table S5.3

(d) the water consumed at the site, reported in the format set out in schedule 5 table S5.3;

(e) the annual production/treatment set out in schedule 5 table S5.2;

(f) details of any contamination or decontamination of the site which has occurred;

(g) the topographical surveys required by condition 3.6.3 other than those submitted as part of a CQA validation report;

(h) the volumetric difference (reported in cubic metres) between the most recent topographical survey and the previous annual topographical survey i.e. the additional volume of the landfill void that is occupied by waste;

(i) an assessment of the settlement behavior of the landfill body based on the difference between the most recent topographical survey and previous annual topographical survey for the areas of the landfill which did not receive waste between the surveys;

(j) a calculation of the remaining capacity (reported in cubic metres) derived from the pre-settlement contours and the most recent topographical survey;

(k) the compliance testing undertaken in the period;

4.2.2 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

(a) in respect of the parameters and emission points specified in schedule 5 Table S5.1;

(b) for the reporting periods specified in schedule 5 Table S5.1 and using the forms specified in schedule 5 Table S5.4; and

(c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.3 A summary report of the waste types and quantities accepted and removed from the site shall be made for each quarter. It shall be submitted to the Agency within one month of the end of the quarter and shall be in the format required by the Agency.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding 4 years, submit to the Agency, within 6 months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.2.5 All reports and notifications required by the permit shall be sent to the Agency using the contact details supplied in writing by the Agency

4.2.6 The results of reviews and any changes made to the Site Protection and Monitoring Programme shall be reported to the Agency, within 1 month of the review or change.

4.3 Notifications

4.3.1 The Agency shall be notified without delay following the detection of:

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

(b) the breach of a limit specified in the permit;

(c) any significant adverse environmental effects.

4.3.2 Any information provided under condition 4.3.1 shall be confirmed by sending the information listed in schedule 6 to this permit within the time period specified in that schedule.

4.3.3. Prior written notification shall be given to the Agency of the following events and in the specified timescales:

(a) as soon as practicable prior to the permanent cessation of any of the permitted activities;

(b) as soon as practicable prior to the cessation of the landfill disposal activities, for a period likely to exceed 1 month; and

(c) at least 7 days prior to the resumption of the landfill disposal activities after a cessation notified under (b) above.

4.3.4 The Agency shall be given at least 14 days notice before implementation of any part of the site closure plan in respect of any activities other than the disposal of waste in the landfill.

4.3.5 Where the Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.

4.3.6 The Agency shall be notified within 7 days of any changes in technically competent management and the name of any incoming person together with evidence that such person has the required technical competence.

4.3.7 The Agency shall be provided, within 14 days of the operator or any relevant person being convicted of a relevant offence, (unless such information has already been notified to the Agency), with details of the nature of the offence, the place and date of conviction, and the sentence imposed.

4.3.8 The Agency shall be notified within 14 days of the operator and/or any relevant person lodging an appeal against a conviction for any relevant offence and of the outcome when the appeal is decided.

4.3.9 The Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

(a) any change in the operator's trading name, registered name or registered office address;

(b) any change to particulars of the operator's ultimate holding company (including details of an ultimate holding company where an operator has become a subsidiary); and

(c) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

4.4 Interpretation

4.4.1 In this permit the expressions listed in schedule 7 shall have the meaning given in that schedule.

Schedule 1 - Operations

Table S1.1 Activities		
Activity listed in Schedule 1 of the PPC Regulations	**Description of specified activity**	**Limits of specified activity**
Section 5.2 Part A(1) (a), The disposal of waste in a landfill.	Landfill for non-hazardous waste (landfill classification under the Landfill Regulations 2002)	Receipt, handling, storage and disposal of wastes, consisting of the types and quantities specified in conditions 2.8, as an integral part of landfilling.
Section 5.3, Part A(1)(c)(i), Biological treatment	Storage and treatment of leachate in a facility with a capacity of >50 Tonnes/ day	Leachate arising from the landfill.
Section 1.1, Part A(1)(b)(iii), Burning of waste as a fuel	Utilisation of landfill gas for energy recovery in an appliance with a rated thermal input of ≥ 3 MW, but <50 MW.	Landfill gas arising from the landfill.
Directly Associated Activity		
Water discharges to controlled waters.	Discharges of treated leachate from the landfill.	From treated leachate discharge pipe to point of entry to controlled waters.
	Discharges of site drainage and water attenuation lagoon discharge	From surface water management system to points of entry to controlled waters.
Landfill gas flaring	Flaring of landfill gas for disposal in an appliance.	Landfill gas arising from the landfill.
Fuel storage.	Storage of fuel for operation of plant and equipment.	Fuel storage tank.

Table S1.2 Operating Techniques		
Description	**Parts**	**Date Received**
Application	The response to questions 2.1, 2.2 and 2.5 given in section B of the Application excluding sections B2.2.9 and B2.2.60;	04 January 2006
	Letter dated 22 March 2006 from Golders Associates Limited (Ref. 03513303.500) regarding management of the Gas Utilisation plant excluding section d;	24 March 2006
	Leachate Action Plan – Control Level Review – June 2006	June 2006
	The response to Schedule 4 Request for Further Information dated 7 June 2006	10 July 2006
	Letter dated 12 September 2006 from Golders Associates Limited (Ref. 03513303) in response to a request for further information on the Hydrogeological Risk Assessment sent in an E Mail dated 31 August 2006 excluding sections 1, 2, 3, 4 and 7	12 September 2006
Post Permit Issue	Letter dated 1March 2007 from Mike Hornby of Severn Waste Services relating to the gas management system at the site including drawings references Gas Extraction Infrastructure H&M-GEI-SWS-001; Gas Extraction Field H&M-GEF-SWS-001; Gas Plant Compound H&M-GPC-SWS-001 All drawings dated 28 Feb 2007.	1 March 2007
	Letter dated 1 March 2007 from Mike Hornby of Severn Waste Services relating to surface water monitoring including drawing reference H&MLF-SWMP-001 dated 02/07	1 March 2007
	Letter dated 28 March 2007 from Mike Hornby of Severn Waste Services relating to landfill gas migration mitigation measures.	28 March 2007
	Letter dated 30 March 2007 from Mike Hornby of Severn Waste Services relating to the installation of additional external landfill gas and groundwater monitoring points including Drawing reference H&MLF-EGGMB-001 dated 04/07	30 March 2007
	Drawing reference H&M-RLGM-MWM-001 dated 02-Apr-07 showing location of additional in waste landfill gas and leachate monitoring points.	30 March 2007
Improvement Conditions	Groundwater monitoring measures approved under condition 2.5.1, Table S1.3, refs. 14 and 15	
	Surface water monitoring measures approved under condition 2.5.1, Table S1.3, Ref 7	
	Landfill Gas management and monitoring measures approved under condition 2.5.1, Table S1.3, Ref. 10, 11 & 12	
Site Protection and Monitoring Programme	Site Protection and Monitoring Programme	

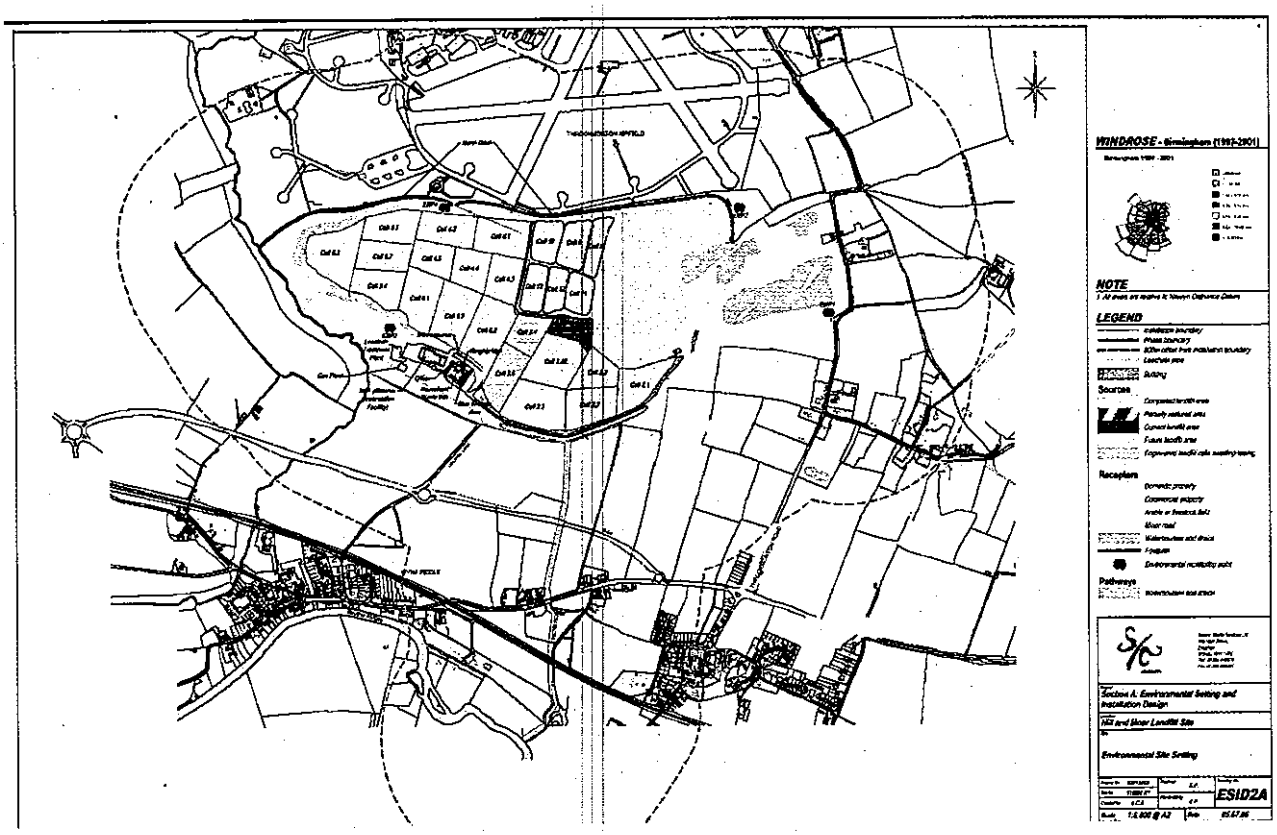
Table S1.3 Improvement Programme Requirements		
Reference (Original references from permit ZP3933LD)	**Requirement**	**Date**
1a	The Operator shall submit written proposals to the Environment Agency, for approval, for the location, design and construction and timing for installation of minimum two remote combined leachate and gas monitoring wells within each lined cell of the site, in accordance with the guidance provided in Agency document 'Guidance on monitoring of landfill leachate, groundwater and surface water' (LFTGN02) and Agency document 'Guidance on the Management of Landfill Gas' (LFTGN03)	07 September 2007
1b	On written approval by the Agency, the remote combined leachate and gas monitoring wells, specified in 1a above, shall be established and monitored in accordance with Tables S4.1, S4.7 and S4.8 of this permit.	In accordance with the timescales agreed in the proposals agreed under condition 1a
3b	On written approval by the Agency, the surface water monitoring points in the ditch along Northern side of site that runs east to west and into Piddle Brook between existing SW monitoring points B and E as detailed in the letter dated 1 March 2007 from Mike Hornby of Severn Waste Services and shown on drawing reference H&MLF-SWMP-001 dated 02/07 shall be established and monitored in accordance with Table S4.9 of this permit.	07 July 2007
4b	On written approval by the Agency, the surface water monitoring points in the Piddle Brook where it forms the western boundary of the site and in the northern ditch between surface water monitoring point E and the junction with the Piddle Brook as detailed in the letter dated 1 March 2007 from Mike Hornby of Severn Waste Services and shown on drawing reference H&MLF-SWMP-001 dated 02/07 shall be established and monitored in accordance with Table S4.9 of this permit after lining engineering is complete in the adjacent cell.	1 month prior to any waste emplacement in the adjacent cell.
5b	On written approval by the Agency the surface water monitoring point in the Piddle Brook upstream (north) of where the Northern ditch joins it at the western end of the installation as detailed in the letter dated 1 March 2007 from Mike Hornby of Severn Waste Services and shown on drawing reference H&MLF-SWMP-001 dated 02/07 shall be established and monitored in accordance with Table S4.9 of this permit.	07 July 2007
6b	On written approval by the Agency the surface water monitoring point in the Piddle Brook at a representative point downstream of where it leaves site boundary (SW corner of site) as detailed in the letter dated 1 March 2007 from Mike Hornby of Severn Waste Services and sown on drawing reference H&MLF – SWMP- 001 dated 02/07 shall be established and monitored in accordance with Table S4.9 of this permit.	07 July 2007
7a	The operator shall prepare control levels for selected parameters for the downstream surface water monitoring point proposed in improvement condition 2.5, ref. 6b above. The control levels shall be proposed when 12 consecutive months monitoring data (Table S4.9) for the monitoring point established under improvement condition 2.5, Ref. 5b above has been collected. The levels and the proposed monitoring frequency shall be submitted to the Agency for approval.	Within 1 month following completion of 12 months of background monitoring
7b	Once agreed with the Agency, the control levels shall be incorporated into the site monitoring plan and monitored in accordance with requirements of Table S4.9 of this permit.	Within 1 month following written agreement by the Agency
8c	On completion of the collection of 6 consecutive months of monitoring data (Table S4.5), prepare landfill gas concentration limit values for new boreholes established in accordance with the details set out in the letter dated 30 March 2007 from Michael Hornby of Severn Waste Services and as shown on drawing reference H&MLF-EGGMB-001 dated 04/07. These shall be submitted to the Agency for approval.	Within 1 month following completion of 6 consecutive months monitoring

10a	Prepare landfill gas concentration limit values for boreholes 6, 7, 8, 103, 104, 105, 106 & 107 on completion of the collection of 12 consecutive months of weekly monitoring data (Table S4.5) subsequent to the implementation of the proposals referred to in Letter from Mike Hornby of Severn Wastre Services dated 28th March 2007. These shall be submitted to the Agency for approval .	Within 1 month following completion of collection of background monitoring data
10b	Once agreed with the Agency, the limits required under 10a above shall be incorporated into the site monitoring plan.	Within 1 month following written agreement from the Agency
11a	The operator shall undertake modelling of short term landfill gas engine emissions of nitrogen oxides and sulphur dioxide. The results and any proposals resulting from the modelling results shall be reported to the Agency.	07 September 2007
11b	On written approval, any proposals resulting from 11a above shall be implemented together with any additional measures notified by the Agency.	Within 1 month following written agreement from the Agency
12a	The operator shall undertake modelling of short term surface emissions of hydrogen sulphide. The results and any proposals resulting from the modelling results shall be reported to the Agency.	07 September 2007
12b	On written approval, any proposals resulting from 12a above shall be implemented together with any additional measures notified by the Agency.	Within 1 month following written agreement from the Agency
14a	The Operator shall submit a report to the Agency for approval that reviews all monitoring data for List I substances in; • groundwater monitoring boreholes BH 6, BH7 BH8 and BH26; and • all existing leachate monitoring boreholes; The report shall propose groundwater trigger levels for List I substances in boreholes BH7, BH 6, BH8 and BH26 that have been identified within the leachate.	07 September 2007
14b	The Operator shall submit a report to the Agency for approval that reviews all monitoring data for List I substances in; • those required by Ref. 1a of this table. The report shall propose revised groundwater trigger levels for List I substances in boreholes BH7, BH 6, BH8 and BH26 that have been identified within the leachate if necessary.	07 June 2008
14c	On approval, the trigger levels shall be incorporated into Table S4.4 of this permit	Immediately, upon receipt of approval from the Agency
15a	From the boreholes established under Table S1.4B, Ref 3 the operator shall propose a selection of boreholes for which List 1 trigger values are to be determined as per Ref 14a above. Selected boreholes should be located between the landfill and the Northern Ditch and Piddle Brook so that they will be compliance points for List 1 substances at the point of entry to a surface water course. These proposals shall be submitted to the Agency for approval	Within 1 months following completion of 12 consecutive months of monitoring
15b	On approval, the trigger levels shall be incorporated into Table S4.4 of this permit.	Immediately, upon receipt of approval from the Agency

Table S1.4B Pre-operational measures for future development		
Reference	**Operation**	**Pre-operational Measures**
1	Construction of cap	Prior to the capping of any filled and completed cell Material and site-specific shear strength testing should be undertaken to verify that the peak and residual strength parameters of the materials used on site are in accordance with the assumptions made in Sections 4.1.2, 4.1.4 and 4.1.6 of the SRA submitted with the application. Further stability calculations shall be submitted to the Agency for approval with respect to:- • Plant loading forces; • Gas pressures; and • Degree of cap saturation (PSR). A cap drainage scheme to prevent saturation and instability of the restoration profile is required. In this regard the requirement for a 0.5m thick drainage layer may be substituted by the provision of land drains. The spacing and depth of land drains should be calculated on the basis of achieving a PSR that does not exceed 0.5. The proposals shall be submitted in writing to Agency for approval.
2	Emplacement of leachate drainage blankets in future cells	The operator shall prepare revised details of leachate drainage blanket in accordance with relevant standards specified in the Agency guidance current at the time. The revised leachate drainage system proposals shall include an options appraisal of drainage measures including but not limited to: material to be used (e.g. aggregate, secondary aggregate, tyres or other appropriate material) provision of pipework within blanket, material grade, material strength, material composition, blanket thickness and provision of protective geotextile.
3	Waste deposit in future cells	Groundwater monitoring wells and Gas monitoring wells as detailed in the letter dated 30 March 2007 from Mike Hornby of Severn Waste Services and drawing reference H&MLF-EGGMB-001 dated 04/07 shall be installed adjacent to new cells a minimum of 1 month prior to waste disposal commencing in those cells and the operator shall commence monitoring in accordance with Tables S4.4, S4.5 and S4.10 of this permit.

Table S1.5 Annual Waste Input Limits	
Category	**Limit Tonnes/ Year**
Non-hazardous Waste	356,000

Schedule 2 - Site plan



Schedule 3 - List of permitted wastes

01 WASTES RESULTING FROM EXPLORATION, MINING, DRESSING AND FURTHER TREATMENT OF MINERALS

01 01	**Wastes from mineral excavation**
01 01 01	wastes from mineral metalliferous excavation
01 01 02	wastes from mineral non-metalliferous excavation
01 03	**Wastes from physical and chemical processing of metalliferous minerals**
01 03 06	tailings other than those mentioned in 01 03 04 and 01 03 05
01 03 08	dusty and powdery wastes other than those mentioned in 01 03 07
01 03 09	red mud from alumina production other than the wastes mentioned in 01 03 07
01 04	**Wastes from further physical and chemical processing on non-metalliferous minerals**
01 04 08	waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	waste sand and clays
01 04 10	dusty and powdery wastes other than those mentioned in 01 04 07
01 04 11	wastes from potash and rock salt processing other than those mentioned in 01 04 07
01 04 12	tailings and other wastes from washing and cleaning of minerals other than those mentioned in 01 04 07 and 01 04 11
01 04 13	wastes from stone cutting and sawing other than those mentioned in 01 04 07
01 05	**Drilling muds and other drilling wastes**
01 05 04	freshwater drilling muds and wastes
01 05 07	barite-containing drilling muds and wastes other than those mentioned in 01 05 05 and 01 05 06
01 05 08	chloride-containing drilling muds and wastes other than those mentioned in 01 05 05 and 01 05 06

02 WASTES FROM AGRICULTURAL, HORTICULTURAL, HUNTING, FISHING AND AQUACULTURAL PRIMARY PRODUCTION, FOOD PREPARATION AND PROCESSING

02 01	**Primary production wastes**
02 01 01	sludges from washing and cleaning
02 01 02	animal-tissue waste
02 01 03	plant-tissue waste
02 01 04	waste plastics (except packaging)
02 01 06	animal faeces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site
02 01 07	wastes from forestry
02 01 09	agrochemical waste other than those mentioned in 02 01 08
02 01 10	waste metal
02 02	**Wastes from the preparation and processing of meat, fish and other foods of animal origin**
02 02 01	sludges from washing and cleaning
02 02 02	animal-tissue waste
02 02 03	materials unsuitable for consumption or processing
02 02 04	sludges from on-site effluent treatment
02 03	**Wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee and tobacco preparation and processing; tobacco processing; conserve production**
02 03 01	sludges from washing, cleaning, peeling, centrifuging and separation
02 03 02	wastes from preserving agents
02 03 03	wastes from solvent extraction
02 03 04	materials unsuitable for consumption or processing
02 03 05	sludges from on-site effluent treatment

02 04	**Wastes from sugar processing**
02 04 01	soil from cleaning and washing beet
02 04 02	off-specification calcium carbonate
02 04 03	sludges from on-site effluent treatment
02 05	**Wastes from the dairy products industry**
02 05 01	materials unsuitable for consumption or processing
02 05 02	sludges from on-site effluent treatment
02 06	**Wastes from the baking and confectionery industry**
02 06 01	materials unsuitable for consumption or processing
02 06 02	wastes from preserving agents
02 06 03	sludges from on-site effluent treatment
02 07	**Wastes from the production of alcoholic and non alcoholic beverages (except tea, coffee and cocoa)**
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials
02 07 02	wastes from spirits distillation
02 07 03	wastes from chemical treatment
02 07 04	materials unsuitable for consumption or processing
02 07 05	sludges from on-site effluent treatment

03 WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PAPER, CARDBOARD, PULP, PANELS AND FURNITURE

03 01	**Wastes from wood processing and the production of panels and furniture**
03 01 01	waste bark and cork
03 01 05	sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04
03 03	**Wastes from pulp, paper and cardboard production and processing**
03 03 01	waste bark and wood
03 03 02	green liquor sludge (from recovery of cooking liquor)
03 03 05	de-inking sludges from paper recycling
03 03 07	mechanically separated rejects from pulping of waste paper and cardboard
03 03 08	wastes from sorting of paper and cardboard destined for recycling
03 03 09	lime mud waste
03 03 10	fibre rejects, fibre-, filler- and coating-sludges from mechanical separation
03 03 11	sludges from on-site effluent treatment other than those mentioned in 03 03 10

04 WASTES FROM THE LEATHER, FUR AND TEXTILE INDUSTRIES

04 01	**Wastes from the leather and fur industry**
04 01 01	fleshings and lime split wastes
04 01 02	liming waste
04 01 04	tanning liquor containing chromium
04 01 05	tanning liquor free of chromium
04 01 06	sludges, in particular from on-site effluent treatment containing chromium
04 01 07	sludges, in particular from on-site effluent treatment free of chromium
04 01 08	waste tanned leather (blue sheetings, shavings, cuttings, buffing dust) containing chromium
04 01 09	wastes from dressing and
04 02	**Wastes from the textile industry**
04 02 09	wastes from composite materials (impregnated textile, elastomer, plastomer)
04 02 10	organic matter from natural products (for example grease, wax)
04 02 15	wastes from finishing other than those mentioned in 04 02 14
04 02 17	dyestuffs and pigments other than those mentioned in 04 02 16
04 02 20	sludges from on-site effluent treatment other than those mentioned in 04 02 19
04 02 21	wastes from unprocessed textile fibres
04 02 22	wastes from processed textile fibres

05 WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL

05 01	**Oily sludges and solid wastes**
05 01 10	sludges from on-site effluent treatment other than those mentioned in 05 01 09
05 01 13	boiler feedwater sludges
05 01 14	wastes from cooling columns
05 01 16	sulphur-containing wastes from petroleum desulphurisation
05 01 17	bitumen
05 06	**Wastes from the pyrolytic treatment of coal**
05 06 04	waste from cooling columns
05 07	**Wastes from natural gas purification**
05 07 02	wastes containing sulphur

06 WASTES FROM INORGANIC CHEMICAL PROCESSES

06 03	**Waste salts and their solutions**
06 03 14	solid salts and solutions other than those mentioned in 06 03 11 and 06 03 13
06 03 16	metallic oxides other than those mentioned in 06 03 15
06 05	**Sludges from on-site effluent treatment**
06 05 03	sludges from on-site effluent treatment other than those mentioned in 06 05 02
06 06	**Waste from the MFSU of sulphur chemicals, sulphur chemical processes and desulphurisation processes**
06 06 03	wastes containing sulphides other than those mentioned in 06 06
06 09	**Wastes from phosphorus chemical processes**
06 09 02	phosphorous slag
06 09 04	calcium-based reaction wastes other than those mentioned in 06 09 03
06 11	**Waste from the manufacture of inorganic pigments and opacificiers**
06 11 01	calcium-based reaction wastes from titanium dioxide
06 13	**Wastes from other inorganic chemical processes**
06 13 03	carbon black

07 WASTES FROM ORGANIC CHEMICAL PROCESSES

07 01	**Wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals**
07 01 12	sludges from on-site effluent treatment other than those mentioned in 07 01 11
07 02	**Wastes from the MFSU of plastics, synthetic rubber and man-made fibres**
07 02 12	sludges from on-site effluent treatment other than those mentioned in 07 02 11
07 02 13	waste plastic
07 02 15	wastes from additives other than those mentioned in 07 02 14
07 02 17	Waste containing silicones other than those mentioned in 07 02 16
07 03	**Wastes from the MFSU of organic dyes and pigments (except 06 11)**
07 03 12	sludges from on-site effluent treatment other than those mentioned in 07 03 11
07 04	Wastes from the MFSU of organic pesticides (except 02 01 05)
07 04 12	sludges from on-site effluent treatment other than those mentioned in 07 04 11
07 06	**Wastes from the MFSU of fats, grease, soaps, detergents disinfectants and cosmetics**
07 06 12	sludges from on-site effluent treatment other than those mentioned in 07 06 11
07 07	**Wastes from the MFSU of fine chemicals and chemical products not otherwise specified**
07 07 12	sludges from on-site effluent treatment other than those mentioned in 07 07 11

08 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS

08 01	**Wastes from MFSU and removal of paint and varnish**
08 01 12	waste paint and varnish other than those mentioned in 08 01 11
08 01 14	sludges from paint or varnish other than those mentioned in 08 01 13
08 01 16	aqueous sludges containing paint or varnish other than those mentioned in 08 0115
08 01 18	wastes from paint or varnish removal other than those mentioned in 08 01 17
08 01 20	aqueous suspensions containing paint or varnish other than those mentioned in 08 01 19
08 02	**Wastes from MFSU of other coatings (including ceramic materials)**
08 02 01	waste coating powders
08 02 02	aqueous sludges containing ceramic materials
08 02 03	aqueous suspensions containing ceramic materials
08 03	**Wastes from MFSU of printing inks**
08 03 07	aqueous sludges containing ink
08 03 08	aqueous liquid waste containing ink
08 03 13	waste ink other than those mentioned in 08 03 12
08 03 15	ink sludges other than those mentioned in 08 03 14
08 03 18	waste printing toner other than those mentioned in 08 03 17
08 04	**Wastes from MFSU of adhesives and sealants (including waterproofing products)**
08 04 10	waste adhesives and sealants other than those mentioned in 08 04 09
08 04 12	adhesive and sealant sludges other than those mentioned in 08 04 11
08 04 14	aqueous sludges containing adhesives or sealants other than those mentioned in 08 04 13
08 04 16	aqueous liquid waste containing adhesives or sealants other than those mentioned in 08 04 15

09 WASTES FROM THE PHOTOGRAPHIC INDUSTRY

09 01	**Wastes from the photographic industry**
09 01 07	photographic film and paper containing silver or silver compounds
09 01 08	photographic film and paper free of silver or silver compounds
09 01 10	single-use cameras without batteries *Cameras - single use*
09 01 12	single-use cameras containing batteries other than those mentioned in 09 01 11

10 INORGANIC WASTES FROM THERMAL PROCESSES

10 01	**Wastes from power stations and other combustion plants**
10 01 01	bottom ash, slag and boiler dust (excluding boiler dust mentioned in 10 01 04)
10 01 02	coal fly ash
10 01 03	fly ash from peat and untreated wood
10 01 05	calcium-based reaction wastes from flue-gas desulphurisation in solid form
10 01 07	calcium-based reaction wastes from flue-gas desulphurisation in sludge form
10 01 15	bottom ash, slag and boiler dust from co-incineration other than those mentioned in 10 01 14
10 01 17	fly ash from co-incineration other than those mentioned in 10 01 16
10 01 19	wastes from gas cleaning other than those mentioned in 10 01 05, 10 01 07 and 10 01 18
10 01 21	sludges from on-site effluent treatment other than those mentioned in 10 01 20
10 01 23	aqueous sludges from boiler cleansing other than those mentioned in 10 01 22
10 01 24	sands from fluidised beds
10 01 25	wastes from fuel storage and preparation of coal-fired power plants
10 01 26	wastes from cooling-water treatment

10 02	**Wastes from the iron and steel industry**
10 02 01	wastes from the processing of slag
10 02 02	unprocessed slag
10 02 08	solid wastes from gas treatment other than those mentioned in 10 02 07
10 02 10	mill scales
10 02 12	wastes from cooling-water treatment other than those mentioned in 10 02 11
10 02 14	sludges and filter cakes from gas treatment other than those mentioned in 10 02 13
10 02 15	other sludges and filter cakes
10 03	**Wastes from aluminium thermal metallurgy**
10 03 02	anode scraps
10 03 05	waste alumina
10 03 16	skimmings other than those mentioned in 10 03 15
10 03 18	carbon-containing wastes from anode manufacture other than those mentioned in 10 03 17
10 03 20	flue-gas dust other than those mentioned in 10 03 19
10 03 22	other particulates and dust (including ball-mill dust) other than those mentioned in 10 03 21
10 03 24	solid wastes from gas treatment other than those mentioned in 10 03 23
10 03 26	sludges and filter cakes from gas treatment other than those mentioned in 10 03 25
10 03 28	wastes from cooling-water treatment other than those mentioned in 10 03 27
10 03 30	wastes from treatment of salt slags and black drosses other than those mentioned in 10 03 29
10 04	**Wastes from lead thermal metallurgy**
10 04 10	wastes from cooling-water treatment other than those mentioned in 10 04 09
10 05	**Wastes from zinc thermal metallurgy**
10 05 01	slags from primary and secondary production
10 05 04	other particulates and dust
10 05 09	wastes from cooling-water treatment other than those mentioned in 10 05 08
10 05 11	dross and skimmings other than those mentioned in 10 05 10
10 06	**Wastes from copper thermal metallurgy**
10 06 01	slags from primary and secondary production
10 06 02	dross and skimmings from primary and secondary production
10 06 04	other particulates and dust
10 06 10	wastes from cooling-water treatment other than those mentioned in 10 06 09
10 07	**Wastes from silver, gold and platinum thermal metallurgy**
10 07 01	slags from primary and secondary production
10 07 02	dross and skimmings from primary and secondary production
10 07 03	solid wastes from gas treatment
10 07 04	other particulates and dust
10 07 05	sludges and filter cakes from gas treatment
10 07 08	wastes from cooling-water treatment other than those mentioned in 10 07 07
10 08	**Wastes from other non-ferrous thermal metallurgy**
10 08 04	particulates and dust
10 08 09	other slags
10 08 11	dross and skimmings other than those mentioned in 10 08 10
10 08 13	carbon-containing wastes from anode manufacture other than those mentioned in 10 08 12
10 08 14	anode scrap
10 08 16	lue-gas dust other than those mentioned in 10 08 15
10 08 18	sludges and filter cakes from flue-gas treatment other than those mentioned in 10 08 17
10 08 20	wastes from cooling-water treatment other than those mentioned in 10 08 19
10 09	**Wastes from casting of ferrous pieces**
10 09 03	furnace slag
10 09 06	casting cores and moulds which have not undergone pouring other than those mentioned in 10 09 05

10 09 08	casting cores and moulds which have undergone pouring other than those mentioned in 10 09 07
10 09 10	flue-gas dust other than those mentioned in 10 09 09
10 09 12	other particulates other than those mentioned in 10 09 11
10 09 14	waste binders other than those mentioned in 10 09 13
10 09 16	waste crack-indicating agent other than those mentioned in 10 09 15
10 10	**Wastes from casting of non-ferrous pieces**
10 10 03	furnace slag
10 10 06	casting cores and moulds which have not undergone pouring, other than those mentioned in 10 10 05
10 10 08	casting cores and moulds which have undergone pouring, other than those mentioned in 10 10 07
10 10 10	flue-gas dust other than those mentioned in 10 10 09
10 10 12	other particulates other than those mentioned in 10 10 11
10 10 14	waste binders other than those mentioned in 10 10 13
10 10 16	waste crack-indicating agent other than those mentioned in 10 10 15
10 11	**Wastes from manufacture of glass and glass products**
10 11 03	waste glass-based fibrous materials
10 11 05	particulates and dust
10 11 10	waste preparation mixture before thermal processing, other than those mentioned in 10 11 09
10 11 12	waste glass other than those mentioned in 10 11 11
10 11 14	glass-polishing and -grinding sludge other than those mentioned in 10 11 13
10 11 16	solid wastes from flue-gas treatment other than those mentioned in 10 11 15
10 11 18	sludges and filter cakes from flue-gas treatment other than those mentioned in 10 11 17
10 11 20	solid wastes from on-site effluent treatment other than those mentioned in 10 11 19
10 12	**Wastes from manufacture of ceramic goods, bricks, tiles and construction products**
10 12 01	waste preparation mixture before thermal processing
10 12 03	particulates and dust
10 12 05	sludges and filter cakes from gas treatment
10 12 06	discarded moulds
10 12 08	waste ceramics, bricks, tiles and construction products (after thermal processing)
10 12 10	solid wastes from gas treatment other than those mentioned in 10 12 09
10 12 12	wastes from glazing other than those mentioned in 10 12 11
10 12 13	sludge from on-site effluent treatment
10 13	**Wastes from manufacture of cement, lime and plaster and articles and products made from them**
10 13 01	waste preparation mixture before thermal processing
10 13 04	wastes from calcination and hydration of lime
10 13 06	particulates and dust (except 10 13 12 and 10 13 13)
10 13 07	sludges and filter cakes from gas treatment
10 13 10	wastes from asbestos-cement manufacture other than those mentioned in 10 13 09
10 13 11	wastes from cement-based composite materials other than those mentioned in 10 13 09 and 10 13 10
10 13 13	solid wastes from gas treatment other than those mentioned in 10 13 12
10 13 14	waste concrete and concrete sludge

11 INORGANIC METAL-CONTAINING WASTES FROM METAL TREATMENT AND THE COATING OF METALS, AND NON-FERROUS HYDROMETALLURGY

11 01	**Liquid wastes and sludges from metal treatment and coating of metals, (e.g. galvanic processes, zinc coating processes, pickling processes, etching, phosphatising, alkaline degreasing)**
11 01 10	sludges and filter cakes other than those mentioned in 11 01 09

11 01 12	aqueous rinsing liquids other than those mentioned in 11 01 11
11 01 14	degreasing wastes other than those mentioned in 11 01 13
11 02	**Wastes and sludges from non-ferrous hydrometallurgical processes**
11 02 03	wastes from the production of anodes for aqueous electrolytical processes
11 02 06	wastes from copper hydrometallurgical processes other than those mentioned in 11 02 05
11 05	**Wastes from hot galvanising processes**
11 05 01	Hard zinc
11 05 02	Zinc ash

12 WASTES FROM SHAPING AND SURFACE TREATMENT OF METALS AND PLASTICS

12 01	**Wastes from shaping (including forgoing, welding, pressing, drawing, turning, cutting and filing)**
12 01 01	ferrous metal filings and turnings
12 01 02	ferrous metal dust and particles
12 01 03	non-ferrous metal filings and turnings
12 01 04	non-ferrous metal dust and particles
12 01 05	plastics shavings and turnings
12 01 13	welding wastes
12 01 15	machining sludges other than those mentioned in 12 01 14
12 01 17	waste blasting material other than those mentioned in 12 01 16
12 01 21	spent grinding bodies and grinding materials other than those mentioned in 12 01 20

15 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED

15 01	**Packaging**
15 01 01	paper and cardboard packaging
15 01 02	plastic packaging
15 01 03	wooden packaging
15 01 04	metallic packaging
15 01 05	composite packaging
15 01 06	mixed packaging
15 01 07	glass packaging
15 01 09	textile packaging
15 02	**Absorbents, filter materials, wiping cloths and protective clothing**
15 02 03	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02

16 WASTES NOT OTHERWISE SPECIFIED IN THE LIST

16 01	**End-of-life vehicles and their components**
16 01 06	end-of-life vehicles, containing neither liquids nor other hazardous components
16 01 12	brake pads other than those mentioned in 16 01 11
16 01 15	antifreeze fluids other than those mentioned in 16 01 14
16 01 16	tanks for liquefied gas
16 01 17	ferrous metal
16 01 18	non-ferrous metal
16 01 19	plastic
16 01 20	glass
16 01 22	components not otherwise specified
16 02	**Discarded equipment and its components**
16 02 14	discarded equipment other than those mentioned in 16 02 09 to 16 02 13
16 02 16	components removed from discarded equipment other than those mentioned in 16 02 15

16 03	**Off-specification batches**
16 03 04	inorganic wastes other than those mentioned in 16 03 03
16 03 06	organic wastes other than those mentioned in 16 03 05
16 05	**Chemicals and gases in containers**
16 05 09	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08
16 06	**Batteries and accumulators**
16 06 04	alkaline batteries (except 16 06 03)
16 06 05	other batteries and accumulators
16 08	**Spent catalysts**
16 08 01	spent catalysts containing gold, silver, rhenium, rhodium, palladium, iridium or platinum (except 16 08 07)
16 08 03	spent catalysts containing transition metals or transition metal compounds not otherwise specified
16 08 04	spent fluid catalytic cracking catalysts (except 16 08 07)

17 CONSTRUCTION AND DEMOLITION WASTES (INCLUDING ROAD CONSTRUCTION)

17 01	**Concrete, bricks, tiles, ceramics, and gypsum-based materials**
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 02	**Wood, glass and plastic**
17 02 01	wood
17 02 02	glass
17 02 03	plastic
17 03	**Asphalt, tar and tarred products**
17 03 02	bituminous mixtures other than those mentioned in 17 03 01
17 04	**Metals (including their alloys)**
17 04 01	copper, bronze, brass
17 04 02	aluminium
17 04 03	lead
17 04 04	zinc
17 04 05	iron and steel
17 04 06	tin
17 04 07	mixed metals
17 04 11	cables other than those mentioned in 17 04 10
17 05	**Soil and dredging spoil**
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 06	dredging spoil other than those mentioned in 17 05 05
17 05 08	track ballast other than those mentioned in 17 05 07
17 06	**Insulation materials**
17 06 04	insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 08	**Gypsum based construction material**
17 08 02	gypsum based construction materials other than those mentioned in 17 08 01
17 09	**Other construction and demolition wastes**
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03

18 WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (except kitchen and restaurant wastes not arising from immediate health care)

18 01	**Wastes from natal care, diagnosis, treatment or prevention of disease in humans**
18 01 04	wastes whose collection and disposal is not subject to special requirements in order to prevent infection(for example dressings, plaster casts, linen, disposable clothing, diapers)

19 WASTES FROM WASTE TREATMENT FACILITIES, OFFSITE WASTE WATER TREATMENT PLANTS AND THE WATER INDUSTRY

19 01	**Wastes from incineration or pyrolysis of waste**
19 01 02	ferrous materials removed from bottom ash
19 01 12	bottom ash and slag other than those mentioned in 19 01 11
19 01 14	fly ash other than those mentioned in 19 01 13
19 01 16	boiler dust other than those mentioned in 19 01 15
19 01 18	pyrolysis wastes other than those mentioned in 19 01 17
19 01 19	sands from fluidised beds
19 02	**Wastes from specific physico/chemical treatments of industrial waste, (e.g. dechromatation, decyanidation, neutralisation)**
19 02 03	premixed wastes composed only of non-hazardous wastes
19 02 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05
19 02 10	combustible wastes other than those mentioned in 19 02 08 and 19 02 09
19 03	**Stabilised/solidified wastes**
19 03 05	stabilised wastes other than those mentioned in 19 03 04
19 03 07	solidified wastes other than those mentioned in 19 03 06
19 04	**Vitrified waste and wastes from vitrification**
19 04 01	vitrified waste
19 04 04	aqueous liquid wastes from vitrified waste tempering
19 05	**Wastes from aerobic treatment of solid wastes**
19 05 01	non-composted fraction of municipal and similar wastes
19 05 02	non-composted fraction of animal and vegetable waste
19 05 03	off-specification compost
19 06	**Wastes from anaerobic treatment of waste**
19 06 04	digestate from anaerobic treatment of municipal waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste
19 07	**Landfill leachate**
19 07 03	landfill leachate other than those mentioned in 19 07 02
19 08	**Wastes from waste water treatment plants not otherwise specified**
19 08 01	screenings
19 08 02	waste from desanding
19 08 05	sludges from treatment of urban waste water
19 08 09	grease and oil mixture from oil/water separation containing edible oils and fat
19 08 12	sludges from biological treatment of industrial waste water other than those mentioned in 19 08 11
19 08 14	sludges from other treatment of industrial waste water other than those mentioned in 19 08 13
19 09	**Wastes from the preparation of drinking water or water for industrial use**
19 09 01	solid waste from primary filtration and screenings
19 09 02	sludges from water clarification
19 09 03	sludges from decarbonation
19 09 04	spent activated carbon
19 09 05	saturated or spent ion exchange resins
19 09 06	solutions and sludges from regeneration of ion exchangers
19 10	**Wastes from shredding of metal-containing waste**
19 10 01	iron and steel waste
19 10 02	non-ferrous waste
19 10 04	fluff-light fraction and dust other than those mentioned in 19 10 03
19 10 06	other fractions other than those mentioned in 19 10 05
19 11	**Wastes from oil regeneration**
19 11 06	sludges from on site effluent treatment other than those mentioned in 19 11 05
19 12	**Wastes from the mechanical treatment of waste (for examples sorting, crushing, compacting, palletising) not otherwise specified**
19 12 01	paper and cardboard
19 12 02	ferrous matal
19 12 03	non-ferrous metal

19 12 04	plastic and rubber
19 12 05	glass
19 12 07	wood other than that mentioned in 19 12 06
19 12 08	textiles
19 12 09	minerals (for example sand, stones)
19 12 10	combustible waste (refuse derived fuel)
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
19 13	**wastes from soil and groundwater remediation**
19 13 02	solid wastes from soil remediation other than those mentioned in 19 13 01
19 13 04	sludges from soil remediation other than those mentioned in 19 13 03
19 13 06	sludges from groundwater remediation other than those mentioned in 19 13 05
19 13 08	aqueous liquid wastes made aqueous concentrates from groundwater remediation other than those mentioned in 19 13 07

20 MUNICIPAL WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INCLUDING SEPARATELY COLLECTED FRACTIONS

20 01	**Separately collected fractions**
20 01 01	paper and cardboard
20 01 02	glass
20 01 08	biodegradable kitchen and canteen waste
20 01 10	clothes
20 01 11	textiles
20 01 25	edible oil and fat
20 01 28	paint, inks, adhesives and resins other than those mentioned in 20 01 27
20 01 30	detergents other than those mentioned in 20 01 29
20 01 32	medicines other than those mentioned in 20 01 31
20 01 34	batteries and accumulators other than those mentioned in 20 01 33
20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 38	wood other than that mentioned in 20 01 37
20 01 39	plastics
20 01 40	metals
20 01 41	wastes from chimney sweeping
20 02	**Garden and park wastes (including cemetery waste)**
20 02 01	biodegradable waste
20 02 02	soil and stones
20 02 03	other non-biodegradable wastes
20 03	**Other municipal wastes**
20 03 01	mixed municipal waste
20 03 02	waste from markets
20 03 03	street-cleaning residues
20 03 06	waste from sewage cleaning
20 03 07	bulky waste

Schedule 4 – Emissions and monitoring

Table S4.1 Leachate level limits and monitoring requirements

Monitoring point reference/ Description	Limit	Monitoring frequency	Monitoring method
Leachate extraction points shown on drawing ESID7 dated 21 October 2005 for phases A1, A2 and 1	As agreed in document 'Leachate Action Plan – Control Level Review' dated June 2006	Monthly	Unless otherwise agreed in writing with the Agency monitoring methods used shall be in accordance with Agency guidance document 'Guidance on monitoring of landfill leachate, groundwater and surface water (LFTGN02)
Leachate extraction points shown on drawing ESID7 dated 21 October 2005 for all phases from Phase 2 onwards	2 m above the top of the basal liner	Monthly	
All future leachate monitoring points required under improvement condition 2.5, Table S1.3, Ref 1	2m above the top of the basal liner	Monthly	

Table S4.2 Point Source Emissions to Air – emission limits and monitoring requirements

Emission point Ref. & Location	Parameter	Source	Limit (including unit)		Reference Period	Monitoring Frequency	Monitoring Standard or Method
Four Gas engines located within the gas Compound shown on drawing ref. ESID2a			Commissioning Date				
			Before 31 December 2005	After 31 December 2005			
	Oxides of Nitrogen	Gas Utilisation plant	650 mg/m^3	500 mg/m^3	Hourly mean	Annually	ISO 10849: 1996
	CO	Gas utilisation plant	1500 mg/m^3	1400 mg/m^3	Hourly mean	Annually	ISO 12039: 2001
	Total VOCs	Gas utilisation plant	1750 mg/m^3	1000 mg/m^3	Hourly mean	Annually	BS EN 12619: 1999 or BS EN 13526: 2002
	NMVOCs	Gas utilisation plant	150mg/m^3	150 mg/m^3	NMVOCs	Annually	BS EN 13649:2002
Flare located within the gas Compound shown on drawing ref. ESID2a			Commissioning Date				
			Before 31 December 2003	After 31 December 2003			
	Oxides of Nitrogen	Landfill Gas Flare	150 mg/m^3	150 mg/m^3	Hourly mean	Annually	ISO 10849
	CO	Landfill Gas Flare	100 mg/m^3	50 mg/m^3	Hourly mean	Annually	ISO 12039
	Total VOCs	Landfill Gas Flare	10 mg/m^3	10 mg/m^3	Hourly mean	Annually	BS EN 12619 or BS EN 13526
	NMVOCs	Landfill Gas Flare	5 mg/m^3	5 mg/m^3	Hourly mean	Annually	BS EN 13649:2002

Table S4.3 Point Source Emissions to Water (Other than Sewer) – emission limits and monitoring requirements						
Emission point Ref. & Location	**Source**	**Parameter**	**Limit (incl unit)**	**Reference Period**	**Monitoring Frequency**	**Monitoring Standard or Method**
Sample point Ref. LDC as shown on drawing ref. HRA4	Leachate Treatment Plant	Volume	130 m^3 *	Daily	Daily	Unless otherwise agreed in writing with the Agency monitoring methods used shall be in accordance with Agency guidance document 'Guidance on monitoring of landfill leachate, groundwater and surface water (LFTGN02
		Rate of discharge	18 litres	Per second	Daily	
		Suspended solids	50 mg/l	Spot Sample	Monthly	
		pH	>6 and <9 pH units	instantaneous	Monthly	
		BOD	50mg/l	Spot sample	Monthly	
		Ammoniacal N	10mg/l	Spot sample	Monthly from May to October inclusive	
		Ammoniacal N	20mg/l	Spot sample	Monthly from November to April inclusive	
		Chromium	200µg/l	Spot sample	Monthly	
		Copper	150µg/l	Spot sample	Monthly	
		Lead	100µg/l	Spot sample	Monthly	
		Nickel	400µg/l	Spot sample	Monthly	
		Zinc	300µg/l	Spot sample	Monthly	
		Toxic Effect	N/A	Spot sample	At the request of the Agency	
DC2 as shown on Plan HRA4	Settlement lagoons	BOD	20mg/l	Spot sample	Monthly	
		Suspended solids	50mg/l	Spot sample	Monthly	
		Ammoniacal N	5mg/l	Spot sample	Monthly	
		Chloride	250mg/l	Spot sample	Monthly	
		Oil and grease	None visible	N/A	Operational weekday (Monday to Friday including Bank holidays) or unless agreed with the EA	

* the volume of the discharge shall not exceed 130 cubic metres per day except when the instantaneous flow recorder of the River Avon (as measured at the Agency's gauging station at Evesham) is indicating a flow of less than 409 megalitres per day when no discharge shall be made.

Table S4.4 Trigger levels for emissions into groundwater and monitoring requirements					
Monitoring point reference	**Parameter**	**Limit (including unit)**	**Reference Period**	**Monitoring frequency**	**Monitoring standard or method**
BH6, BH7, BH8, BH26, BH28 and BH36 as shown on plan ESID8	Benzene	1µg/l	Spot Sample	Annually	Unless otherwise agreed in writing with the Agency monitoring methods used shall be in accordance with Agency guidance document 'Guidance on monitoring of landfill leachate, groundwater and surface water (LFTGN02)
	Cadmium	0.1µg/l	Spot Sample	Annually	
	Mecoprop	0.04µg/l	Spot sample	Annually	
BH6, BH7, BH8, BH26, BH28 and BH36 as shown on plan ESID8 and additional boreholes required under Table S1.3 Ref 2 and Ref. 15 of this permit.	List 1 substances as determined by Ref 14a of Table S1.3 of this permit.	As per Table S1.3 Ref. 14a	Spot sample	Quarterly for the first year, then annually	

Table S4.5 Landfill gas in external monitoring boreholes – limits and monitoring requirements				
Monitoring point Ref. /description	**Parameter**	**Limit (%v/v)**	**Monitoring frequency**	**Monitoring standard or method**
BH4	Methane	1	Monthly	Unless otherwise agreed in writing with the Agency monitoring methods used shall be in accordance with Agency guidance document 'Guidance on the management of landfill gas (LFTGN03)
	Carbon dioxide	2.8*		
BH 5	Methane	1		
	Carbon dioxide	2.9*		
BH10	Methane	1		
	Carbon dioxide	2.2*		
BH12	Methane	1		
	Carbon dioxide	3*		
BH19	Methane	1		
	Carbon dioxide	3.6*		
BH23	Methane	1		
	Carbon dioxide	2.6*		
BH26	Methane	1		
	Carbon dioxide	1.5*		
BH28	Methane	1		
	Carbon dioxide	2.2*		
BH29	Methane	1		
	Carbon dioxide	4.4*		
BH30	Methane	1		
	Carbon dioxide	3.4*		
BH31	Methane	1		
	Carbon dioxide	5.2*		
BH32	Methane	1		
	Carbon dioxide	2*		
BH33	Methane	1		
	Carbon dioxide	2.3*		
BH34	Methane	1		
	Carbon dioxide	1.8*		
BH35	Methane	1		
	Carbon dioxide	2.7*		
BH36	Methane	1		
	Carbon dioxide	1.5*		
BH37	Methane	1		
	Carbon dioxide	1.5*		
BH 108	Methane	1		
	Carbon dioxide	4.8*		
GM 1	Methane	1		
	Carbon dioxide	1.5*		
GM 2	Methane	1		
	Carbon dioxide	1.5*		
BHX	Methane	1		
	Carbon Dioxide	1.9*		
All future external monitoring boreholes as required under improvement condition 2.5, Table S1.3 Ref. 8	Methane Carbon Dioxide	To be established in accordance with improvement condition 2.5, Table S1.3 Ref. 8c **		

Table S4.5 Landfill gas in external monitoring boreholes – limits and monitoring requirements				
Monitoring point Ref. /description	**Parameter**	**Limit (%v/v)**	**Monitoring frequency**	**Monitoring standard or method**
BH's 6, 7, 8, 101, 102, 103, 104, 105, 106 107.	Methane Carbon Dioxide	To be established in accordance with improvement condition 2.5, Table S1.3 Ref. 10a **		
All existing and future boreholes	Oxygen	No limit		
	Atmospheric pressure	No limit		
	Differential Pressure	No limit		
	Meteorological data	No limit		

* The limits specified take account of the agreed background concentrations as detailed in GMP3: Gas Trigger Levels within the Landfill Gas Monitoring Programme (Section J of the application dated December 2005).

** This table shall be read as if it contained limits approved under condition 2.5, Table S1.3, references 8c and 10a

Table S4.6 Landfill gas from capped surfaces - monitoring requirements				
Monitoring point Ref. /description	**Parameter**	**Monitoring frequency**	**Other specifications**	**Monitoring Standard or method**
Permanently capped zone	Average Methane flux	Annually	Where a rate of 0.001 mg/m^2/second is exceeded appropriate measures must be taken to reduce the rate.	Flame ionisation detector walkover, flux box or as otherwise agreed in writing by the Agency*.
Temporarily capped zone	Average Methane flux	Annually	Where a rate of 0.1 mg/m^2/second is exceeded appropriate measures must be taken to reduce the rate.	Flame ionisation detector walkover, flux box or as otherwise agreed in writing by the Agency*.

Footnote * If a cap has previously been shown compliant and there have been no significant physical changes in the gas management during the year, a detailed walkover survey with an FID can be used to demonstrate that the surface emissions are under control. If this survey shows no change in the pattern of methane emission, it may be used as the annual survey. The values for flux and total methane emissions measured in the previous year may be reported and a fresh flux box survey is not necessary. If the zone remains stable, the results of a full walkover survey may be accepted as the site report for a period of four years before a further quantitative flux box survey is required.

Table S4.7 Landfill gas – other monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
All in waste monitoring boreholes as required under condition 2.5.1, Table S1.3, Ref. 1	Methane Carbon Dioxide Oxygen Carbon Monoxide Atmospheric pressure Differential pressure Meteorological Data	Monthly		
Gas collection system at well control valve or manifolds on gas system	Methane Carbon Dioxide Oxygen Carbon Monoxide Atmospheric pressure Differential pressure Gas flow rate or suction	At frequencies specified in table 5.4 of LFTGN 03		Where the Oxygen level exceeds 5% or where the addition of the Carbon Dioxide and Methane percentages is less than 80%, an assessment of air ingress into the system shall be undertaken Where the concentration of carbon monoxide exceeds 100ppm then further investigation shall be undertaken.
Input to LFG Utilisation Compound	Trace gas analysis in accordance with LFTGN04.	Annually		The concentration of trace gas components shall be assessed against the assumptions made in the Landfill gas risk assessment and dispersion modelling.
Input to LFG Utilisation Compound	Methane Carbon Dioxide Oxygen Gas flow rate	Weekly		Where the Oxygen level exceeds 5% or where the addition of the Carbon Dioxide and Methane percentages is less than 80%, an assessment of air ingress into the system shall be undertaken.

Table S4.8 Leachate– other monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**

Table S4.8 Leachate– other monitoring requirements				
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**	**Other specifications**
2 representative* leachate points per cell as shown plan ESID7 and as required by Table S1.3 Ref.1.	pH, Cl, CaCO3, NH4+, Ca, Mg, Na, K, SO4, EC, TON, TOC, BOD, COD	Quarterly		Unless otherwise agreed in writing with the Agency monitoring methods used shall be in accordance with Agency guidance document 'Guidance on monitoring of landfill leachate, groundwater and surface water (LFTGN02)
	Fe, Cd, Cr, Cu, Pb, Ni, Zn, Benzene, Mecoprop.	Annually		
	List 1 screen	Annually		Unless otherwise agreed in writing with the Environment Agency, the analytical framework used shall be in accordance with guidance in Appendix 6 of Environment Agency document 'Hydrogeological Risk Assessments for Landfills and the Derivation of Groundwater Control and Trigger Levels' (LFTGN01).

*Footnote: In each cell 1 sampling point shall be established at a leachate extraction point and one at a remote leachate level monitoring point

Table S4.9 Surface water – other monitoring requirements			
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**
A, E, DC2, LDC, B, F, G, H and I as shown on plan HRA4 and Surface Water Monitoring Points asshown in drawing H7MLF-SWMP-001.	Temperature, DO, pH, EC, TSS, NH4-N, TON, TOC, BOD, COD, Cl	Monthly	Unless otherwise agreed in writing with the Agency monitoring methods used shall be in accordance with Agency guidance document 'Guidance on monitoring of landfill leachate, groundwater and surface water (LFTGN02)
Surface Water Monitoring Points as shown in drawing H7MLF-SWMP-001.	pH, CL, EC, NH4-N	Monthly	
A, E, DC2, LDC, B, F, G, H and I as shown on plan HRA4 and Surface Water Monitoring Points as shown in drawing H7MLF-SWMP-001.	Sulphate, alkalinity, Na, K, Ca, Mg and Zn	Quarterly	
Surface Water Monitoring Points as shown in drawing H7MLF-SWMP-001.	Control levels as established by Table S1.3 Ref. 7	Monthly	
Surface Water Monitoring Points A and those shown in drawing H7MLF-SWMP-001.	List 1 Screen	Quarterly for the first year then annually	

Table S4.10 Groundwater – other monitoring requirements			
Emission point reference or source or description of point of measurement	**Parameter**	**Monitoring frequency**	**Monitoring standard or method**
BH4, BH5, BH6, BH7, BH8 BH10, BH12, BH19, BH23, BH26, BH28, BH29, BH30, BH31, BH32, BH33, BH34, BH35, BH36 BH37 BHX All future groundwater monitoring points as shown on drawing reference H&MLF-EGGMB-001.	Water level (m AOD), monitoring point base, pH, EC, Cl, COD. BOD, TON, TOC, NH4-N, Sulphate, Alkalinity, Sodium, Calcium, Potassium, Magnesium, Manganese, Cadmium, Copper, Nickel, Lead, Iron, Zinc, Benzene, Mecoprop	Quarterly	Unless otherwise agreed in writing with the Agency monitoring methods used shall be in accordance with Agency guidance document 'Guidance on monitoring of landfill leachate, groundwater and surface water (LFTGN02)
Existing and future boreholes adjacent to Northern Ditch or Piddle Brook	Water level (m AOD), monitoring point base, pH, EC, Cl, COD. BOD, TON, TOC, NH4-N, Sulphate, Alkalinity.	Weekly when surface water monitoring data as required by Table S 4.9 shows a trend away from the norm or when the control levels are breached	

Schedule 5 - Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S5.1 Reporting of monitoring data			
Parameter	**Emission or monitoring point/reference**	**Reporting period**	**Period begins**
Leachate levels As required by condition 3.6.1	Monitoring points specified in Table S4.1	Every 3 months	02 January 2007
Emissions to air Parameters as required by condition 3.6.1	Monitoring points specified in Table S4.2	Every 12 months	02 January 2007
Emissions to water Parameters as required by condition 3.6.1	Monitoring point specified in Table S4.3	Every 3 months	02 January 2007
Groundwater Parameters as required by condition 3.6.1	Monitoring points specified in Table S4.4	Every 3 Months	02 January 2007
Landfill gas surface emissions Parameters as required by condition 3.6.1	Monitoring points specified in Table S4.6	Every 12 months	02 January 2007
Landfill gas lateral migration Parameters as required by condition 3.6.1	Monitoring points specified in Table S4.5	Every 3 months	02 January 2007
Other Landfill gas monitoring Parameters as required by condition 3.6.1	Monitoring points specified in Table S4.7	Every 3 months	02 January 2007
Other leachate monitoring Parameters as required by condition 3.6.1 List 1 Screen	Monitoring points as specified in Table S4.8	Every 3 months Every 12 months	02 January 2007
Other surface water monitoring Parameters as required by condition 3.6.1	Monitoring points as specified in Table S4.9	Every 3 months	02 January 2007
Other groundwater monitoring Parameters as required by condition 3.6.1	Monitoring points as specified in Table S4.10	Every 3 months	02 January 2007
Assessment of environmental impact on River Avon	H and I as shown on plan HRA4 Sample point LDC	Every 12 months	02 January 2007

Table S5.2: Annual production/treatment	
Leachate: **Disposed of off site;** **Disposed of to any onsite effluent treatment plant;** **Recirculated into the waste mass.**	**Cubic metres/year**
Surface water and/ or groundwater: **Disposed of off site;** **Disposed of to any onsite effluent treatment plant.**	**Cubic metres/year**
Landfill gas: **combustion in flares;** **combustion in gas engines;** **Other methods of gas utilisation.**	**Normalised cubic metres/year**

Table S5.3 Performance Parameters			
Parameter	**Frequency of assessment**	**Annual total**	**Unit**
Potable water use	Annually		Cubic metres
Energy used (including for leachate treatment)	Annually		MWh of electricity
Non potable water use	Annually		Cubic metres

Table S5.4 Reporting Forms		
Media/parameter	**Reporting Format**	**Date of Form**
Leachate	From leachate 1 or other reporting format to be agreed in writing with the Agency	
Air	Form Air 1 or other reporting format to be agreed in writing with the Agency	
Controlled water	Form Water 1 or other reporting format to be agreed in writing with the Agency	
Groundwater	Form Groundwater 1 or other reporting format to be agreed in writing with the Agency	
Sewer	Form Sewer 1 or other reporting format to be agreed in writing with the Agency	
Landfill gas	Form LFG 1 or other reporting format to be agreed in writing with the Agency	
Waste Return	Waste Return Form RATS2E	
Landfill topographical surveys and interpretation	Reporting format to be agreed in writing with the Agency	

Schedule 6 - Notification

This page outlines the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the PPC Regulations.

Part A

Permit Number	
Name of operator	
Location of Installation	
Time and date of the detection	

(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 the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(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	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	**Notification period**
Carbon Dioxide in external boreholes BH4, BH6, BH7, BH8, BH12, BH26 – BH37 inclusive, BH101 – BH108 inclusive, BHX, G1 and GM2	48 hours
Breach of control levels for downstream surface water monitoring point as established by Table S1.3 Ref. 6a and Ref 7a	24hours
Breach of Trigger levels for groundwater List 1 substances	24 hours
Leachate level limit	5 working days

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B to be supplied as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
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 dates of any unauthorised emissions from the installation in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of Severn Waste Services Limited

Schedule 7 - Interpretation

"*Accident*" means an accident that may result in pollution.

"*Annually*" means once every Year.

"*Application*" means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 4 to the PPC Regulations

"*Authorised Officer*" means any person authorised by the Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in Section 108(4) of that Act.

"*Background concentration*" means such concentration of that substance as is present in:

- For emissions to surface water, the surface water quality up-gradient of the site; or
- For emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge; or
- For emissions of landfill gas, the ground or air outside the site and not attributable to the site.

"*Construction Proposals*" means written information, at a level of detail appropriate to the complexity and pollution risk, on the design, specifications of materials selected, stability assessment (where relevant) and the construction quality assurance (CQA) programme in relation to the New Cell or Landfill Infrastructure.

"*CQA Validation Report*" means the final "as built" construction and engineering details of the New Cell or of the Landfill Infrastructure. It must provide a comprehensive record of the construction and must include, where relevant:

- The results of all testing required by the CQA programme - this must include the records of any failed tests with a written explanation, details of the remedial action taken, referenced to the appropriate secondary testing;
- Plans showing the location of all tests;
- "As-built" plans and sections of the works;
- Copies of the site engineer's daily records;
- Records of any problems or non-compliances and the solution applied;
- Any other site specific information considered relevant to proving the integrity of the New Cell or Landfill Infrastructure;
- Validation by a qualified person that all of the construction has been carried out in accordance with the Construction Proposals.

"*Fugitive emission*" means an emission to air, water or land from the activities which is not controlled by an emission or background concentration limit.

"*Groundwater Regulations*" means the Groundwater Regulations SI 1998 No. 2746, and words and expressions used in this permit which are also used in the Regulations shall have the same meanings as in those Regulations.

"*Landfill Infrastructure*" means any specified element of the:

- permanent capping;
- temporary capping (i.e. engineered temporary caps not cover materials);
- leachate abstraction systems;
- leachate transfer, treatment and storage systems;
- surface water drainage systems;
- leachate monitoring wells;
- groundwater monitoring boreholes;
- landfill gas monitoring boreholes;
- landfill gas management systems;

within the site.

"*Landfill Regulations*" means the Landfill (England and Wales) Regulations SI 2002 No. 1559, and words and expressions used in this permit which are also used in the Regulations shall have the same meanings as in those Regulations.

"*Land Protection Guidance*" means Agency guidance "H7 - Guidance on the protection of land under the PPC Regime: Application site report and site protection monitoring programme".

"*Liquids*" means any liquid other than leachate within the engineered landfill containment system.

"*LFTGN 05*" means Environment Agency Guidance for monitoring enclosed landfill gas flares, September 2004.

"*LFTGN 08*" means Environment Agency Guidance for monitoring landfill gas engines, September 2004.

"*New Cell*" means any new cell, part of a cell or other similar new area of the site where waste deposit is to commence after issue of this permit and can comprise:

- groundwater under-drainage system;
- permanent geophysical leak location system;
- leak detection layer;
- sub-grade;
- barriers;

- liners;
- leachate collection system;
- leachate abstraction system;
- separation bund/layer;
- cell or area surface water drainage system;
- side wall subgrade and containment systems;

for the New Cell.

"*No impact*" means that the change made to the construction process will not alter the agreed design criteria, specification or performance.

"notify without delay" and "notified without delay" means that a telephone call can be used, whereas all other reports and notifications must be supplied in writing, either electronically or on paper.

"*PPC Regulations*" means the Pollution, Prevention and Control (England and Wales) Regulations SI 2000 No.1973 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

"*Quarter*" means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

"*Relevant person*" and "*relevant conviction*" shall have the meanings given to them in the Environmental Protection Act 1990

"*Review of the Hydrogeological Risk Assessment*" means a written review of the hydrogeological risk assessment included in the Application, together with any other parts of the Application that addressed the requirements of the Groundwater Regulations. The review shall assess whether the activities of disposal or tipping for the purpose of disposal of waste authorised by the permit continue to meet the requirements of the Groundwater Regulations

"*Site Protection and Monitoring Programme*" means a document which meets the requirements for Site Protection and Monitoring Programmes described in the Land Protection Guidance.

"*Technically competent management*" and "*technical competence*" shall have the meanings given to them in the Environmental Protection Act 1990.

"waste code" means the six digit code referable to a type of waste in accordance with the List of Wastes (England) Regulations 2005, or List of Wastes (Wales) Regulations 2005, List of Wastes (Northern Ireland) Regulations 2005 (as amended), or The Special Waste Amendment (Scotland) Regulations 2004 as appropriate, and in relation to hazardous waste, includes the asterisk

"*Year*" means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means the standards included in Environment Agency Guidance for Monitoring Enclosed Landfill Gas Flares LFTGN 05 or Guidance for Monitoring Landfill Gas Engine Emissions LFTGN 08.

END OF PERMIT

Appendix P – Grid Connection Offer and WPD guidance documents

WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Fabian Meazzo
London Power Associates Ltd
Abbey House
450 Bath Road
Longford
London Heathrow
UB7 0EB

Primary System Design
Toll End Road
Tipton
West Midlands
DY4 0HH

Tel:
0121 6 239312

e-mail:
dsbennett@westernpower.co.uk

Your Reference	**Our Reference**	**Date**
10183/FM/WPD/L001	1554882	21st December 2012

Dear Fabian,

Offer for electricity connection works by Western Power Distribution (West Midlands) plc ("WPD") for a 25MW Incineration generation scheme at Hartlebury Trading Estate, Kidderminster, DY10 4JB ("the Connection Works").

Thank you for your application dated 5th October 2012 for the connection of a 25MW Incineration plant at Hartlebury Trading Estate, Kidderminster, DY10 4JB. I am pleased to provide WPD's **formal offer** to carry out the Connection Works for the customer (the '**Connection Offer**'). This Connection Offer is for WPD to undertake both Non-Contestable and the Contestable connection works.

This Connection Offer comprises this letter (**"the Offer Letter"**) and the following documents:

a) Specific Conditions for Connection Works
b) General Conditions for Connection Works
c) Letter of Acceptance (a form of which is attached), once signed by the Customer;

Some of the expressions used in this Offer Letter are defined in the attached Specific Conditions for Connection Works and General Conditions for Connection Works.

This Connection Offer is open for acceptance for a period of 90 days from the date of this Offer Letter after which time it will, if not accepted, automatically expire.

This connection will not be available for Export Capacity until the works have been completed to change the switchgear at Bishops Wood expected 2015.

In the future some outage periods will be required during the construction works of the proposed Hartlebury Primary Substation.

If you have any queries or are not satisfied with this Offer and after discussion, you and I are unable to reach agreement, I hope you will take the opportunity of talking to my Manager Tony Berndes, Primary System Design Manager (telephone number 0117 933 2101). If, following discussion with the Manager, we still cannot reach an agreement please contact Alison Sleightholm on 0117 9332175, or write to her at Avonbank, Feeder Road, Bristol BS2 0TB. She will investigate and try to resolve the matter with you. Our complaints procedure is available on our website www.westernpower.co.uk If we are unable to resolve your complaint, you will have the right to refer the matter to the Energy Ombudsman for a decision. This is a free and independent dispute resolution service.

If you would like to accept this Connection Offer and confirm your agreement to the terms therein, please complete and return the Acceptance Letter to WPD at the address given at the top of this letter.

If you have any questions or wish to discuss any of the above, please do not hesitate to contact me.

Yours sincerely,

David Bennett
Primary Network Design Engineer
Primary System Design
Western Power Distribution (West Midlands) plc

Specific Conditions for Connection Works

1.0 Definitions

All words and expressions defined in the Offer Letter and the General Conditions for Connection Work shall, unless the context otherwise provides, have the same meanings in these Specific Conditions.

Unless the context otherwise requires, the following words shall have the following meanings:

"Connection Point" means the point at which a supply of electricity may flow between the Distribution System and the Customer's Installation upon Energisation.

"Customer"means Mercia Waste Management, the Marina, Kings Road, Evesham, Worcestershire, WR11 3XZ.

"Firm Connection" means that the Maximum Import Capacity or Maximum Export Capacity is available following a first circuit outage on the Distribution System feeding the Customer.

"**Maximum Export Capacity**" means the maximum amount of electricity expressed in kVA that WPD can accept onto the Distribution System at the Connection Point, as agreed between WPD and the Customer.

"Maximum Import Capacity" means the maximum amount of electricity expressed in kVA that the Customer can take from the Distribution System at the Connection Point, as agreed between WPD and the Customer.

"Point of Connection" means the point on the Distribution System to which the new assets will be connected.

"Premises" means the premises of Oak Drive, Hartlebury Trading Estate, Kidderminster, DY10 4JB as shown on drawing submitted with your application form.

2.0 Technical specification

2.1 Scope of the Connection Works

(a) Connection Assessment

This Connection Offer is based upon a request from the Customer for the connection of a Incineration generation scheme with a Maximum Export Capacity of 25MW. WPD understands that the proposed Customer's Installation will comprise the following:-

- One, 25MW Synchronous generator an output voltage of 11,000V. The site will be capable of parallel operation with WPD's distribution network;
- One, 66,000/11,000V, 25MVA step-up transformers. I understand the impedance of the transformer shall be approximately 0.0997pu on name plate rating;

It is understood that there shall be no electrical interconnection between the proposed new electricity connection and any existing connection at the site.

This connection offer has been prepared on the understanding that the customer does not require a firm connection. The customer should be aware that, under this supply arrangement, in the event of a fault or outage affecting the 66,000V circuit between Stourport - Upton Warren - Redditch North and the generation site, the site will lose its electricity supply for the duration of the repair or outage. For the avoidance of doubt, WPD does not guarantee that the Customer will be able to import or export electricity through the Connection Point at all times. Any connection of load by the Customer to the Distribution System must comply with the requirements of The Distribution Code of Great Britain.

(b) Connection and supply Specification

The characteristics of the Connection Point will be;

Nominal voltage at the connection point: 66 000V
Number of phases: 3
Nominal frequency: 50Hz
Maximum Import Capacity: 3000KW
Maximum Export Capacity: 25MW at unity power factor as measured at the 66kV metering position

(c) *Outline of Connection Works*

The connection offer is based on WPD providing the both the Non Contestable and Contestable connection

1. Install 1600m of 800CU XLPE 66kV underground circuit from O/H line tee position.

2. Supply, install and connect a 66kV substation bay with the following:
   - 1 x circuit breaker
   - 2 x Isolator
   - 1 x voltage transformer
   - 1 x Cable sealing End
   - Relay cabinet for over current/earth fault & interposing relays for telecontrol connection.

3. Supply, install, connect and commission the telecontrol unit with modem, transmitter and antenna. The telecontrol unit is required to give live time operation of the network connected the 66kV metering circuit breaker along with monitoring of the MW & MVAR directional flow.

Note if signal strength is insufficient, then the customer shall accept the cost variation for the installation of a suitable telephone line.

4. Supply, install and connect 110v and 48v battery and chargers. (Customer to install a LV supply adjacent to the unit).

5. The customer shall have to install a separate cubicle for the CT metering of their chosen supplier.