COVENTRY CITY COUNCIL

City of Coventry

ENVIRONMENTAL PROTECTION ACT 1990, SECTIONS 8(8), 12

NOTICE OF REVOCATION

075

To: Surface Technology Plc
Godiva Place
COVENTRY
CV1 5PN

Coventry City Council ("the Council"), in exercise of the powers conferred on it by section 8(8), 12 of the Environmental Protection Act ("the Act"), hereby gives you notice as follows:

(for section 12(1) notices)

1. The authorisation reference **075** is hereby revoked with effect from **19th March 2001.**

Signed on behalf of Coventry City Council

[redacted]

Assistant Director, Environmental Services
The officer appointed for that purpose

Date: 13th February 2001

G/wp/epa/st/authrevoke

SERVICE BY HAND

I, [redacted] ..... being employed as a Domestic Noise Officer in the Housing and Environmental Services Directorate of Coventry City Council hereby certify that the Notice of which this is a copy was ~~served~~/delivered by me to Surface Technology of Godiva Place ..... Coventry on 16th February ~~19~~2001 ... 11-50

Signed [redacted] .....

Your Reference :
Our Reference :
Please ask for :
Direct Dialling No :
Date :

City of Coventry

HOUSING AND ENVIRONMENTAL SERVICES DIRECTORATE
Director Howard T. Farrand
Providing Housing, Environmental and Client Agency Services
Michael J. Green
City Environment Officer
Broadgate House
Broadgate
Coventry, CV1 1NH
Telephone : 01203 83 1832/34
Telecom Gold Mailbox : 76 : END042
Fax : 01203 83 1831

THE ENVIRONMENTAL PROTECTION ACT 1990

The Environmental Protection (Prescribed Processes and Substances) Regulations 1991, SI 472.

The Environmental Protection (Application, Appeals and Registers) Regulations 1991, SI 507.

Authorisation No: 075
Application Received: 1st June 1995

Notice is hereby given that under the Environmental Protection Act 1990 Coventry City Council (hereafter called the Authority) gives authorisation to:

Surface Technology Plc
Godiva Place
Coventry
CV1 5PN
England

Registration No. 2402547

For the surface treatment of metals as described on Page 2 at:

Surface Technology Plc
Godiva Place
Coventry
CV1 5PN

Subject to the conditions specified on the attached pages, Nos 1 to 6, and within the process boundary as indicated on Plan No. 1.

Signed [redacted] Dated 14 day of JUNE 1996
City Environment Officer

1. DESCRIPTION OF PROCESS

1.1 This authorisation is for the use of nitric acid for the surface treatment of metals as described in the Environmental Protection (Prescribed Processes and Substances) Regulations 1991, SI472, Section 6.5 Part B paragraph (a) within the process boundary outlined in red on the attached plan numbered 1 and specifically relate to the processes outlined below.

(i) The delivery to and storage of nitric acid in sealed containers in the outside storage area shown on plan numbered 01.

(ii) The transfer of the nitric acid in sealed acid containers to the electroless nickel line via fork lift truck shown on plan numbered 01.

(iii) The mechanical tipping of nitric acid into process vessels A and B, showed on plan numbered 01, by overhead crane.

(iv) The cleaning and degreasing of aluminium and steel components using a non-solvent caustic agent on the electroless nickel line, and subsequent cold water rinsing.

(v) The surface treatment of aluminium and steel components in process vessels A and B using a 25% nitric acid solution, and subsequent cold water rinsing.

1.2 Any change to the above description must not take place without the prior consent of this Authority.

2. EMISSION LIMITS AND CONTROLS

2.1 All emissions to air from the scrubber stack, shown on plan numbered 01 other than steam or water vapour shall be colourless and free from persistent mist and fumes.

2.2 All emissions to air from the scrubber stack, shown on plan numbered 01 shall be free from droplets in excess of 20 μm aerodynamic diameter.

2.3 All emissions to air from the scrubber stack, shown on plan numbered 01 shall be free from offensive odour outside external factory walls of the premises.

2.4 The emissions of nitrogen oxides from the scrubber stack shown on plan numbered 01 shall not exceed 400 mg/m^3, expressed as one hour mean emission concentration.

2.5 The introduction of dilution air to achieve the emission concentration specified in clause 2.4 is not permitted.

3. MONITORING SAMPLING AND MEASUREMENT OF EMISSIONS

3.1 Emissions from the scrubber stack, shown on plan numbered 01 shall be tested for nitrogen oxides once per year.

3.2 The Local Authority shall be informed at least 14 days in advance of any periodic emission monitoring to comply with Clause 3.1, with details of the time and date monitoring will take place, and the methods to be used.

3.2.1 Periodic monitoring in Clause 3.2 shall not take place without prior written approval from the Local Authority.

3.3 The operator shall submit the results of sampling required in clause 3.2 to this Local Authority within 8 weeks of sampling taking place.

3.4 An olfactory assessment of emissions from the process shall be made at least once a day around the perimeter of the factory premises, where accessible, during operation.

3.5 The results of monitoring to comply with clause 3.4 shall be recorded in a log book. This shall include the date, time and direction, the name of the observer and an assessment of the emissions, in addition to the position of the observer if odour is detected. This log book shall be retained, on site, for a minimum of four years.

3.6 The alkali concentration and scrubber liquor density in the wet scrubber shall be tested at least once per week. These results shall be recorded in the log book outlined in clause 3.5.

3.7 A visual inspection of the scrubber shall take place once per week to ensure proper working order, and liquor circulation. The date of inspection and results of the inspection shall be recorded in the log book outlined in clause 3.5.

3.8 A visual inspection of the droplet and mist elimination equipment in the scrubber shall take place once per week to ensure proper working order. The date of inspection and results of the inspection shall be recorded in the log book outlined in clause 3.5.

4. OPERATIONAL PRACTICE

4.1 Nitrogen oxide emissions shall be contained and vented using lip extraction ducts on process vessels A and B as shown on plan numbered 01, and all process vessels containing water used for cold rinsing of components after nitric acid treatment.

4.2 Dipping of components in process vessels A and B as shown on plan numbered 01, and cold rinsing of metal components following nitric acid treatment, shall only take place whilst the extraction system and scrubber are in operation and in proper working order.

5. PROCESS EXHAUSTS

5.1 Emissions from process vessels A and B as shown on plan numbered 01, and tanks containing water used for cold rinsing of components after nitric acid treatment, shall only be emitted to atmosphere through the scrubber.

5.2 The scrubber stack as shown on the plan numbered 01 shall be a minimum of 3m above roof ridge height of the factory unit and shall have an efflux velocity of 15m/sec.

5.3 The linear velocity within the scrubber stack as shown on the plan numbered 01 shall not exceed 9m/sec.

5.4 All extraction system ducting from process vessels A and B as shown on plan numbered 01, and those process vessels containing water used for the cold rinsing of metal components after nitric acid treatment, shall be leakproof.

5.5 The stack from the scrubber shown as plan numbered 01 shall be leakproof.

5.6 The stack from the scrubber shown on plan numbered 01 shall not be fitted with any restrictions at the final opening and shall discharge vertically.

6. GENERAL OPERATIONS

6.1 Any malfunction or breakdown of the process extraction system or scrubber likely to give rise to uncontrolled nitrogen oxide emissions shall be remedied as soon as is possible and the dipping of metal components in nitric acid and subsequent cold water rinsing shall cease until the fault has been remedied. Any such malfunction or breakdown shall be noted in the log book outlined in clause 3.5, in addition to the remedial action taken.

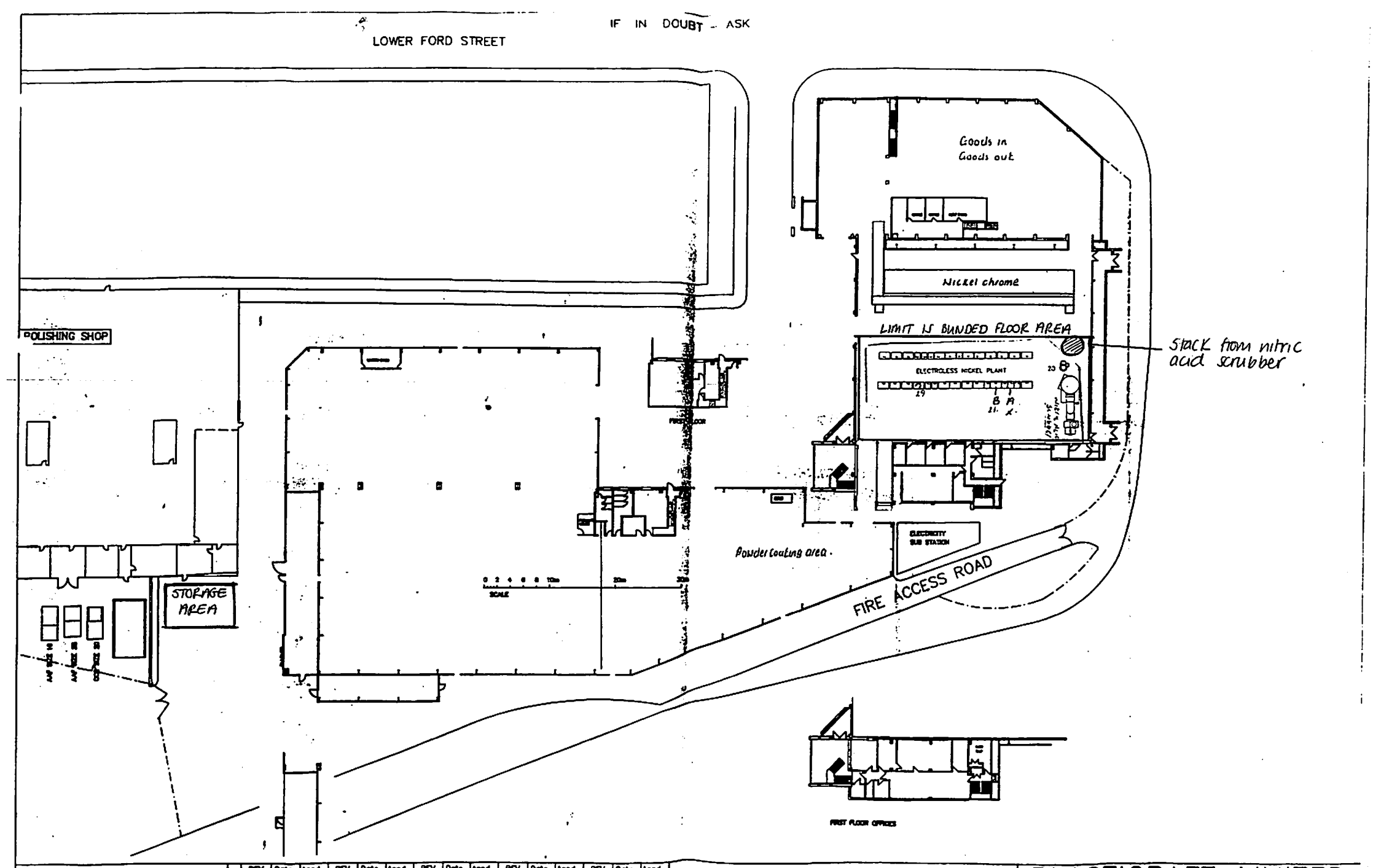
6.2 The process operator shall inform this Local Authority as soon as is possible by telephone of the failure of the scrubber.

6.3 Any incidents likely to give rise to nitrogen oxide emissions which may have an impact on neighbouring residents shall be reported to this Local Authority without delay.

6.4 A copy of this authorisation shall be displayed so it can be conveniently read by persons having duties which are or maybe affected by this authorisation.

6.5 The operator shall supply, to this Authority, on demand and without charge, a copy of all or part of the monitoring records kept in accordance with this authorisation.

epa/surtech2



Amendments	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.
	A	28.04.93																

1) BUILDING CONTROL OFF

PROJECT '92

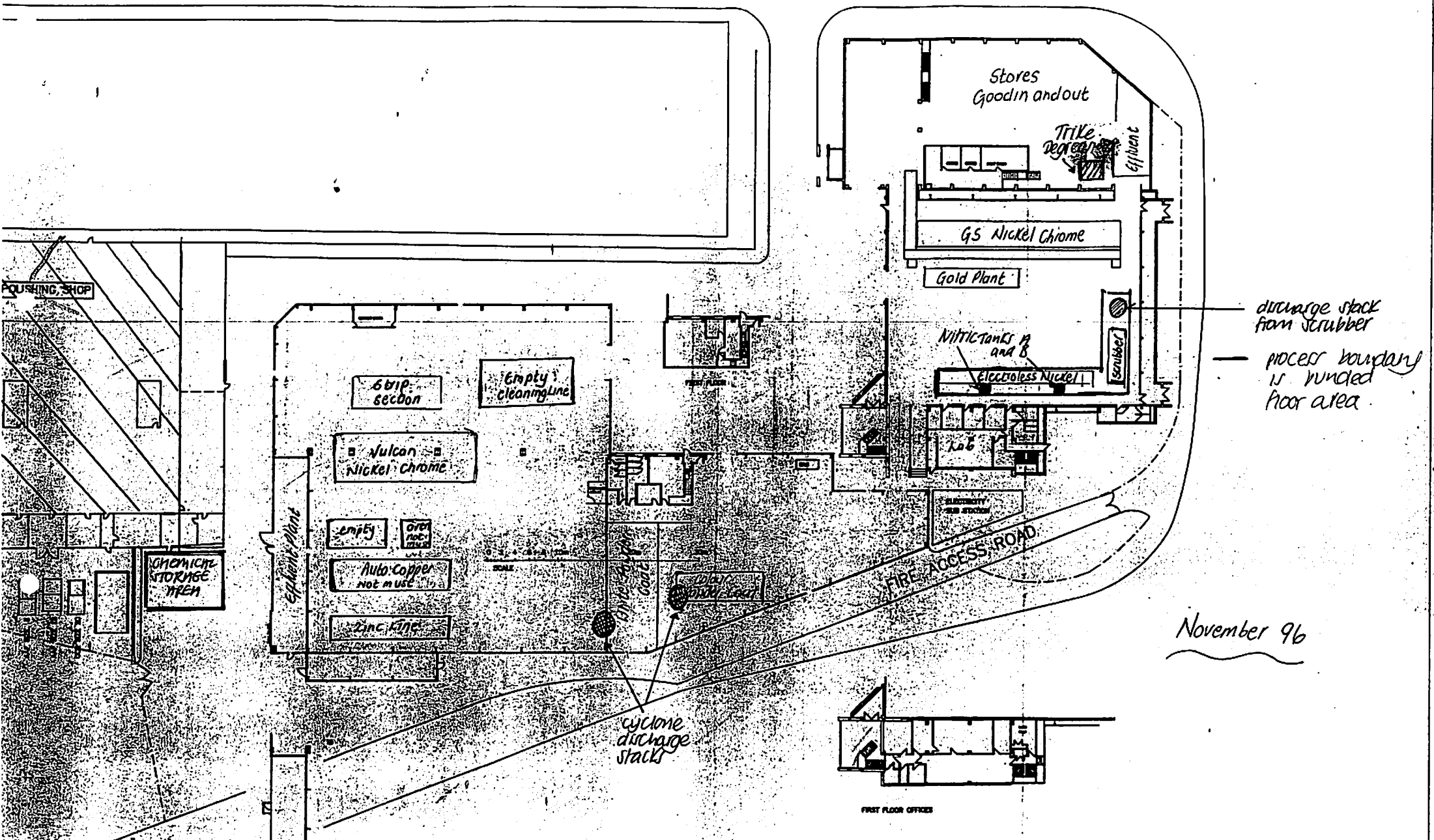
Client. SURFACE TECHNOLOGY PLC

PLASTICRAFT LIMITED.
Shenstone Drive, Aldridge. WS9 8TP. Tel.0922 547

Dy.			
Date drawn.	13 JAN 1993	Enq. No.	
Scale.	1:250	Drg. No.	7419-03A

IF IN DOUBT – ASK

LOWER FORD STREET



Amendments	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.
	A	30.04.93																
	BUILDING CONTROL GPT PHASE 2 RE-ISSUED 12.05.93																	

PROJECT '92

Title. GODIVA PLACE, COVENTRY

PLASTICRAFT LIMITED.

Shenstone Drive, Aldridge. WS9 8TP. Tel.0922 54711.

Drawn by. MRB	Checked by.
Date drawn. 13 JAN 1993	Eng. No.

YOU ARE REQUIRED, within a period of **28 days** from the date of service on you of this Notice, to notify the Authority of the action (if any) which you propose to take to ensure that the process is carried on in accordance with the authorisation as varied by this Notice.

Dated 28th February 2000

[redacted]

(Signed).....

(Designation) DIRECTOR

(the Officer appointed for this purpose)

(Magistrates Courts Rules 1968)
Rule 56 (2)

Address for all communications:

Housing and Environmental Services Directorate
Broadgate House
Broadgate
COVENTRY
CV1 1NH

[redacted] employed by Coventry City Council hereby certify that I served THE CO SECRETARY SURFACE TECHNOLOGY with a true copy of the notice recorded delivery at the Post Office situated at 27 Hertford Street Coventry at 4.30 p.m. on 28/2/00 and addressed to GODIVA PLACE, COVENTRY being his/her last known residence/the company's registered office/place of business dated the 28 day of FEB 2000

Signed [redacted]

Delete any words in square brackets which do not apply

NOTE

You have a right of appeal against this Notice to the Planning Inspectorate. If you wish to appeal you must do so in writing within a period of two months beginning with the date of this Notice. You must set out the grounds for your appeal and send to the Planning Inspectorate a copy of this Notice, together with copies of all relevant documents and correspondence. You should also indicate whether you wish the appeal to be dealt with at a hearing or on the basis of written representations. A copy of your Notice of Appeal must also be sent to the Council.

** "Substantial change" is defined in Section 10(7) of the Environmental Protection Act 1990 as "a substantial change in the substances released from the process or in the amount or any other characteristic of any substance so released"; and the Secretary of State may give directions to enforcing authorities as to what does or does not constitute a substantial change in relation to processes generally, any description of process or any particular process.

ENVIRONMENTAL PROTECTION ACT 1990 section 10

NOTICE OF VARIATION OF AUTHORISATION

To **The Company Secretary**

Of **Surface Technology plc, Godiva Place, Coventry, CV1 5PN**

The **Coventry City Council**
(the Authority) has decided that the authorisation to carry out a prescribed process, namely:

the surface treatment of metals

at the premises known as **Surface Technology plc, Godiva Place, Coventry, CV1 5PN**

granted to you by the Council on the **14th** day of **June 1996** under the reference number **075** should be varied in the following manner*

1. In existing clause 2.2 after 'free from droplets' delete 'in excess of 20um aerodynamic diameter.'

2. In existing clause 2.4 after 'emissions of nitrogen oxides' insert '(expressed as nitrogen dioxide equivalent)'.

3. In existing clause 3.1 after 'nitrogen oxides' delete 'once per year' and insert 'every 12 months to demonstrate compliance with clause 2.4'.

4. In existing clause 3.2.1 after 'Periodic monitoring' delete 'in clause 3.2' and insert 'required in clause 3.2'

5. In existing clause 3.3 after 'required in clause' delete '3.2' and insert '3.1'.

(PLEASE SEE ATTACHED)

The date(s) on which the variation(s) are to take effect are†

1. Immediately	2. Immediately	3. Immediately
4. Immediately	5. Immediately	6. Immediately
7. Immediately	8. Immediately	9. Immediately
10. Immediately	11. Immediately	12. Immediately
13. Immediately	14. Immediately	15. Immediately
16. Immediately	17. Immediately	

continued overleaf

Delete any words in square brackets which do not apply

* Specify the variation(s) to the authorisation.

† Specify the effective dates for each variation.

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6. After existing clause 3.3 insert new clause 3.3.1
'3.3.1 The Local Authority shall be notified immediately if the results of the monitoring required by clause 3.1 indicate that the emissions from the scrubber stack exceed the emission limit specified in clause 2.4'.

7. After existing clause 3.4 insert new clause 3.4.1
'3.4.1. a visual assessment of emissions from the scrubber stack shown on plan numbered 01 shall be made once per day during process operation from the perimeter of the factory premises where accessible'.

8. Delete existing clause 3.5 and insert new clause 3.5.

'3.5 The results of monitoring to comply with clauses 3.4 and 3.4.1 shall be recorded in a log book. This shall include the date and time the assessment was undertaken, the name of the observer, an assessment of the emissions and the position of the observer during the assessment period. The log book shall be retained on site for a minimum of 4 years.'

9. After clause 3.5 insert new clause 3.5.1
'3.5.1 The cause of any adverse emissions noted during the monitoring required by clauses 3.4 and 3.4.1 shall be investigated immediately and if necessary process operations shall be adjusted until the cause has been identified and remedied. Remedial action shall be undertaken as soon as is possible and noted in detail in the log book outlined in clause 3.5, in addition to the cause of the adverse emission'.

10. In existing clause 3.6 after 'alkali concentration' delete 'and scrubber liquor density' and after 'once per week' insert 'during operation'

11. After clause 3.7 insert new clause 3.7.1
'3.7.1 The circulation of liquor in the wet scrubber shall be continuously monitored. In the event of the failure of the circulation pump an alarm shall be activated and process operations shall cease until the cause of the failure has been identified and remedied. Such failures, in addition to the remedial action taken, shall be recorded in the process log book outlined in clause 3.5'.

12. In existing clause 5.1 after 'through the scrubber' insert 'via the extraction system'.

13. In existing clause 5.2 after 'efflux velocity of' delete '15m/sec' and insert ' not less than 15m/sec at full load operation'.

14. After existing clause 5.6 insert new clauses 5.7 and 5.8
'5.7 The extraction system serving process vessels A and B as shown on plan numbered 01 and those process vessels used for cold water rinsing of metal components after nitric acid treatment shall be serviced once every 12 months to ensure proper working order. Service records shall be kept for a minimum of 4 years and shall detail the tests undertaken, in addition to any faults noted and repairs made.

'5.8 The wet scrubber shown on plan numbered 01 shall be serviced once every 12 months to ensure proper working order. Service records shall be kept for a minimum of 4 years and shall detail the tests undertaken in addition to any faults noted and repairs made.'

15. In existing clause 6.1 after 'malfunction or breakdown' delete 'of the process extraction system or scrubber likely to give rise to uncontrolled nitrogen oxide emissions shall be remedied and as soon as possible' and insert 'likely to result in adverse emissions shall be investigated and remedied immediately'. In addition after 'the fault has been remedied' insert 'the cause of'.

16. Delete existing clause 6.2 insert new clause 6.2
'6.2 In the event of the failure of the wet scrubber process operations shall cease and the local authority notified immediately. Process operations shall not commence until the cause of the failure has been identified and remedied and approval from the local authority has been given. The cause of the failure and the remedial action taken shall be recorded in detail in the log book outlined in clause 3.5'.

17. In existing clause 6.3 delete 'nitrogen oxide' and insert 'adverse'.

ENVIRONMENTAL PROTECTION ACT 1990 section 10

NOTICE OF VARIATION OF AUTHORISATION

City of Coventry

To **The Company Secretary**

Of **Surface Technology plc, Godiva Place**
Coventry, CV1 5NP

The **Coventry City Council**
(the Authority) has decided that the authorisation to carry out a prescribed process, namely:

the surface treatment of metals

at the premises known as **Surface Technology plc**

granted to you by the Council on the **14th** day of **June 96** under the reference number **075** should be varied in the following manner*

1. In existing clause 1.1 after "SI472, section" delete "6.5 Part B paragraph (a)" and insert "4.3 Part B".

2. In existing clause 1.1 (v) delete "1% and 6%".

(PLEASE SEE ATTACHED)

The date(s) on which the variation(s) are to take effect are†

1. Immediately
2. Immediately

continued overleaf

Delete any words in square brackets which do not apply

* Specify the variation(s) to the authorisation.

† Specify the effective dates for each variation.

YOU ARE REQUIRED, within a period of **28 days** from the date of service on you of this Notice, to notify the Authority of the action (if any) which you propose to take to ensure that the process is carried on in accordance with the authorisation as varied by this Notice.

~~[In the opinion of the Authority, the action to be taken by you in consequence of this Variation Notice will involve a substantial change** in the manner in which the process is being carried on.]~~

Dated 13th October 1998

(Signed).....[redacted]

(Designation).....DIRECTOR.....
(the Officer appointed for this purpose)

Address for all communications:

Housing and Environmental Services Directorate
Broadgate House
Broadgate
COVENTRY
CV1 1NH

Delete any words in square brackets which do not apply

NOTE

You have a right of appeal against this Notice to the Planning Inspectorate. If you wish to appeal you must do so in writing within a period of two months beginning with the date of this Notice. You must set out the grounds for your appeal and send to the Planning Inspectorate a copy of this Notice, together with copies of all relevant documents and correspondence. You should also indicate whether you wish the appeal to be dealt with at a hearing or on the basis of written representations. A copy of your Notice of Appeal must also be sent to the Council.

** "Substantial change" is defined in Section 10(7) of the Environmental Protection Act 1990 as "a substantial change in the substances released from the process or in the amount or any other characteristic of any substance so released"; and the Secretary of State may give directions to enforcing authorities as to what does or does not constitute a substantial change in relation to processes generally, any description of process or any particular process.

epa/surftecvar

CERTIFICATE OF SERVICE BY POST
(Magistrates Courts Rules 1968)
Rule 55 (2)

[redacted] a Clerical Assistant
yed by Coventry City Council, hereby
ty that I served ....MRS. T. COLLINS.
a true copy of this notice, by the
ded delivery service posted by me at the
Office situated at 21 Hertford Street,
ntry at ..... a.m/p.m on ...14.10.98.
addressed to SURFACE TECH. GODIVA PLACE
g his/her last known residence/the
pany's registered office/place of business
ated the ....14. day of ..10.98..... .....

Signed .... [redacted]

ENVIRONMENTAL PROTECTION ACT 1990 section 10

NOTICE OF VARIATION OF AUTHORISATION

To **Surface Technology plc**

Of **Godiva Place, Coventry, CV1 5PN**

The **Coventry City Council**
(the Authority) has decided that the authorisation to carry out a prescribed process, namely:

the surface treatment of metals

at the premises known as **Surface Technology plc**

granted to you by the Council on the **14th** day of **June 1996** under the reference number **075** should be varied in the following manner*

1. In clause 1.1 before 'plan numbered 1' insert 'revised plan numbered 01'.

2. In clause 1.1(v) delete '25% nitric acid solution' and insert '1% and 6% nitric acid solution'.

(PLEASE SEE ATTACHED)

The date(s) on which the variation(s) are to take effect are†

1. Immediately
2. Immediately

continued overleaf

Delete any words in square brackets which do not apply

* Specify the variation(s) to the authorisation.

† Specify the effective dates for each variation.

YOU ARE REQUIRED, within a period of **28 days** from the date of service on you of this Notice, to notify the Authority of the action (if any) which you propose to take to ensure that the process is carried on in accordance with the authorisation as varied by this Notice.

~~[In the opinion of the Authority, the action to be taken by you in consequence of this Variation Notice will involve a substantial change** in the manner in which the process is being carried on.]~~

Dated 13th December 1996

[redacted]

(Signed).....

(Designation).....DIRECTOR.....
(the Officer appointed for this purpose)

Address for all communications:

Housing and Environmental Services Directorate
Broadgate House
Broadgate
COVENTRY
CV1 1NH

Delete any words in square brackets which do not apply

NOTE

You have a right of appeal against this Notice to the Secretary of State for [the Environment] [~~Wales~~]. If you wish to appeal you must do so in writing within a period of two months beginning with the date of this Notice. You must set out the grounds for your appeal and send to the Secretary of State a copy of this Notice, together with copies of all relevant documents and correspondence. You should also indicate whether you wish the appeal to be dealt with at a hearing or on the basis of written representations. A copy of your Notice of Appeal must also be sent to the Council.

** "Substantial change" is defined in Section 10(7) of the Environmental Protection Act 1990 as "a substantial change in the substances released from the process or in the amount or any other characteristic of any substance so released"; and the Secretary of State may give directions to enforcing authorities as to what does or does not constitute a substantial change in relation to processes generally, any description of process or any particular process.

1. Application Form

Her Majesty's Inspectorate of Pollution
THE ENVIRONMENTAL PROTECTION ACT 1990, SECTION 6

APPLICATION FOR AN AUTHORISATION UNDER IPC (to be completed instead of Page 1 of the application form)

AL8487

GENERAL DETAILS

Is this an application *to vary* an existing permission? YES/NO*

If YES, please state existing permission number _____
If NO, please provide sufficient detail [1] for HMIP to identify any permissions you have, or applications you may have made for these premises to HMIP under

i) Part 1 of the Environmental Protection Act 1990;
ii) The Radioactive Substances Acts of 1960 or 1993;
iii) The Control of Industrial Air Pollution Regulations 1989 (SI 318) or whether;
iv) A referral has been made to the Secretary of State under the terms of the Water Industry Act 1991

_____

_____

Section 1: OPERATOR'S DETAILS

1.1. Operator's Name Surface Technology plc

1.2. Type of Company

✓	Tick as appropriate		✓
✓	Public Limited Company	Limited Liability Company	
	NHS Hospital	NHS Trust	
	Partnership	Sole Trader	
	Educational Establishment	Other (specify type) _____	

1.3. Companies House Registration Number (where appropriate) _____

[1] Provide details for only the most recent application or permission

1.4. **Operator's Registered Office Address** (if no registered office address please give principal place of business)

Registered [2] Address: Norman Hay PLC

Postal Locality: Godiva Place
Postal Town: Coventry
County: Warwickshire
Postcode: CV1 5PN

1.5. **Address where the process is carried out**

Address: Surface Technology

Postal Locality: Godiva Place
Postal Town: Coventry
County: Warwickshire
Postcode: CV1 5PN

1.5.1. National Grid Reference: SP 3404 7464 (eight characters)

1.6. **Operational contacts**

1.6.1. Please give details of the principal contact on matters relating to the operation of the process.

Operational Contact's Name: M. Goodenough

Operational Contact's Post/Position: Operations Manager

1.6.2. If the contact is not an employee of the operator, please give details of his/her employer.

Organisation Name: N/A

1.6.3. Please give the address of the operational contact.

Address: Surface Technology

Postal Locality: Godiva Place
Postal Town: Coventry
County: Warwickshire
Postcode: CV1 5PN
Tel No: 0203 258464

[2] Delete if appropriate

1.7. Application form contacts

1.7.1. Please give details of the principal contact on matters relating to the content of this application form.

Application Contact's Name: Mark Goodenough

Application Contact's Post/Position: operations Manager

1.7.2. If the contact is not an employee of the operator, please give details of his/her employer.

Organisation Name: n/a

1.7.3. Please give the address of the application contact.

Address: Surface Technology

Postal Locality: Addison place
Postal Town: Coventry
County: Warwickshire
Postcode: CV1 5PN
Tel No: 0203 258464

Section 2: OTHER DETAILS

2.1. National Rivers Authority (NRA)

Local NRA Region Name: Severn Trent Region

iii) Address (including post code) to which invoices should be s[illegible]

Name: surface technology PLC
Godiva Place
Coventry
Warwickshire
CV1 5PN

Official Use only

New operator account: Yes/No

Invoicee code: C19542

Date: 31/11/94

Den'ms.

Contact

Name: M. Goldenberg
Tel. No.: 0203 258444

iv) Application Fee *(cheques should be made payable to: "HER MAJESTY'S INSPECTORATE OF POLLUTION")*
PAYMENT BY DIRECT DEBIT & CREDIT CARDS NOT ACCEPTED

Amount attached to application: £ 2500

Amount recd.:

Date:

Number of components: one

Sign.:

Description of components contained within process *(see charging scheme)*: Acid forming oxides of nitrogen at less than 2000 tonnes

Process code:

Schedule reference number and process type: 4.3 Acid processes

v) Is this an application for a mobile process? ~~Yes~~/No*

vi) Borough or District Council area in which premises are located *(if mobile process then local district council of principal place of business)*: Coventry County Council

vii) Waste Regulation Authority area: Walsall

viii) Are there any plans to, or do you discharge a Trade Effluent to sewer? Yes/No*

If Yes, please provide name of Sewerage Undertakers: Severn Trent plc

ix) Are there any plans to, or do you currently, discharge effluent to controlled waters? ~~Yes~~/No*

Official Use only

x) Are there any sites of special scientific interest (SSSI) within 1 mile of the process? ~~Yes~~/No*

If Yes, please detail:

xi) Is there any information contained within this application that you wish to be kept from the public register on the grounds of commercial confidentiality? Yes/No*

All information contained within this application will be made available to the public unless there is a request to withold any of it. Any such request should provide a full justification for why the information needs to be withheld.

xii) Have you given Notice to the Secretary of State (Environment) that information contained in this application should be excluded from the public register in the interest of national security? ~~Yes~~/No*

If Yes then please, unless you have already done so, enclose a copy of the Secretary of State's determination

ii) If this is an existing process are there any current documents permitting the release of substances into the environment? Yes/~~No~~*

If YES, please enclose copies of any consents/agreements/authorisations, etc. that are held *(if copies are not available then list and give appropriate reference numbers, where known).*

Applicant's Declaration

I hereby declare that all information contained in this application is, to the best of my knowledge, correct.

Signed *(on behalf of organisation)*:

[redacted]

Position in organisation:
OPERATIONS MANAGER

Organisation name and address:
SURFACE TECHNOLOGY
GODIVA PLACE
COVENTRY
CV1 5PN

Date: 26/1/94

Note: it is an offence under section 23(1)(h) of the Act to provide false or misleading information.

2. Chemical Analysis

FINTEC FINISH LIMITED

Grove Mill, Lumbhole, Kettleshulme, Via Stockport, SK12 7RA. TELEPHONE: (0663) 734696

15 - 12 - 93

F.A.O. Mark. Goodenough.

ELCOTE MP4 MU & MP4 R. :—

Pb	less than	30 p.p.m.
Cd.	"	40 p.p.m.
Hg	"	5 p.p.m.

ELCOTE MP4 M :—

Pb	less than	5000 p.p.m.
Cd.	"	10000 p.p.m.
Hg	"	20 p.p.m.

1/60 counter unit R counter unit M

G. M.

Company Registration No. 1984383

atotech
ATO

Atotech UK Ltd
William Street, West Bromwich,
West Midlands B70 0BE, England.
Telephone: 021-557 3949. Telex: 338790.
General Fax No: 021 557 5607. Executive Fax No: 021 522 4361.

PDL/GEM/G692

22 December, 1993

Dr M Goodenough - General Manager
Surface Technology PLC
Godiva Place
COVENTRY CV1 5PN

C O N F I D E N T I A L

Dear Mark

Here are the cadmium, mercury and lead concentrations in the products, as requested.

Product Code	Description	Cd max	Hg max	Pb max
4123	Nomist MSP-2	0.02 mg/1	0.0002mg/1	17 mg/1
4122	Nomist MSP-F	-	-	-
7512	Chromic Acid	-	-	-
2148	Black Magic RT-A3	0.5 mg/1	0.005 mg/1	0.05 mg/1
3102	Alkavate 358	-	-	150 mg/kg
3405	Uniclean Supersoak	0.075mg/kg	0.0008mg/kg	0.89 mg/kg
3634	Alumseal 1000 A	-	-	0.22 mg/1
3635	Alumseal 1000 B	1 mg/kg	0.01 mg/kg	0.1 mg/kg
3632	Alumseal 1000	0.1 mg/1	0.001 mg/1	0.47 mg/1
6002	Sodium Cyanide	-	-	-
3007	Kuprit Salts	-	-	6.5 mg/kg
1330	Nichem PF-500 A	0.1 mg/1	0.001 mg/1	0.5 mg/1
1331	Nichem PF-500 B	0.1 mg/1	0.001 mg/1	2.9 mg/1
1332	Nichem PF-500 C	0.1 mg/1	0.001 mg/1	19 mg/1
3918	Nichem 1100 A	0.1 mg/1	0.001 mg/1	28 mg/1
3919	Nichem 1100 B	0.1 mg/1	0.001 mg/1	0.5 mg/1
3920	Nichem 1100 C	0.1 mg/1	0.001 mg/1	0.5 mg/1
3939	Nichem 2500 A	9 mg/1	0.001 mg/1	0.5 mg/1
3940	Nichem 2500 B	0.1 mg/1	0.001 mg/1	10 mg/1
3941	Nichem 2500 C	45 mg/1	0.001 mg/1	100 mg/1

This information is provided to you in confidence. I trust that it proves helpful to you.

With best regards.

Yours sincerely

[redacted]

PETER LONGFIELD
BUSINESS MANAGER - FUNCTIONAL

3. Water Consents

Severn Trent Water

SEVERN TRENT WATER LIMITED
COVENTRY & NORTH WARKS. DISTRICT
SHERBOURNE HOUSE
ST. MARTINS ROAD
COVENTRY CV3 6SD
TELEPHONE: 0203 693333
TELEX: 311343
TELEFAX: 0203 693333 EXT. 3513

YOUR REFERENCE

OUR REFERENCE

JW/ /

Dear Sirs,

Trade Effluent Control and Charging Scheme
Notice of Charges for 1992/93 to Existing Dischargers

Severn Trent Water has agreed its main charges for 1992/93. The standard regional charge per cubic metre was set at 35.46 pence. The elements of the charges are set out below:-

	Standard Unit Charge pence per cubic metre 1992/93 p
Conveyance	9.88
Treatment - Volumetric	9.07
- Biological	10671 (27.51p/kg)
- Sludge	5.84 (18.09p/kg)
	35.46
Standard Strengths	
COD (mg/litre)	388
SS (mg/litre)	323

The increase in trade effluent charges for the individual discharger will depend primarily on the volume and strength of the effluent.

There is a minimum charge of £90.00 per year.

The charge for discharge of used water, where allowed, to surface water sewers is 4.84 pence per cubic metre.

Continued.....

The charges for effluents of regionally agreed strengths are as follows:-

	1992/93 p/m^3
Car Wash Effluent	21.86
Launderette Effluent	39.94
Gas Holder Seal Water	22.09
Paint Stripping Effluent	30.94

Please contact the District staff at the above address if you require any further information on the charging for trade effluent.

Yours faithfully,

[redacted]

J.Wild
Industrial Services Manager

Severn Trent Water Limited
Water Industry Act 1991

Consent to the discharge of trade effluent to the public foul water sewer

To: Surface Technology plc.,
Godiva Place,
Coventry,
CV1 5PN.

Whereas

On the seventh day of February 19 92, a trade effluent notice was, in pursuance of the provisions of the Water Industry Act 1991 served by you on Severn Trent Water Limited in respect of the trade premises known as

Surface Technology Plc

and situated at Godiva Place,
Coventry,
CV1 5PN.

Now Therefore Severn Trent Water Limited (hereinafter called "The Sewerage Undertaker") Hereby Consent to the discharge of trade effluent from the above-mentioned premises into the public foul water sewers subject to the following conditions and not otherwise:

Sewer Affected

1. The public sewer into which the trade effluent may be discharged is the foul water sewer situated in
Godiva Place, Coventry

Nature or composition

2. The trade effluent to be discharged shall consist solely of waste waters specified in the trade effluent notice served in respect of the premises and derived from
Contaminated Surface Water

Maximum volume

3. The maximum volume of trade effluent to be discharged in any continuous period of 24 hours shall not exceed 360 cubic metres

Maximum rate

4. The highest rate at which the trade effluent may be discharged shall not exceed 10.0 litres per second

Period of Discharge

5. The trade effluent shall only be discharged into the public sewer between 00.00 hours and 24.00 hours

Quality conditions

6. a. The trade effluent to be discharged shall not contain any of the substances or properties listed in Appendix I hereto in amounts or proportions other than those which comply with the limits there stated and shall not contain any substances or properties not listed in Appendix I except with the prior written permission of the Sewerage Undertaker and on such terms and conditions as are set out therein.

b. The trade effluent to be discharged shall not contain any prescribed substances listed in Schedule 1 to the Trade Effluents (Prescribed Processes and Substances) Regulations 1989 insofar as they are in a concentration greater than the background concentration (as defined in the said Regulations).

c. Where the trade effluent derives from a prescribed process mentioned in Schedule 2 to the said Regulations, it shall not contain asbestos (as defined in the said Regulations) and chloroform in a concentration greater than the background concentration (as defined in the said Regulations);

Inspection chamber

7. An inspection chamber or manhole shall be provided and maintained in connection with each pipe through which the trade effluent is to be discharged into the public sewer, and such inspection chamber or manhole shall be so constructed and maintained as to enable a person readily to obtain samples at any time of the trade effluent so discharged

Quality and volume measurement

8. (a) Apparatus adequate for measuring and automatically recording the volume, rate and composition of trade effluent so discharged shall be provided with every such pipe and such apparatus shall be maintained and tested to the satisfaction of the Sewerage Undertaker.

(b) If the measuring and recording apparatus ceases to record or is suspected of not measuring correctly, then the Sewerage Undertaker shall have the right to make estimates of the volume and composition of the trade effluent until such time as the said apparatus is again operating to the satisfaction of the Sewerage Undertaker.

(c) The foregoing provisions of this condition shall be of no effect so long as there is provided and maintained to the satisfaction of the Sewerage Undertaker some other method approved by the Sewerage Undertaker of sampling the trade effluent or determining, measuring and recording the volume and composition of the trade effluent so discharged.

(d) Records of the volume and composition of the trade effluent discharged into the sewer shall be kept available at all times for inspection by any authorised representative of the Sewerage Undertaker and copies of such records shall be sent to the Sewerage Undertaker on demand.

Payment

9. Payment shall be made to the Sewerage Undertaker for the reception, treatment and disposal of the trade effluent discharged into the public foul water sewer in accordance with the Sewerage Undertakers Charging Scheme in force from time to time.

All sums payable to the Sewerage Undertaker under this condition shall become due and payable on demand.

Dated 1ST Day of APRIL 1992

For and on behalf of the Sewerage Undertaker

[redacted]

..... District [redacted]

Address of District

Severn Trent Water Ltd.,
Coventry & N.Warks. District,
Sherbourne House,
St. Martins Road,
Finham,
Coventry,
CV3 6SD.

NOTE: Your attention is drawn to the right of appeal to the Director General of Water Services under the provisions of Section 122 of the Water Industry Act 1991.

1.	The trade effluent shall have a pH value of not less than 6 nor greater than 10 in the recognised scale.	
2.	The Chemical Oxygen Demand of the trade effluent shall not exceed 600	milligrams per litre.
3.	The Suspended Solids in the trade effluent shall not exceed 600	milligrams per litre.
4.	The total of tin in the trade effluent shall not exceed 2.0	milligrams per litre as metal.
5.	The total of chromium in the trade effluent shall not exceed 6.0	milligrams per litre as metal.
6.	The total of copper in the trade effluent shall not exceed 4.0	milligrams per litre as metal.
7.	The total of lead in the trade effluent shall not exceed 4.0	milligrams per litre as metal.
8.	The total of nickel in the trade effluent shall not exceed 4.0	milligrams per litre as metal.
9.	The total of zinc in the trade effluent shall not exceed 10.0	milligrams per litre as metal.
10.	The total of tin, copper, chromium, lead, nickel and zinc in the trade effluent shall not exceed as metals 25.0	milligrams per litre.
11.	The total of cyanides (expressed as CN) in the trade effluent, excluding ferrocyanide and ferricyanide, shall not exceed 5.0	milligrams per litre.
12.	The effluent shall be free from physically separable, dispersed or emulsified oil or soluble oil.	
13.	The temperature of the trade effluent shall not exceed 43	degrees Centigrade

A shaken sample to be used except for COD where the sample shall be supernatant after 1 hour settlement.

Severn Trent Water

Trade effluent charge calculation

The payment to be made by the occupier(s) of the premises from which the trade effluent is discharged for the whole or any part of any period of twelve calendar months commencing on 1 April in any year shall be calculated as follows:

1. The Volume of trade effluent discharged in cubic metres multiplied by C, where

$$C = R + V + \frac{Ot}{Os} B + \frac{St}{Ss} S$$

C = Total charge per cubic metre of trade effluent.

R = One third of the amount determined by the Sewerage Undertaker as the average cost to the Sewerage Undertaker for the year of charge of receiving into its sewers (other than those used solely for surface water) and conveying one cubic metre of sewage to the Sewerage Undertaker's sewage treatment works.

V = The amount determined by the Sewerage Undertaker as the average cost for the year of charge of primary treatment and other volumetric treatment costs in the treatment of one cubic metre of sewage at the Sewerage Undertaker's sewage treatment works.

Ot = The Chemical Oxygen Demand (COD) of the trade effluent in milligrams per litre (mg/l) after one hour quiescent settlement.

Os = The estimated average Chemical Oxygen Demand (COD) of settled sewage in milligrams per litre (mg/l) at the Sewerage Undertaker's works as determined by the Sewerage Undertaker for the purpose of the year of charge.

B = The amount determined by the Sewerage Undertaker as the average cost to the Sewerage Undertaker for the year of charge of biological treatment of one cubic metre of sewage at the Sewerage Undertaker's sewage treatment works.

St = The total suspended solids in the trade effluent in milligrams per litre (mg/l) at the pH of the trade effluent.

Ss = The estimated average amount of suspended solids in milligrams per litre (mg/l), determined on a shaken sample, in sewage received for treatment at the Sewerage Undertaker's works as determined by the Sewerage Undertaker for the purposes of the year of charge.

S = The amount determined by the Sewerage Undertaker as the average cost to the Sewerage Undertaker for the year of charge, of primary sludge treatment and disposal of one cubic metre of sewage at the Sewerage Undertaker's sewage treatment works.

2. Minimum charge for small volumes: where the product of the volume of trade effluent in cubic metres and the unit charges calculated from the above formula is less than the minimum charge determined by the Sewerage Undertaker for the year of charge, then that minimum charge shall be paid.

3. The Sewerage Undertaker will notify the occupier(s) of the premises from which trade effluent is discharged of the factors in the above formula, on which the Sewerage Undertaker's trade effluent charges will be based for each year of charge, prior to 1 April in any year.

Appendix 4
Water Industry Act 1991

Severn Trent Water

Offences

Your attention is drawn to the provisions of the following Sections:-

Section 121 of the Water Industry Act 1991, which provides inter alia that the occupier of the premises from which trade effluent is discharged in contravention of any condition imposed on a consent shall be guilty of an offence and be liable on summary conviction to a fine not exceeding the statutory maximum or on conviction on indictment, to a fine.

Section 111 of the Water Industry Act 1991, the effect of which is given here below,in relation to a discharge of trade effluent which may not comply with either the description stated by the occupier in the trade effluent notice or with any condition in a consent or direction issued under the Act:-

1. No person shall throw, empty or turn, or suffer or permit to be thrown or emptied or to pass, into any public sewer, or into any drain or sewer communicating with a public sewer:-

   (a) Any matter likely to injure the sewer or drain, or to interfere with the free flow of its contents, or to affect prejudicially the treatment and disposal of its contents; or

   (b) Any chemical refuse or waste steam, or any liquid of a temperature higher than one hundred and ten degrees Fahrenheit, being refuse or steam which, or a liquid which when so heated, is, either alone or in combination with the contents of the sewer or drain, dangerous, or the cause of a nuisance, or injuries or likely to cause injuries to health; or

   (c) Any petroleum spirit, or carbide of calcium.

2. A person who contravenes any of the provisions of this Section shall be liable:-

   (a) On summary conviction to a fine not exceeding the Statutory maximum and to a further fine not exceeding £50 for each day on which the offence continues after conviction;

   (b) On conviction on indictment, to imprisonment for a term not exceeding two years or a fine or both.

3. In respect of the imposition of a daily penalty -

   (a) the Court may fix a reasonable date from the date of Conviction for Compliance with any directions given by the Court; and

   (b) where a Court has fixed such a period, the daily penalty shall not be imposed in respect of any day before the end of that period.

4. In this Section the expression "petroleum spirit" means any such:-

   (a) Crude petroleum

   (b) Oil made from petroleum, or from coal, shale, peat or other bituminous substances; or

   (c) Product of petroleum or mixture containing petroleum,

as, when tested in the manner prescribed by or under the Petroleum (Consolidation) Act 1928, gives off an inflammable vapour at a temperature of less than seventy-three degrees Fahrenheit.

Severn Trent Water
SEVERN TRENT WATER LIMITED
COVENTRY & NORTH WARKS. DISTRICT
SHERBOURNE HOUSE
ST. MARTINS ROAD
COVENTRY CV3 6SD
TELEPHONE: 0203 693333
TELEX: 311343
TELEFAX: 0203 693333 EXT. 3513

YOUR REFERENCE

OUR REFERENCE

JW/

RECORDED DELIVERY

Dear Sirs,

The Water Industry Act 1991

Trade Effluent - Control and Charging

Please find enclosed a copy of your Consent to Discharge Trade Effluent.

The Consent contains conditions which are designed to protect the assets of Severn Trent, receiving watercourses and the people working in these areas. The conditions apply at all times and failure to meet them can result in prosecution under the provisions of the above Acts of Parliament.

Your attention is drawn to Section 7 and Section 8(d) of the consent. Section 7 requires that an inspection chamber or manhole be constructed and maintained to enable a person to readily obtain samples of the Trade Effluent at all times.

Section 8(d) requires you to keep flow records of the Trade Effluent Discharge which should commence from the date of the Consent. You will then be required to submit this information to Severn Trent quarterly on volume return forms supplied to you.

The current charges for trade effluents discharged to sewers are outlined in the enclosed note.

Could you please acknowledge receipt of these documents.

Should you have any questions please telephone the Industrial Waste Section on the above number and ask for the person named below.

Yours faithfully,

[redacted]

J.Wild
Industrial Services Manager.

WHEN TELEPHONING PLEASE CONTACT

Severn Trent Water Limited
ter Industry Act 1991

CONSENT NO. C234.01
DIRECTION NO.2

Direction to vary conditions of consent to discharge trade effluent to the public foul water sewer

To: Surface Technology Plc.,
Godiva Place,
Coventry,
CV1 5PN.

Whereas

Trade effluent is now discharged from the premises known as Surface Technology Plc., and situated at Godiva Place, Coventry, CV1 5PN. under a consent dated 1st October 1987 issued by Severn Trent Water Authority

Now Therefore Severn Trent Water Limited (hereinafter called "The Sewerage Undertaker"). Hereby Direct under the powers conferred on them by Section 124 of the Water Industry Act 1991, that subject as hereinafter specified as om 1st June 1992 the Consent dated the 1st October 1987 be varied and the following conditions substituted for the conditions previously attached thereto.

Sewer affected

1. The public sewer into which the trade effluent may be discharged is the foul water sewer(s) situated in Ford Street

Nature or composition

2. The trade effluent to be discharged shall consist solely of waste waters specified in the trade effluent notice served in respect of the premises and derived from Electroplating and Metal Finishing

Maximum volume

3. The maximum volume of trade effluent to be discharged in any continuous period of 24 hours shall not exceed .....500..... cubic metres

Maximum rate

4. The highest rate at which the trade effluent may be discharged shall not exceed ...6..0..... litres per second

Period of ischarge

5. The trade effluent shall only be discharged into the public sewer between .....00.00..... hours and .....24.00..... hours

Quality conditions

6. a. The trade effluent to be discharged shall not contain any of the substances or properties listed in Appendix I hereto in amounts or proportions other than those which comply with the limits there stated and shall not contain any substances or properties not listed in Appendix I except with the prior written permission of the Sewerage Undertaker and on such terms and conditions as are set out therein.

b. The trade effluent to be discharged shall not contain any prescribed substances listed in Schedule 1 to the Trade Effluents (Prescribed Processes and Substances) Regulations 1989 insofar as they are in a concentration greater than the background concentration (as defined in the said Regulations).

c. Where the trade effluent derives from a prescribed process mentioned in Schedule 2 to the said Regulations,it shall not contain asbestos (as defined in the said Regulations) and chloroform in a concentration greater than the background concentration (as defined in the said Regulations);

Inspection chamber

7. An inspection chamber or manhole shall be provided and maintained in connection with each pipe through which the trade effluent is to be discharged into the public sewer, and such inspection chamber or manhole shall be so constructed and maintained as to enable a person readily to obtain samples of the trade effluent so discharged.

Severn Trent Water

Offences

Your attention is drawn to the provisions of the following Sections:-

Section 121 of the Water Industry Act 1991, which provides inter alia that the occupier of the premises from which trade effluent is discharged in contravention of any condition imposed on a consent shall be guilty of an offence and be liable on summary conviction to a fine not exceeding the statutory maximum or on conviction on indictment, to a fine.

Section 111 of the Water Industry Act 1991, the effect of which is given here below,in relation to a discharge of trade effluent which may not comply with either the description stated by the occupier in the trade effluent notice or with any condition in a consent or direction issued under the Act:-

1. No person shall throw, empty or turn, or suffer or permit to be thrown or emptied or to pass, into any public sewer, or into any drain or sewer communicating with a public sewer:-

   (a) Any matter likely to injure the sewer or drain, or to interfere with the free flow of its contents, or to affect prejudicially the treatment and disposal of its contents; or

   (b) Any chemical refuse or waste steam, or any liquid of a temperature higher than one hundred and ten degrees Fahrenheit, being refuse or steam which, or a liquid which when so heated, is, either alone or in combination with the contents of the sewer or drain, dangerous, or the cause of a nuisance, or injuries or likely to cause injuries to health; or

   (c) Any petroleum spirit, or carbide of calcium.

2. A person who contravenes any of the provisions of this Section shall be liable:-

   (a) On summary conviction to a fine not exceeding the Statutory maximum and to a further fine not exceeding £50 for each day on which the offence continues after conviction;

   (b) On conviction on indictment, to imprisonment for a term not exceeding two years or a fine or both.

3. In respect of the imposition of a daily penalty -

   (a) the Court may fix a reasonable date from the date of Conviction for Compliance with any directions given by the Court; and

   (b) where a Court has fixed such a period, the daily penalty shall not be imposed in respect of any day before the end of that period.

4. In this Section the expression "petroleum spirit" means any such:-

   (a) Crude petroleum

   (b) Oil made from petroleum, or from coal, shale, peat or other bituminous substances; or

   (c) Product of petroleum or mixture containing petroleum,

as, when tested in the manner prescribed by or under the Petroleum (Consolidation) Act 1928, gives off an inflammable vapour at a temperature of less than seventy-three degrees Fahrenheit.

Appendix 3

Severn Trent Water

Trade effluent charge calculation

The payment to be made by the occupier(s) of the premises from which the trade effluent is discharged for the whole or any part of any period of twelve calendar months commencing on 1 April in any year shall be calculated as follows:

1. The Volume of trade effluent discharged in cubic metres multiplied by C, where

$$C = R + V + \frac{Ot}{Os} B + \frac{St}{Ss} S$$

C = Total charge per cubic metre of trade effluent.

R = One third of the amount determined by the Sewerage Undertaker as the average cost to the Sewerage Undertaker for the year of charge of receiving into its sewers (other than those used solely for surface water) and conveying one cubic metre of sewage to the Sewerage Undertaker's sewage treatment works.

V = The amount determined by the Sewerage Undertaker as the average cost for the year of charge of primary treatment and other volumetric treatment costs in the treatment of one cubic metre of sewage at the Sewerage Undertaker's sewage treatment works.

Ot = The Chemical Oxygen Demand (COD) of the trade effluent in milligrams per litre (mg/l) after one hour quiescent settlement.

Os = The estimated average Chemical Oxygen Demand (COD) of settled sewage in milligrams per litre (mg/l) at the Sewerage Undertaker's works as determined by the Sewerage Undertaker for the purpose of the year of charge.

B = The amount determined by the Sewerage Undertaker as the average cost to the Sewerage Undertaker for the year of charge of biological treatment of one cubic metre of sewage at the Sewerage Undertaker's sewage treatment works.

St = The total suspended solids in the trade effluent in milligrams per litre (mg/l) at the pH of the trade effluent.

Ss = The estimated average amount of suspended solids in milligrams per litre (mg/l), determined on a shaken sample, in sewage received for treatment at the Sewerage Undertaker's works as determined by the Sewerage Undertaker for the purposes of the year of charge.

S = The amount determined by the Sewerage Undertaker as the average cost to the Sewerage Undertaker for the year of charge, of primary sludge treatment and disposal of one cubic metre of sewage at the Sewerage Undertaker's sewage treatment works.

2. Minimum charge for small volumes: where the product of the volume of trade effluent in cubic metres and the unit charges calculated from the above formula is less than the minimum charge determined by the Sewerage Undertaker for the year of charge, then that minimum charge shall be paid.

3. The Sewerage Undertaker will notify the occupier(s) of the premises from which trade effluent is discharged of the factors in the above formula, on which the Sewerage Undertaker's trade effluent charges will be based for each year of charge, prior to 1 April in any year.

APPENDIX I

1. The trade effluent shall have a pH value of not less than 6 nor greater than 11 in the recognised scale.

2. The Chemical Oxygen Demand of the trade effluent shall not exceed 600 milligrams per litre.

3. The Suspended Solids in the trade effluent shall not exceed 600 milligrams per litre.

4. The total of tin in the trade effluent shall not exceed 2.0 milligrams per litre as metal.

5. The total of chromium in the trade effluent shall not exceed 6.0 milligrams per litre as metal.

6. The total of copper in the trade effluent shall not exceed 4.0 milligrams per litre as metal.

7. The total lead in the trade effluent shall not exceed 4.0 milligrams per litre as metal.

8. The total of nickel in the trade effluent shall not exceed 4.0 milligrams per litre as metal.

9. The total of zinc in the trade effluent shall not exceed 4.0 milligrams per lite as metal.

10. The total of tin, copper, chromium, lead, nickel and zinc in the trade effluent shall not exceed as metals 25.0 milligrams per litre.

11. The total of cyanides (expressed as CN) in the trade effluent, excluding ferrocyanide and ferricyanide, shall not exceed 5.0 milligrams per litre.

12. The effluent shall be free from physically separable oil.

13. The temperature of the trade effluent shall not exceed 43 degrees Centigrade.

A shaken sample to be used except for COD where the sample shall be supernatant after 1 hour settlement.

Quality and volume measurement

8. (a) Apparatus adequate for measuring and automatically recording the volume, rate and composition of trade effluent so discharged shall be provided with every such pipe and such apparatus shall be maintained and tested to the satisfaction of the Sewerage Undertaker.

(b) If the measuring and recording apparatus ceases to record or is suspected of not measuring correctly, then the Sewerage Undertaker shall have the right to make estimates of the volume and composition of the trade effluent until such time as the said apparatus is again operating to the satisfaction of the Sewerage Undertaker.

(c) The foregoing provisions of this condition shall be of no effect so long as there is provided and maintained to the satisfaction of the Sewerage Undertaker some other method approved by the Sewerage Undertaker of sampling the trade effluent or determining, measuring and recording the volume and composition of the trade effluent so discharged.

(d) Records of the volume and composition of the trade effluent discharged into the sewer shall be kept available at all times for inspection by any authorised representative of the Sewerage Undertaker and copies of such records shall be sent to the Sewerage Undertaker on demand.

Payment

9. Payment shall be made to the Sewerage Undertaker for the reception, treatment and disposal of the trade effluent discharged into the public foul water sewer in accordance with the Sewerage Undertakers Charging Scheme in force from time to time.

All sums payable to the Sewerage Undertaker under this condition shall become due and payable on demand.

Dated 11TH Day of MARCH 1992

For and on behalf of the Sewerage Undertaker

[redacted]

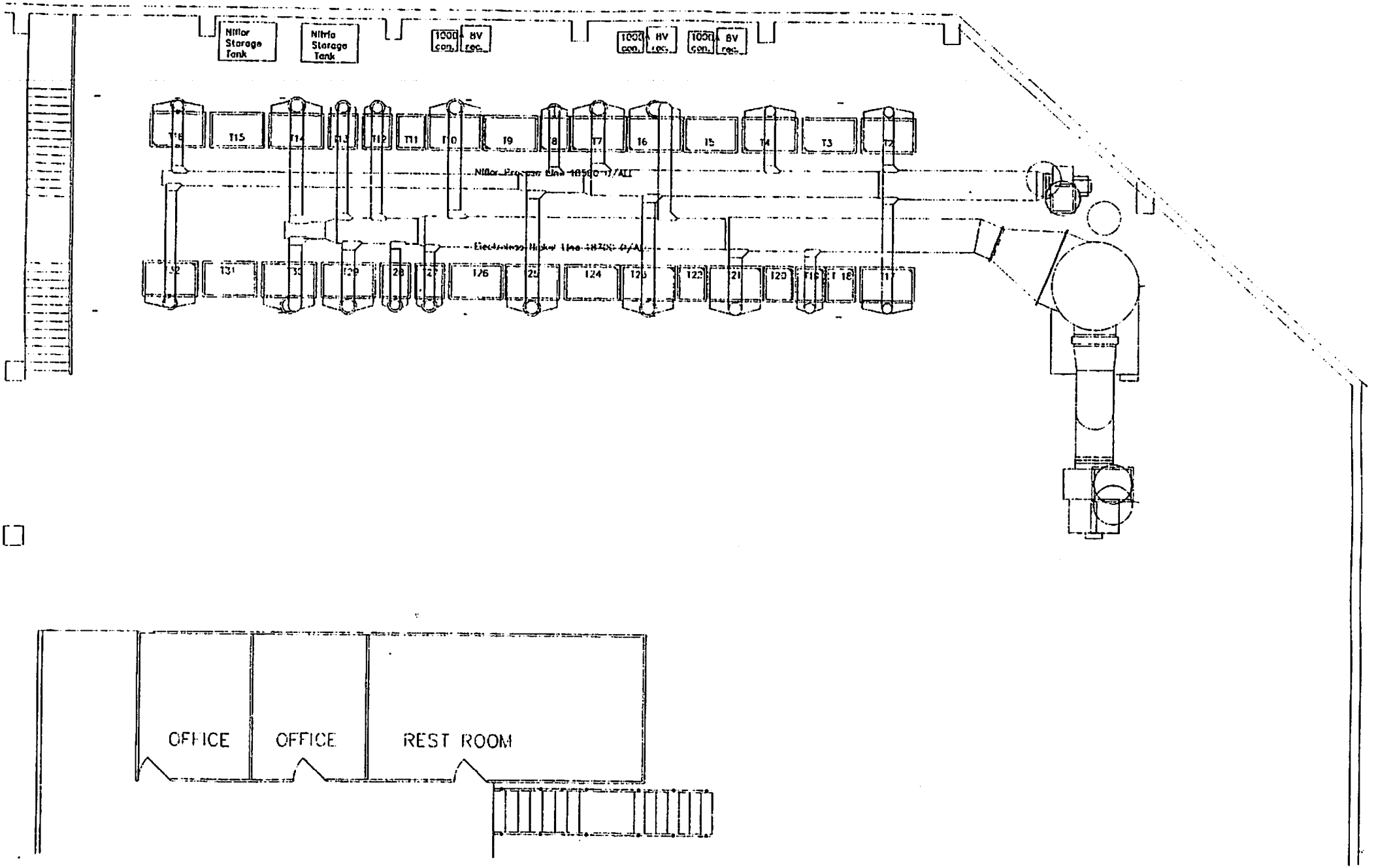
District Manager

Address of District

Severn Trent Water Ltd.,
Coventry & N.Warks. District,
Sherbourne House,
St. Martins Road,
Finham,
Coventry,
CV3 6SD.

NOTE: Your attention is drawn to the right of appeal to the Director General of Water Services conferred by Section 126 of the Water Industry Act 1991.

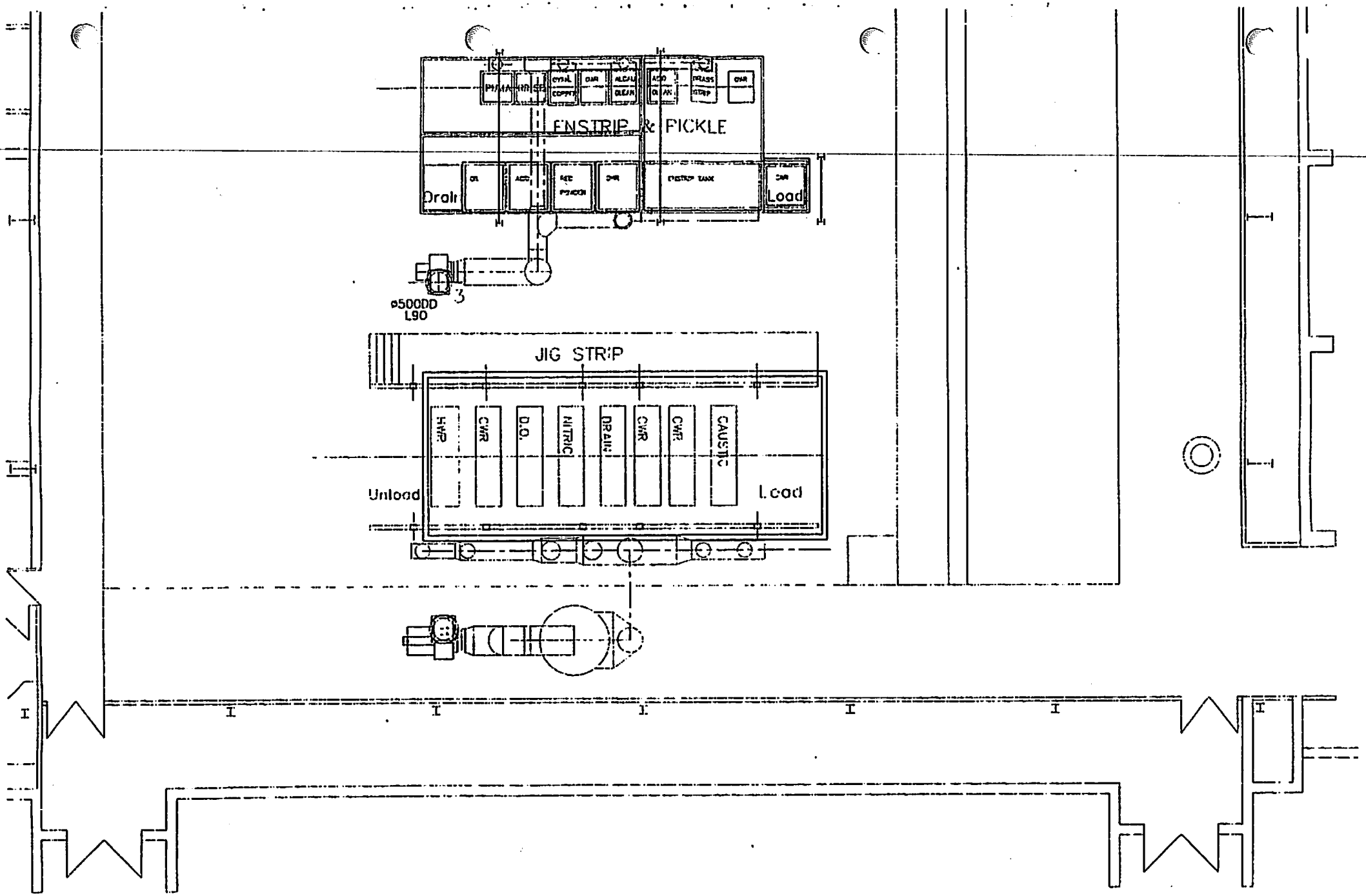
4. Electroless Nickel


Nitlor Storage Tank
Nitrlo Storage Tank
1000 con.
HV rec.
1000 con.
HV rec.
1000 con.
HV rec.
T15
T14
T13
T12
T11
T10
T9
T8
T7
T6
T5
T4
T3
T2
T1
OFFICE
OFFICE
REST ROOM

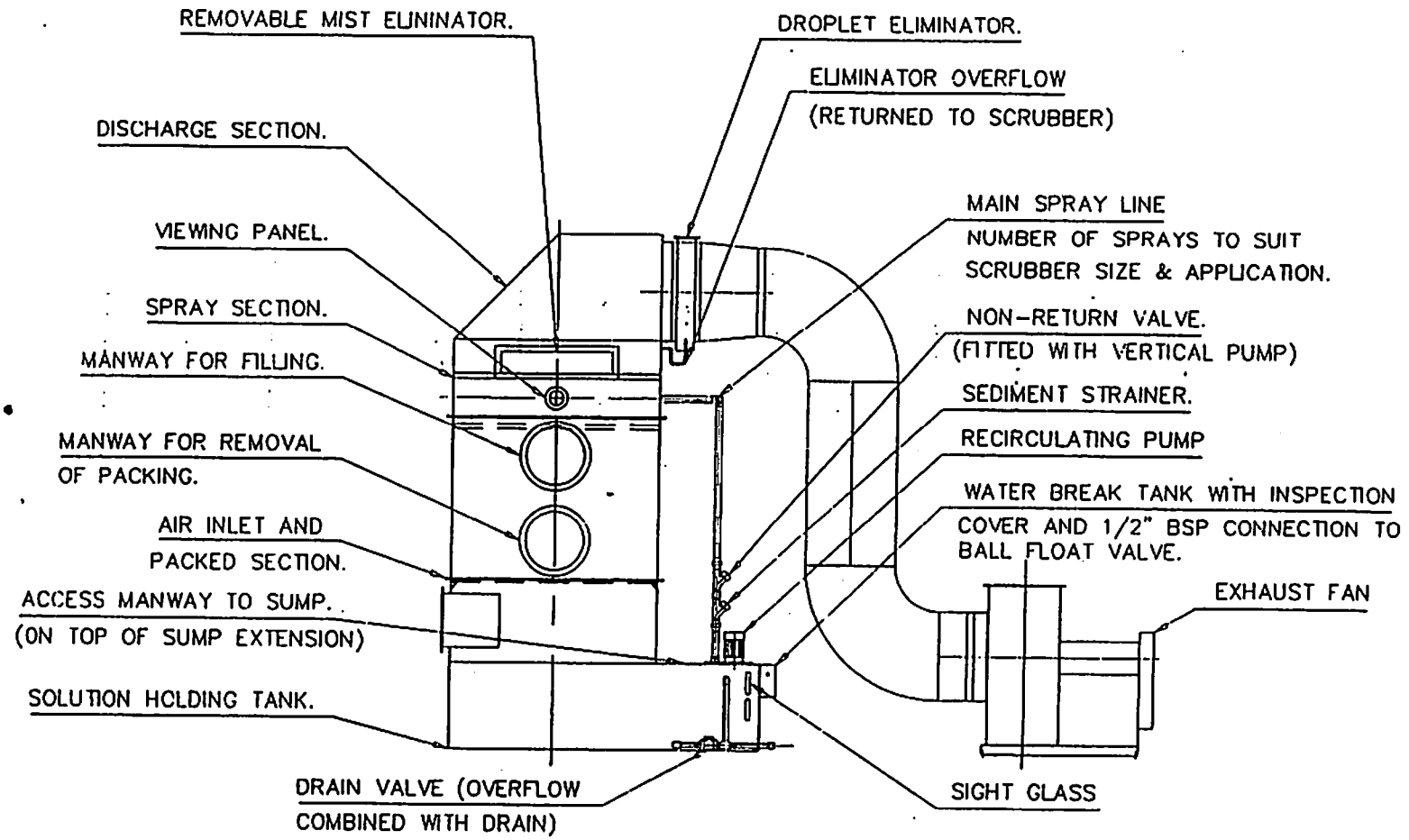
5. *Jig Strip*

J I G S T R I P

	PROCESS	SOLUTION COMPOSITION	VOL/LTS	TEMP	SUPPLIER	TO EFFULENT
TANK 1	Caustic Soda	NaOH (100 g/l)	3000 litres	25 °C	Ellis & Everard	"
TANK 2	Towns Water	Towns Water	3000 litres	25 °C	--------	"
TANK 3	Towns Water	Towns Water	3000 litres	25 °C	--------	"
TANK 4	Drain	----------	3000 litres	-----	--------	"
TANK 5	Acid Etch	Nitric Acid (70%) + 1.87 g/l	3000 litres	25 °C	Ellis & Everard	"
TANK 6	Dragout	Nitric Acid (70%) + 1.87 g/l	3000 litres	25 °C	Ellis & Everard	"
TANK 7	Towns Water	Towns Water	3000 litres	25 °C	--------	"
TANK 8	Towns Water	Towns Water	3000 litres	80 °C	--------	"


ENSTRIP & PICKLE
Drain
Load
ø500DD
L90
JIG STRIP
HWR
CWR
D.O.
NITRIC
DRAIN
CWR
CWR
CAUSTIC
Unload
Load

6. Extraction Information



PLASTICRAFT LTD SHENSTONE DRIVE ALDRIDGE WALSALL WS9 8TP	
CUSTOMER	
TITLE FUME SCRUBBING UNIT.	
DRG No CRAFT-01	DATE JAN 92
DRAWN BY MRB	MOD No

SCRUBBED SYSTEM

Lip extract velocities measured 20th January 1992.

Niflor Line		Electroless Nickel Line	
Tank No	Air Velocity ft/min	Tank No	Air Velocity ft/min
6	5000	19	5000
10	4690	21	5970
12	2235	27	2950
13	2350	28	3000
14	2150	29	6450
		30	8220

Volumetric Measurement

Vp = 0.307" wg, equates to 2219 ft/min
Duct size 36" CSA = 7.06 sq ft
Volume 2219 ft/min x 7.06 = 15660 cu ft/min

Instruments

Solomat MPM 500C
Serial No 224427
Calibrated 28/08/90

Hot wire probe

36" pitot tube

EXTRACT SYSTEMS

Air velocity measurements were taken at the lip extract slots of the non-scrubbed system, also of the scrubbed system using a hot wire probe.

Volumetric measurements were taken for each system using a pitot tube.

The positions of the pitot measuring boles are shown on the attached drawing.

NON SCRUBBED SYSTEM

Lip extract velocities measured 17th December 1991.

Niflor Line		Electroless Nickel Line	
Tank No	Air Velocity ft/min	Tank No	Air Velocity ft/min
2	12100	17	13700
4	2730	23	2600
7	2540	25	4630
8	1850	32	5450
16	5090		

Volumetric Measurement

Vp = 0.395" wg, equates to 2517 ft/min
Duct size 28" CSA = 4.27 sq ft
Volume 2517 ft/min x 4.27 sq ft = 10748 cu ft/min

diameter

ST ELIMINATOR

Supplier: Knitmesh Limited
Sanderson Station Approach
South Croydon
Surrey
CR2 OYY

Description: Knitmesh pad type 9036SL
Polypropylene 2130 Dia 6" thick

Quantity: 1 set

HOIST EQUIPMENT

Supplier: H.F. Cranes Limited
85a Huntington Street
St. Neots
Cambrideshire
PE19 1DU

Description: Kings hoists with chains and pendant
250 kg SWL, single speed
23 metre/min cross travel
8 metre/min hoist speed

Quanity: 3 №

FUME SCRUBBER

	Plasticraft manufacture
Description:	Diameter 2134mm Sump Volume 3.4 cu mtrs Packed bed volume 6 cu mtrs

CIRCULATING PUMP

Supplier:	Thomas Matthews Pumps Limited Unit 5H Lynwell Trading Estate Lynwell Road Manchester M30 9QG
Description:	Lowara Pump Model HTS40-125/22
Quantity:	1 №

SPRAY NOZZLES

Supplier:	Aquaflow PNR Limited 16 Sugarbrook Road Aston Fields Industrial Estate Bromsgrove Worcester
Description:	PVC Spray nozzles ½" BSP Ref DDW/2235/D1
Quantity:	40 №

PACKED BED

Supplier:	Norton Chemical Process Products Kine Street Fenton Stoke on Trent ST4 2LT
Description:	No2 Snowflake
Quantity:	6 cubic metres

AGITATION

Supplier: Becker UK Limited
Unit 32
Bergen Way
Sutton Fileds
Hull
HU8 07Q

Description: 185 cfm @ 2.5 to 2.7 psi
Type, side channel blower
Series SV5-490/1
5.5kw, 415v, 3ph, 50Hz motor

Quantity: 1 №

Description: Inlet filter FK450

Quantity: 1 №

Description: Pressure Relief Valve ST609

Quantity: 1 №

FUME EXTRACT FANS

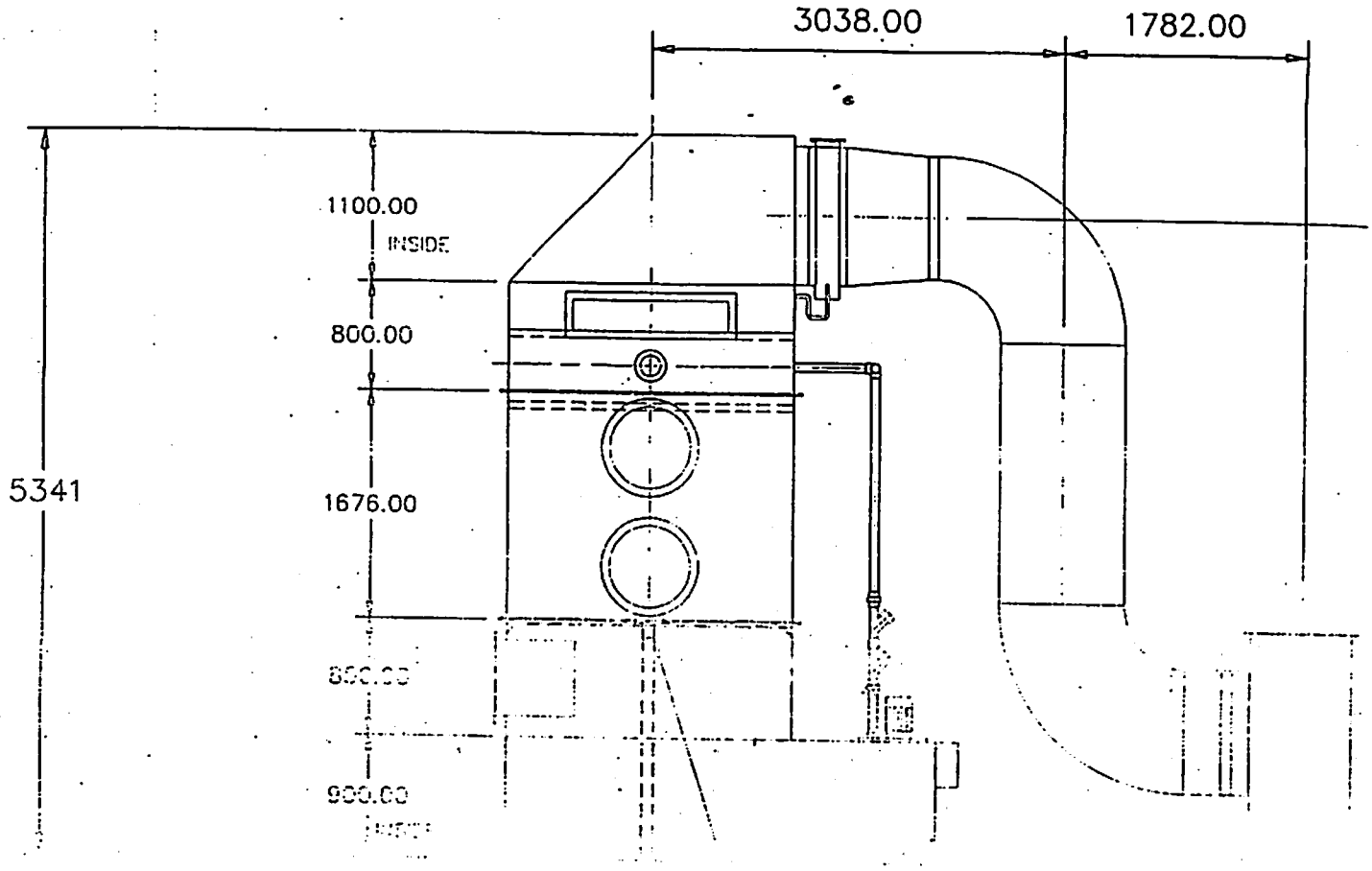
Supplier: Wyman Fume Equipment Limited
14 Dollman Street
Nechells
Birmingham
B7 4RP

Description: 11000 cfm fan @ 2" wg
Type 24 FV Direct Drive
Polypropylene Impeller
15hp 960rpm motor
R90 Discharge viewed from drive side

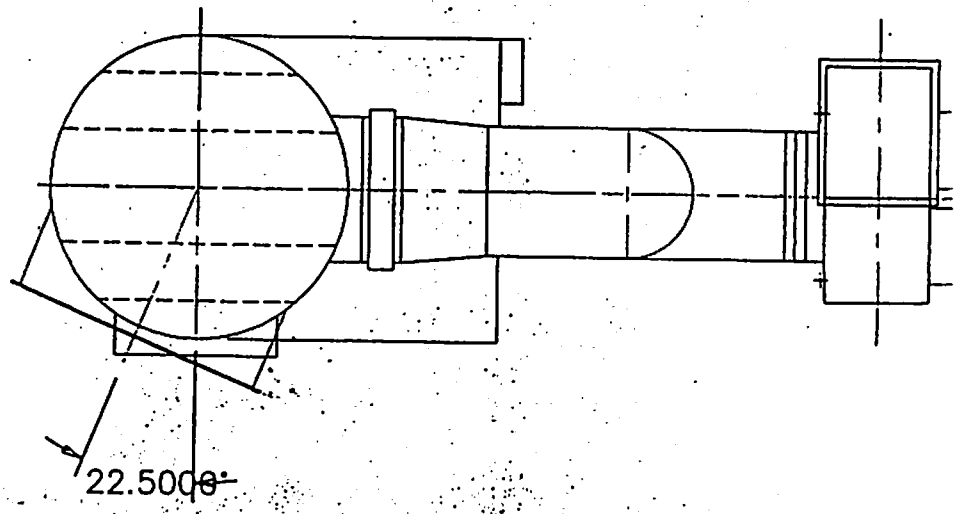
Quantity: 1 №

Description: 13500 cfm fan @ 5" wg
Type 36 FV, U/S, B/D
Polypropylene Impeller
30hp 1460 rpm motor
L90 Discharge viewed from drive side

Quantity: 1 №

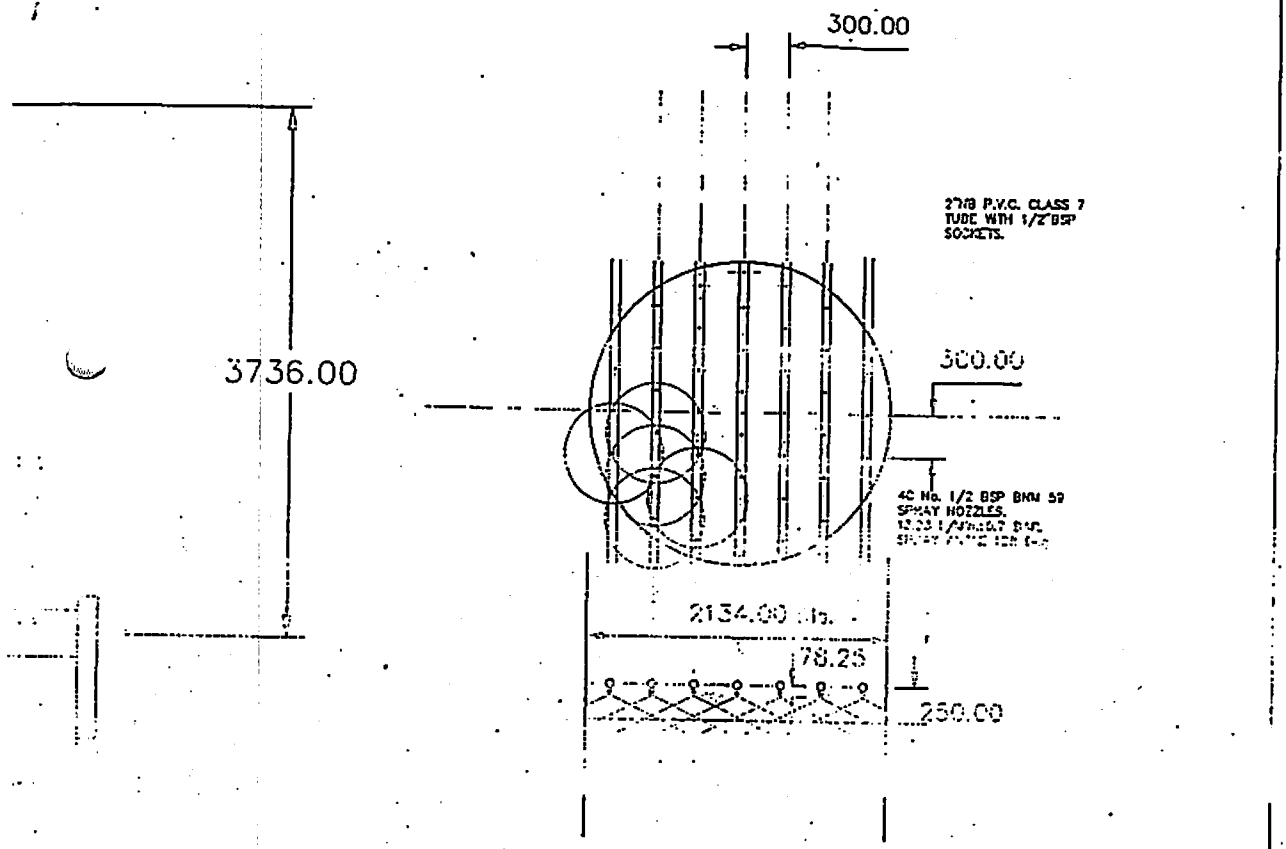


PACK SUPPORT BEAM: 80X80X5 RHS COVERED WITH 3THK P.V.C.
CENTRE POST 76.1 CIRCULAR HOLLOW SECTION INSIDE 3" P.V.C. PIPE. PLATE 9THK. P.V.C. EACH END.



Title. FUME SCRUBBER & SPRAYS.

Client. SURFACE TECHNOLOGY.



PLASTICRAFT LIMITED.	
Shenstone Drive, Aldridge. WS9 8TP. Tel.No.0922 54711.	
Drawn by. M.R.B.	Checked by.
Date drawn.	Eng. No. P7284/91
Scale. 1:25	Drg. No. 7005:05

PLASTICRAFT

Plasticraft Limited
Albrighton House Allport Street Cannock
Staffordshire WS11 1JZ
Telephone (0543) 570100
Facsimile (0543) 572105
VAT No 222 5248 91

FACSIMILE TRANSMISSION

TO: MARK GOODENOUGH

FAX NO:

FROM: MIKE BINSLEY

DATE: 23 DEC 1993

NO. OF PAGES INCLUDING THIS ONE: 2

RE INFORMATION REQUESTED FOR NEW JIG STRIP FACILITY PROPOSED FOR 45.

1. SCRUBBER SUMP CAPACITY 2.3 m^3
2. TOTAL SYSTEM EXTRACT CAPACITY 3.07 m^3/s - 6500 cfm
3. EXHAUST STACK DIAMETER. 660 mm
4. AIRSPEED THROUGH STACK 8.07 m/sec.
5 & 6. LIP DUCT SLOT VELOCITIES & RATES FROM EACH TANK

	slot vel.	EXTRACT RATE
CAUSTIC TANK 8'x2'	10 m/sec.	0.76 m^3/sec.
NITRIC TANK 8'x2'	10 m/sec.	1.46 m^3/sec
Hot Water Rinse 8'x2.25'	10 m/sec.	0.85 m^3/sec

7. MANIFOLD DIAMETER AT SCRUBBER ENTRY 590 mm INSIDE

IN THE EVENT OF AN ERROR IN TRANSMISSION, PLEASE ADVISE BY:
TELEPHONE: 0543-570100

7. Effluent Information

Aston Science Park, Love Lane,
Aston Triangle, Birmingham B7 4BJ.
Tel: 021-359 5361/0981.
Fax: 021-359 2330.

OEH Scientific

Health and Safety for Industry and Commerce

REPORT NO:	OEH/7225/STAK/SS.15
TITLE:	ASSESSMENT OF ATMOSPHERIC EMISSIONS OF ACID FORMING OXIDES OF NITROGEN FROM EXHAUST VENTS ANTE AND POST SCRUBBER UNIT.
CLIENT:	SURFACE TECHNOLOGY PLC GODIVA PLACE COVENTRY CV1 5PN
FOR THE ATTENTION OF:	MR M R GOODENOUGH
DATE OF VISIT:	5 JANUARY 1994
DATE OF ANALYSIS:	11-12 JANUARY 1994
DATE OF REPORT:	17 JANUARY 1994
CLIENT REFERENCE:	PURCHASE ORDER NO. 3938
DISK REFERENCE:	C:\AMIPRO\DOCS\OEH7225.SAM 27 January 1994/ 3:28 AM

DATA PROTECTION REGISTRATION:
B0479 03 4

OEH Scientific Limited
Registered in England No. 1902833
Registered Office above. VAT No. 416985027

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We undertake that we will not knowingly make use or disclose any confidential information or photographs relating to your business which may have come to our knowledge or attention as a result of our visit on site or otherwise as a result of the work carried out by us in connection with the preparation of this report.....

OEH Scientific Limited

If you have any queries or comments regarding this report, please contact the Office Manager, OEH Scientific Ltd. Tel: 021 359 5361

1 OBJECTIVES

The aim of this survey was to assess the nature and quantity the extent of atmospheric emissions of:

i.) acid forming oxides of nitrogen from exhaust vents ante and post scrubber unit;

ii.) volatile organic compounds (as trichloroethylene) from the exhaust stack of a degreasing tank which are potentially released during the cleaning of electroplating tanks and metal degreasing operations respectively.

This survey is intended to provide information for scrubber gas checks for (Part 'A' process under HMIP) and Part 'B' local authority solvent emission checks.

2 INTRODUCTION

The survey described in this report was carried out on 5 January 1994 by Mr M S D Read at the request of Mr M R Goodenough at Surface Technology plc, Godiva Place, Coventry. In accordance with our brief, emphasis was placed mainly on the assessment of i) atmospheric emissions of acid forming oxides of nitrogen and ii) volatile organic compounds (as trichloroethylene) which are potentially generated during the cleaning of process of electroplating tanks and metal degreasing operations respectively.

Production schedules on the date of the survey were described as normal, although whilst monitoring was conducted no aluminium components were plated.

3 DESCRIPTION OF PROCESS

Surface Technology plc specialises in the plating of a variety of pre-formed metal components via the following processes.

The components are initially degreased by being placed in baskets and residual surface oil removed in a degreasing tank containing trichloroethylene. Depending upon the coating required, and the base metal, there are several plating and dipping processes. The processes which give rise to fume that were being monitored in the exhaust system was the following electrodeless plating process.

Degreased components were placed in baskets and subsequently immersed in cleaning, plating, rinsing, etching and final rinsing solutions depending upon the nature of the metal to be coated and the specifications of the coating. After plating and rinsing, the components were dried either by 'dry chemical tank' or by being placed in a warm air environment. Components were finally packaged for despatch.

When "Electroless Nickel" plating solutions had become spent, the solution was drained and the tank cleaned with 35% v/v nitric acid solution and being left overnight. Alternate tanks were cleaned each night. The fumes from the tanks were extracted via cowling around the lid and into the exhaust duct which passed into a scrubber unit containing 6000 litres of an alkali solution to trap acid fumes. Air leaves the scrubber unit and is discharged to atmosphere.

4 ENVIRONMENTAL CONSIDERATIONS

The principal environmental considerations that were addressed during this visit relates to acid forming oxides of nitrogen emitted to atmosphere. Secondary to this is the volatile organic compounds (as trichloroethylene) emitted to atmosphere.

Oxides of Nitrogen

Nitrous oxide, N_2O, is a colourless, non-combustible gas, sweet- tasting and slightly soluble in water. Nitric oxide is a colourless gas slightly soluble in water. Nitric oxide combines with oxygen to form nitrogen dioxide which is a reddish brown gas with a characteristic odour. When nitrogen dioxide comes in contact with water, nitrous oxide and nitric acid are formed. Nitric acid is a colourless liquid when pure, but on exposure to light, the liquid may turn yellowish brown as a result of nitrogen dioxide formation. Nitric acid mist almost always contains nitrogen oxide gases. Nitrogen dioxide decomposes in water.

Exposure to nitrogen oxides is typically a mixed exposure to nitrous fumes which may evolve from various manufacturing processes. Exposure to nitrogen oxides may occur during the manufacture of nitric and sulphuric acid, oxidized cellulose compounds, explosives, rocket propellants, fertilizers, dyes and dyestuffs, pharmaceuticals, and inorganic chemicals such as nitrites, and other nitro compounds. Exposure may also occur during jewellery manufacturing, etching, brazing, lithographic, metal cleaning, textile and food bleaching, glass blowing, electroplating, gas and electric arc welding, and during the nitration of chloroform. Nitrogen oxides also occur in garages from automobile exhaust, in silos from organic material decomposition, in tunnels following blasting, and when nitric acid comes in contact with organic materials.

Nitrogen oxide gases may produce irritation of the eyes and mucous membranes. Prolonged low level exposure may produce yellowish or brownish staining of the skin and teeth. This usually indicates nitric acid exposure. Nitric acid is an extremely corrosive liquid and may cause severe burns, ulcers, and necrosis of the skin, mucous membranes, and eye tissues.

Exposure to high concentrations of nitrogen oxides may result in severe pulmonary irritation and methemoglobenemia. The former is believes to be caused by the nitrogen dioxide portion, while the latter is mainly caused by nitric oxide.

Acute exposure to nitrogen dioxide may produce immediate malaise, cyanosis, cough, dyspnea, chills, fever, headache, nausea, and vomiting. Collapse and death may occur if exposure is sufficiently high. When lower concentrations are encountered, there may be only mild signs of bronchial irritation followed by a five to twelve hour symptom free period. Subsequently, the onset of signs and symptoms of acute pulmonary oedema occur suddenly. Chronic exposure may result in pulmonary dysfunction.

Volatile Organic Compounds (VOC)

VOC are released from virtually any process that employs substances containing organic solvents. The latter, on the other hand, occur in almost every industry that one cares to consider, and the range of solvents employed in blending or as thinners extends from white spirit and industrial methylated spirit to toluene, xylene, alcohols, ketones and other proprietary mixtures.

Solvented products are designed to dry by solvent evaporation, consequently, during manufacture or use, solvent vapours are constantly released to the working and external environments. The rate of solvent release depends on its volatility, the method of use, the surface area of exposed solvent, air temperature, the rate of extraction applied and the overall air space.

The acute effects of occupational exposure to organic solvents have been known for a long time. These include dizziness and fatigue, concentration and memory difficulties, headaches, impairment of physical and neurological functions and mood or behavioural changes. Such symptoms, whilst clearly important in terms of judging exposure limits, are often transient and usually subside following cessation of exposure. On the other hand, very little is known about the existence of chronic and

possibly irreversible effects resulting from repeated exposure to low levels of solvents over several years, especially when present in the surrounding air that is breathed at every instance of the human existence. In fact, recent studies conducted by the World Health Organisation have been very limited in scope and range, and as such have related only to a minority of compounds.

• • •

The Environmental Standard for acid forming oxides of nitrogen (expressed as nitrogen dioxide) is 300 mg/m^3 and 20 mg/m^3 for volatile organic compounds as trichloroethylene (a Class A compound). The limits are at reference conditions (273K, 101.3kPa) without correction for water vapour or oxygen as stated in the Environmental Protection Act (1990) Part I Secretary of State's Guidance - Processes for the manufacture or release of acid forming oxides of nitrogen - Process Guidance Note IPR 4/11.

• • •

The scrubbing solution was sampled and subsequently analysed for pH and nitrate concentration as it was deemed necessary to reinforce discussion on post scrubber concentrations of nitric concentrations of nitric oxide (NO).

5 FIELD SAMPLING

5.1 Acid Forming Oxides Of Nitrogen

Continuous extractive monitoring was conducted in accordance with the following parameters:

PARAMETER	METHOD DETAIL
Monitor	Combustion efficiency analyser - Testo 33
Sampling Period	7 hours

5.2 Bulk Samples Of Scrubbing Solution

Bulk samples were collected via a boiler lowered into the scrubber unit.

5.3 Volatile Organic Compounds (As Trichloroethylene)

Extractive samples were collected in accordance with the following parameters:

PARAMETER	METHOD DETAIL
Monitor	Standard NIOSH charcoal tubes
Sample Mode	Active
Sampling Rate	50 ml/min
Sampling Period	1-2 hours
Pump Type	Negretti Automation C-500 (intrinsically safe) flow calibrated before and after each sampling period.

6 METHOD OF ANALYSIS

6.1 Acid Forming Oxides Of Nitrogen

TECHNIQUE	Flue Gas Optimiser Testotherm Testo 33 Automatic Analyser with continuous monitoring	
ANALYTE	**METHOD REFERENCE**	**DETECTION LIMIT**
Acid forming oxides of nitrogen	OEH Internal Method	1ppm

6.2 Bulk Samples Of Scrubbing Solution

TECHNIQUE		
ANALYTE	**METHOD REFERENCE**	**DETECTION LIMIT**
pH Nitrates	OEH Internal Method	0.01 unit 1mg/l

6.3 Volatile Organic Compounds (As Trichloroethylene)

TECHNIQUE	Solvent desorption/Gas Chromatography	
ANALYTE	**METHOD REFERENCE**	**DETECTION LIMIT**
Volatile Organic Compounds	NIOSH 1022	12µg of trichloroethylene on tube

7 RESULTS

The report lists in tabular form details of the sampling and analytical results for each sample. For ease of interpretation, the data are classified under the following columns:-

- Location of sampling and activity monitored
- Time of sampling
- Analyte details
- Units of measurement
- Environmental Standard release level
- Emission concentration at reference conditions expressed as milligrammes per cubic metre.

8 DISCUSSION

8.1 Acid Forming Oxides Of Nitrogen (See Tables 1 & 2)

Continuous sampling of atmospheric emissions was undertaken on the exhaust vents pre and post scrubber unit respectively. Throughout the monitoring period, concentrations of nitric oxide (NO) varied from less than detection limit (<dl) to 2 mg/m³ pre-scrubber and from <dl to 38 mg/m³ post scrubber. Concentrations of nitrogen dioxide were all less than dl for both pre and post scrubber exhaust vents.

8.2 Bulk Samples Of Scrubbing Solution (See Table 3)

Samples of scrubbing solution taken at the times indicated in Table 2, exhibited pH levels ranging from 4.69 to 4.70 and nitrate levels ranging from 19 to 33mg/l. Recommendations for the scrubber solution and the above NO_x emissions are given in Section 9.

8.3 Volatile Organic Compounds (As Trichloroethylene)

Of the five stack samples taken, all results exceeded the EPA Standard of 20 mg/m³ for VOC. The sample result ranged from 24 to 27 mg/m³ VOC (as trichloroetheylene).

9 RECOMMENDATIONS

9.1 Acid Forming Oxides Of Nitrogen

Whilst levels of nitric oxide and nitrogen dioxide were considerably less than the EPA standard of 300 mg/m³ on both pre and post scrubber vents, the concentrations of the post scrubber stack could further be minimised by modifications to the scrubbing solution outlined in Section 9.2.

9.2 Scrubber Solution

The 6000 litres of "caustic" scrubbing solution had been cycling continuously for 3 months, the acidic pH and high nitrate levels of samples taken from the unit indicate that trapped fumes have not only neutralised the scrubbing solution but also acidified it. Hence explaining the post scrubber emissions as regeneration of oxides of nitrogen is occurring in the acidic medium.

Measures are now being put in place, and the pH of the solution is checked on a daily basis, and the corresponding volume of sodium hydroxide solution pumped into maintain alkalinity.

9.3 VOC (As Trichloroethylene)

All emissions from the degreasing tank exceeded the EPA standard and could be reduced by improving procedures for removing the degreased components. Craning the baskets out at a limited speed would yield less trichloroethylene emission around the tank lip than the sometimes observed practice of manually 'hooking' out the baskets which does not give adequate time for the solvent to evaporate before it reaches the lid of the tank. This observation was born out by the resulting background sample placed 8" from the lid at a height of 5' which yielded a concentration of 9132 mg/m³ of trichloroethylene clearly exceeding the MEL of 535 mg/m³ as cited in EH40/93.

Surveyed and reported by

[redacted]

pp. Mr M S D Read BSc (Hons) GRSC
Consultant
ON BEHALF OF OEH SCIENTIFIC LIMITED

Table 1

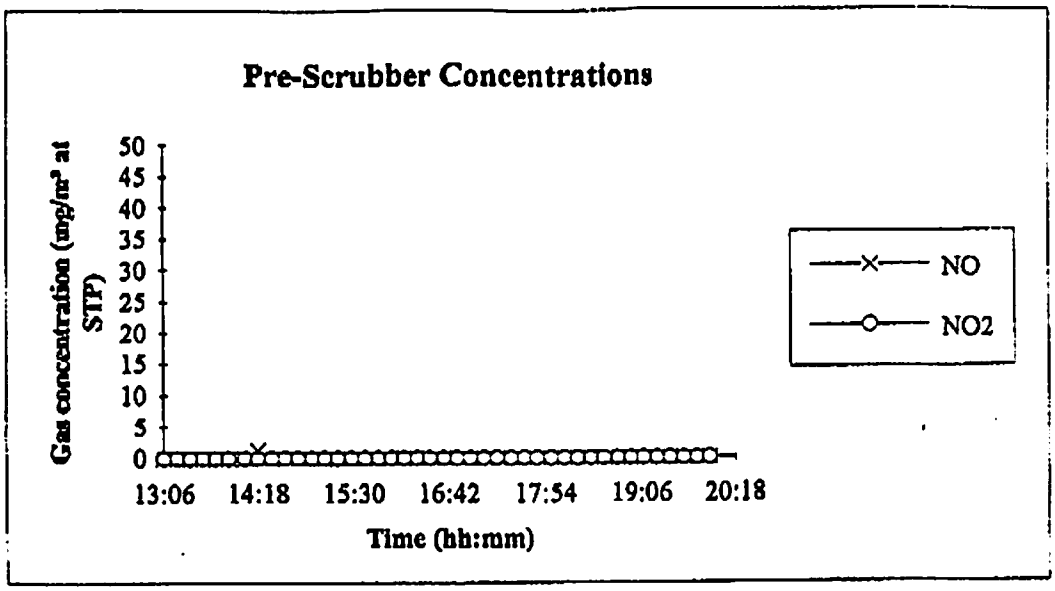
Pre-Scrubber					
Time (hh:mm)	Temperature (°C)	NO (ppm)	NO (mg/m^3) at STP	NO2 (ppm)	NO2 (mg/m^3) at STP
13:06	12.6	< d.l.	< d.l.	< d.l.	< d.l.
13:16	12.3	< d.l.	< d.l.	< d.l.	< d.l.
13:26	12.1	< d.l.	< d.l.	< d.l.	< d.l.
13:36	12.2	< d.l.	< d.l.	< d.l.	< d.l.
13:46	12.0	< d.l.	< d.l.	< d.l.	< d.l.
13:56	12.7	< d.l.	< d.l.	< d.l.	< d.l.
14:08	13.1	< d.l.	< d.l.	< d.l.	< d.l.
14:18	13.2	1	1	< d.l.	< d.l.
14:28	13.5	< d.l.	< d.l.	< d.l.	< d.l.
14:38	13.1	< d.l.	< d.l.	< d.l.	< d.l.
14:48	13.5	< d.l.	< d.l.	< d.l.	< d.l.
14:58	13.2	< d.l.	< d.l.	< d.l.	< d.l.
15:08	13.4	< d.l.	< d.l.	< d.l.	< d.l.
15:18	13.1	< d.l.	< d.l.	< d.l.	< d.l.
15:28	13.6	< d.l.	< d.l.	< d.l.	< d.l.
15:38	13.7	< d.l.	< d.l.	< d.l.	< d.l.
15:48	13.5	< d.l.	< d.l.	< d.l.	< d.l.
15:58	13.1	< d.l.	< d.l.	< d.l.	< d.l.
16:08	13.2	< d.l.	< d.l.	< d.l.	< d.l.
16:18	13.5	< d.l.	< d.l.	< d.l.	< d.l.
16:28	16.4	< d.l.	< d.l.	< d.l.	< d.l.
16:38	18.3	< d.l.	< d.l.	< d.l.	< d.l.
16:48	17.4	< d.l.	< d.l.	< d.l.	< d.l.
16:58	17.8	< d.l.	< d.l.	< d.l.	< d.l.
17:08	17.9	< d.l.	< d.l.	< d.l.	< d.l.
17:18	17.7	< d.l.	< d.l.	< d.l.	< d.l.
17:28	18.1	< d.l.	< d.l.	< d.l.	< d.l.
17:38	18.2	< d.l.	< d.l.	< d.l.	< d.l.
17:48	17.5	< d.l.	< d.l.	< d.l.	< d.l.
17:58	17.9	< d.l.	< d.l.	< d.l.	< d.l.
18:08	18.1	< d.l.	< d.l.	< d.l.	< d.l.
18:18	17.9	< d.l.	< d.l.	< d.l.	< d.l.
18:28	17.7	< d.l.	< d.l.	< d.l.	< d.l.
18:38	17.4	< d.l.	< d.l.	< d.l.	< d.l.
18:48	18.0	< d.l.	< d.l.	< d.l.	< d.l.
18:58	18.0	< d.l.	< d.l.	< d.l.	< d.l.
19:08	17.7	< d.l.	< d.l.	< d.l.	< d.l.
19:18	17.9	< d.l.	< d.l.	< d.l.	< d.l.
19:28	17.5	< d.l.	< d.l.	< d.l.	< d.l.
19:38	17.2	< d.l.	< d.l.	< d.l.	< d.l.
19:48	17.2	< d.l.	< d.l.	< d.l.	< d.l.
19:58	17.4	< d.l.	< d.l.	< d.l.	< d.l.

< d.l. = Less than Detection Limit

Table 2

Post-Scrubber					
Time (hh:mm)	Temperature (°C)	NO (ppm)	NO (mg/m^3) at STP	NO2 (ppm)	NO2 (mg/m^3) at STP
13:07	13.0	< d.l.	< d.l.	< d.l.	< d.l.
13:17	12.8	< d.l.	< d.l.	< d.l.	< d.l.
13:27	12.6	< d.l.	< d.l.	< d.l.	< d.l.
13:37	12.5	< d.l.	< d.l.	< d.l.	< d.l.
13:47	12.4	< d.l.	< d.l.	< d.l.	< d.l.
13:57	12.8	< d.l.	< d.l.	< d.l.	< d.l.
14:07	13.0	2	3	< d.l.	< d.l.
14:17	13.3	2	3	< d.l.	< d.l.
14:27	13.4	1	1	< d.l.	< d.l.
14:37	13.5	2	3	< d.l.	< d.l.
14:47	13.7	2	3	< d.l.	< d.l.
14:57	13.6	2	3	< d.l.	< d.l.
15:07	13.5	2	3	< d.l.	< d.l.
15:17	13.8	3	4	< d.l.	< d.l.
15:27	13.8	3	4	< d.l.	< d.l.
15:37	13.9	3	4	< d.l.	< d.l.
15:47	13.8	4	5	< d.l.	< d.l.
15:57	13.9	4	5	< d.l.	< d.l.
16:07	13.9	3	4	< d.l.	< d.l.
16:17	13.2	4	5	< d.l.	< d.l.
16:27	12.9	3	4	< d.l.	< d.l.
16:37	12.6	4	5	< d.l.	< d.l.
16:47	12.6	4	5	< d.l.	< d.l.
16:57	16.5	3	4	< d.l.	< d.l.
17:07	19.3	4	5	< d.l.	< d.l.
17:17	19.7	5	7	< d.l.	< d.l.
17:27	19.8	5	7	< d.l.	< d.l.
17:37	15.9	5	6	< d.l.	< d.l.
17:42	19.6	6	8	< d.l.	< d.l.
17:52	19.6	6	8	< d.l.	< d.l.
18:02	19.6	7	9	< d.l.	< d.l.
18:12	19.6	6	8	< d.l.	< d.l.
18:22	19.5	5	7	< d.l.	< d.l.
18:32	19.5	5	7	< d.l.	< d.l.
18:42	19.4	6	8	< d.l.	< d.l.
18:52	19.4	5	7	< d.l.	< d.l.
19:02	19.3	5	7	< d.l.	< d.l.
19:12	19.2	5	7	< d.l.	< d.l.
19:22	19.3	5	7	< d.l.	< d.l.
19:32	19.1	5	7	< d.l.	< d.l.
19:42	19.2	19	25	< d.l.	< d.l.
19:52	19.1	19	25	< d.l.	< d.l.
20:02	19.0	18	24	< d.l.	< d.l.

< d.l. = Less than Detection Limit


Pre-Scrubber Concentrations
Gas concentration (mg/m³ at STP)
50
45
40
35
30
25
20
15
10
5
0
13:06
14:18
15:30
16:42
17:54
19:06
20:18
Time (hh:mm)
NO
NO2

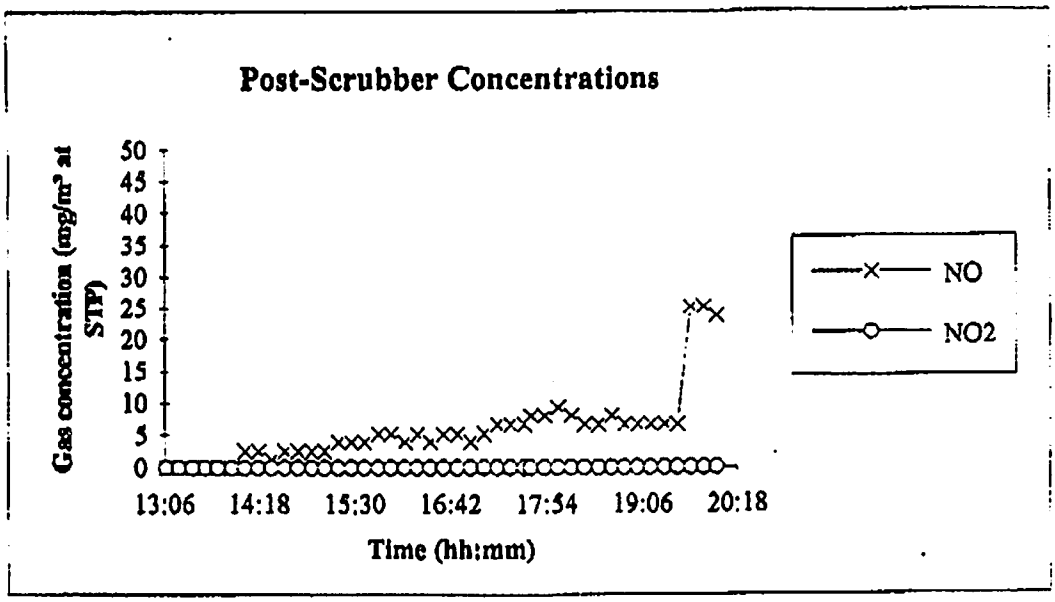

Post-Scrubber Concentrations
Gas concentration (mg/m³ at STP)
50
45
40
35
30
25
20
15
10
5
0
13:06
14:18
15:30
16:42
17:54
19:06
20:18
Time (hh:mm)
NO
NO2

Table 3

Time Sample Collected	pH	Nitrate (mg/l)
14:10	4.70	31
15:00	4.70	29
16:00	4.69	19
19:00	4.70	33

Table 4

Standardisation of Pollutant Concentration Data to Reference Conditions

O.E.H. Job Reference	7225
Client	Surface Technology
Date	1/11/94
Location	

Stack Reference
De-greasing tank lip extraction stack

Site Data

Barometric Pressure	1013.40	mbar	101.340	kPa
Atmospheric Oxygen Content	20.9	%		

Physical Stack Parameters

Circumference	0.56	m	Cross Sectional		
Diameter	0.18	m	Area	0.0250	m²
Radius	0.09	m			

Time of sampling	Start / Finish								
	Start	15:30	15:45	16:00	17:30	18:00			
	Finish	15:45	16:00	16:15	17:45	18:38			
Mean Velocity Pressure	Pa	38	40	36	38	38			
Mean Air Velocity	m/min	490	503	476	489	490			
Mean Volume Flow Rate	m³/hour	733	753	713	733	733			
Mean Temperature	°C	14.0	14.5	13.9	13.8	14.0			
Cross Sectional Area	m²	0.02	0.02	0.02	0.02	0.02			

Standardisation of Pollutant Concentration Data to Reference Conditions

O.E.H. Job Reference	7225
Client	Surface Technology
Date	1/11/94
Location	

Stack Reference
De-greasing tank lip extraction stack

Analyte	Trichloroethylene as VOC

Release Level		mg/m³

Sample Reference Number		ST1	ST2	ST4	ST5	ST6			
Measured Concentration in Stack	mg/m³	377	391	249	422	394			
Stack Temperature	°C	14.0	14.5	13.9	13.8	14.0			
	K	287.15	287.65	287.05	286.95	287.15			
Concentration corrected for Temperature	mg/m³	396.5	416.8	261.7	443.3	414.2			
Concentration corrected for Pressure	mg/m³	396.3	416.7	261.6	443.3	414.1			

9. Environmental Authorisation

For most processes all the clauses in a PG note are likely to be applicable. However, where a process operator considers that a particular clause does not apply to his/her process, this should be stated in the upgrading programme, together with brief reasons.

A few of examples of what might be included in an upgrading programme can be found in the Annex to this note.

How long should an upgrading programme be?

While the length an complexity of an upgrading programme will vary from process to process, it is not envisaged that such programmes will generally need to be very extensive documents. A short statement of action for each PG clause, together with any relevant plans and specifications ought in most cases to form the core of a programme. Local authorities have been advised separately not to expect more information than is absolutely necessary to enable them to consider the upgrading action to be taken and to make the appropriate variations to the authorisation.

On the other hand, an upgrading programme which stated, for example, that all the standards in the relevant PG note would be complied with by a given date would not only be unhelpful to the local authority, but could also be counterproductive for the process operator. In such circumstances, the local authority would have the choice of either:

a) requiring (by the use of a section 19 notice) more information to be provided - and, without any knowledge of the operator's detailed upgrading plans, the amount of information required might be more than if the operator had submitted a fuller programme in the first place; or

b) issuing a variation notice based on the PG note, with the possible result that the notice could impose obligations which were not adequately tailored to the particular circumstances of the plant in question.

Where can further advice be found?

A copy of this guidance note is being sent to all local authorities in England and Wales. Any process operator who has a query about how to submit an upgrading programme should contact the local authority which issued his/her authorisation. In many cases, local authorities will be pleased to discuss operators' upgrading plans before a formal programme is submitted.

ANNEX

SIX EXAMPLES OF WHAT MIGHT BE INCLUDED IN AN UPGRADING PROGRAMME

Clause ... We intend to use in the spray booth identified on our location plan only the compliant coatings listed in this clause by [x date].

Clause ... All spray guns used in the spray booth marked on our location plan will be HVLP by [x date].

Clauses ... We will install an [ABC/123] continuous particulate monitor and recording system as described in the enclosed technical details (item W attached to this submission) at x location so that it is in operation no later than [y date]. Once in operation:

- the monitor will be checked at least once a day and will be maintained in accordance with the manufacturers' instructions a copy of which will be held on site for examination

- the monitoring data will be retained for at least 4 years and will be held on site for examination for that period

- any result exceeding the emission limit specified in Clause [ ] will be sent to the authority within [z days], and the authority will be notified without delay of any result which is more than twice the emission limit specified in that Clause

- a [supervisor/manager] will investigate immediately any result exceeding the emission limit given in Clause [ ] in order to identify the cause and take corrective action. Details of the exceedance and the action taken will be recorded in the log book, and this information will be retained for examination on site for at least 4 years.

Clause ... This clause requires annual testing for ammonia from the shell core-making machine in number 3 bay. We will submit a monitoring protocol to you [the local authority] by [x date] and undertake the first monitoring exercise by [y date].

Clause ... By no later than [x date] the chimney marked Y on plan Z attached to the authorisation granted on [z date] will be increased in height by at least [ ] metres to achieve a total height of [ ] metres from ground level. Copies of the chimney height calculations, plans and planning permission [reference ....] are enclosed.

Clause ... This clause is not relevant to my process because [I do not use waste oil in my combustion units].

10. Alkali/Acid Authorisation

CG 794612

Dr M Goodenough
Production/Technical Manager
Surface Technology plc
Godiva Place
Coventry
England CV1 5PN

MG/JAO

HMIP/03/AH7607

8 February 1993

Dear Sir

THE CONTROL OF INDUSTRIAL AIR POLLUTION (REGISTRATION OF WORKS) REGULATIONS 1989, S.I. 318

APPLICATION BY SURFACE TECHNOLOGY PLC TO CARRY OUT THE ELECTROPLATING & ELECTROLESS PLATING OF A VARIETY OF SURFACE COATINGS AT GODINA PLACE,COVENTRY.

We hereby acknowledge receipt of your Application for a Certificate of Registration which was received at this office on 17 November 1992.
I regret the delay in confirming receipt.This is due to a lack of staff resources which has only recently been addressed.Please accept my apologies for any inconvenience caused.

The Application complies with the requirements set out in Regulation 3(a) to 3(i) of the above Statutory Instrument.
You are advised that you are required by Regulation 4(a) to 4(g) of the above Statutory Instrument to publish a notice of this Application in at least one local newspaper circulating in the locality of the works on each of two successive weeks. Copies of typical advertisements are enclosed for your guidance. Please note the reference should be made in the advertisement to the above office concerning inspection of applications.

You would normally have been advised to advertise between 1 December 1992 and 1 June 1993.However,as the Department is only just processing your application, I would advise you to advertise as soon as possible and certainly before 1 June 1993. Your Application will be deemed to have been withdrawn if you fail to publish by this latter date. You are also required by Regulation 5(1) of the above Statutory Instrument to provide this Inspectorate with a copy of this notice together with a certificate stating the dates on which and the publication(s) in which it was published not later than 21 days after the date of first publication of the notice.

- ur application will be deemed to have been withdrawn either if you fail to provide this Inspectorate with a copy of this notice and the certificate within this 21 day period (Regulation 5(2) applies) or the notice is not published within 6 months. (Regulation 5(3) applies.)

Yours faithfully

MRS G B CARTRIDGE
ADMINISTRATION

STDD

AH7607

Surface Technology plc

MG/JAO

13th November, 1992.

Mr. P. Brookfield,
H.M.I.P.,
Division West,
Highwood Pavilions,
Jupiter Road,
Patchway,
BRISTOL, BS12 5SN

Dear Mr. Brookfield,

Please find enclosed a completed Application Form in respect to the Alkali and Works Act 1906. I have completed the form as per guidance notes provided. However, if further information is required please do not hesitate to contact me.

The application also contains information relating to the extract, plant and chemicals utilised in the process area.

Yours sincerely,

[redacted]

DR. M. GOODENOUGH,
Production/Technical Manager.

Enc.

BS 5750 Part 2 1987
ISO 9002 1987

Registered in England
& Wales No. 2402547

Surface Technology plc,
Godiva Place, Coventry,
England CV1 5PN
Tel: (0203) 258444 Telex: 31441 MPCO G
Fax: (0203) 633411

A subsidiary of Norman Hay plc

HER MAJESTY'S INSPECTORATE OF POLLUTION

ALKALI & ETC WORKS REGULATION ACT 1906, as amended by the 1989 Regulations (a)
THE HEALTH & SAFETY AT WORK ETC ACT 1974
THE HEALTH & SAFETY (EMISSIONS INTO THE ATMOSPHERE) REGULATIONS 1983, S.I. 943
THE CONTROL OF INDUSTRIAL AIR POLLUTION (REGISTRATION OF WORKS) REGULATIONS 1989 S.I. 318
THE HEALTH AND SAFETY (EMISSIONS INTO THE ATMOSPHERE) (AMENDMENT) REGULATIONS 1989 S.I. 319

APPLICATION FOR A CERTIFICATE OF REGISTRATION

I (or We) the undersigned hereby apply for a Certificate of Registration of the undermentioned work, and I (or We) hereby declare that the following particulars are correct:-

(a) the name and address of the owner of the work or, if the owner is a limited company registered under the Companies Acts, the name, registered number and registered office of the company;

NORMAN HAY
ORCHARDLEA
WINKFIELD LANE
WINKFIELD
WINDSOR, BERKS
Post Code: SL4 4RV
Tel No: 0344 890011

(b) the name, if any, and the address of the premises where the work is or will be carried on;

SURFACE TECHNOLOGY PLC
GODIVA PLACE
COVENTRY
Post Code: CV1 5PN
Tel No: 0203 258444

(c) the identification, by means of a map or plan or otherwise, of those parts of the premises where the work is or will be carried on;

Please find enclosed a layout of the plant where nitric acid is utilised

PLEASE INCLUDE O.S. GRID REFERENCE

S	P	3	4	0	9	7	9	0	4

(d) the name of the relevant local authority

COVENTRY COUNTY COUNCIL

(e) the date on which the application is made;

17/11/92

For the following section please use continuation sheet if necessary.

(f) a full description of the nature of the work carried on or proposed to be carried on

Surface Technology is a commercial contract metal finisher which carries out the electroplating and electroless plating of a variety of surface coatings.

One of these coatings is Electroless Nickel, a process which runs at elevated temperatures, 90°C, and utilises chemical reductants to deposit a nickel phosphorus alloy of 93/7%. A prerequisite of this process are cleaners and etchants. One of these is nitric acid which is utilised as both a component etchant, to approve adhesion, and a stripper to remove unwanted nickel from jigs, tanks and components. During both these applications oxides of nitrogen are given off as a by-product of the breakdown of nitric acid as it acts as an oxidiser. The nitric acid used to carry out these applications is stored both on the process line and in storage tanks (please see enclosed block diagram and plant summary sheets, Appendix I).

The original plant to carry out this work was first installed on the Coventry site some 10-15 years ago. However, due to relatively new and perceived environmental regulations, a new process line was built and commissioned, by Plasticraft, in April 1991. This plant enables all tanks which can emit noxious fumes to be extracted through a scrubber system.

r the following section please use continuation sheet if necessary.

(g) a description of the source, nature and amount of any noxious or offensive substance that may be emitted into the atmosphere as a result of carrying out the work;

Nitric acid is utilised as an oxidant during the etching and stripping of components, jigs or tanks in the electroless deposition of nickel. One reaction that occurs during this process is:

$$Ni^{\circ} + NO_3^{-} + 3H^{+} \longrightarrow HNO_2 + H_2O$$

However, several other similar reactions could be written to show the release of other oxides of nitrogen during the reduction of nitric acid. Thus, the exact oxide or oxides that are finally released subsequent to the oxidation of unwanted nickel by nitric acid is scientifically difficult to state, due to the instability of the initial products released breaking down to a series of by-products via a sea of chemical sub-reactions. Therefore it is difficult, if not impossible, to identify or quantify the emission other than to say they are oxides of nitrogen.

No other noxious fumes should be released under normal working conditions from this process line, and this is confirmed by a recent air survey that was carried out of the process line (report included, Appendix 2). In emergency situations there is a faint possibility of ammonia and cyanide emissions.

r the following sections please use continuation sheet if necessary.

(h) a description of the means proposed to enable the work to be carried on in accordance with such requirements of the 1906 Act and Part I of the 1974 Act as applied to the work;

The plant under question is fitted with a comprehensive extraction ventilation system. All tanks other than the water rinses are extracted. Further, the tanks that contain the Electroless Nickel solutions and nitric acid, where stripping or etching occurs, are extracted and the extract taken through a scrubber system (Plan included, Appendix 3), to minimise the emission of any oxides or nitrogen to the atmosphere. The plant and extraction were both installed by Plasticraft.

Extract efficiency is not know, but was set and tested by the manufacturers to meet recommended levels. No final emissions have been measured from the final entry stack, but measurement subsequent to the scrubber have shown less than detectable values, i.e. < 0.3 ppm. The chimney height is level with the apex of the building. A comprehensive maintenance manual has been provided by the manufacturers and spare parts to cover minor breakdowns have been purchased. A copy of the relevant pages covering the extract and scrubber system are enclosed giving details of the fan capacity, etc.

The temperature of the discharge gas would be ambient as no cooling or heating systems are provided on the stack and the reactions that occur in the process tanks, although exothermic, are insufficient to warm the solutions above the ambient temperatures they are operated at.

or the following section please use continuation sheet if necessary.

(i) a description of the provision it is proposed to make for determining the nature and amount of any noxious or offensive substance emitted into the atmosphere.

There is presently no on line measurement equipment. However, the extraction ducts are fitted with measurement chambers to measure extract velocity and can also be used to insert chemical probes or measurement devices to measure gas or noxious content. The extract velocity is measured at the frequency set down by the statutory regulations.

The scrubber system is automatically dosed and the solution pH monitored to ensure the recirculating liquid maintains the correct pH to optimally remove any noxious gas (acidic).

Signed [redacted] Date 17/11/94

Name (Block Capitals) MARK GOODENOUGH Tel No: 0203 358464

NB: It is requested that the application to be made and signed by or on behalf of the Company or person actually carrying on the work.

This application should be sent to the District/Regional Office of HMIP at:

A. Date received by HMIP from Company FOR OFFICIAL USE ONLY

B. Accept as follows

PROCESS	SUB PROCESS CODE
.....	.....
.....	.....
.....	.....

SIGNED _____ DATE _____

(Chief Inspector)

Copy of Certificate of Registration sent to Local Authority

on (date) _____ by (name) _____

APPENDIX I

BLOCK DIAGRAM OF PLANT

APPENDIX 2

AIR ANALYSIS

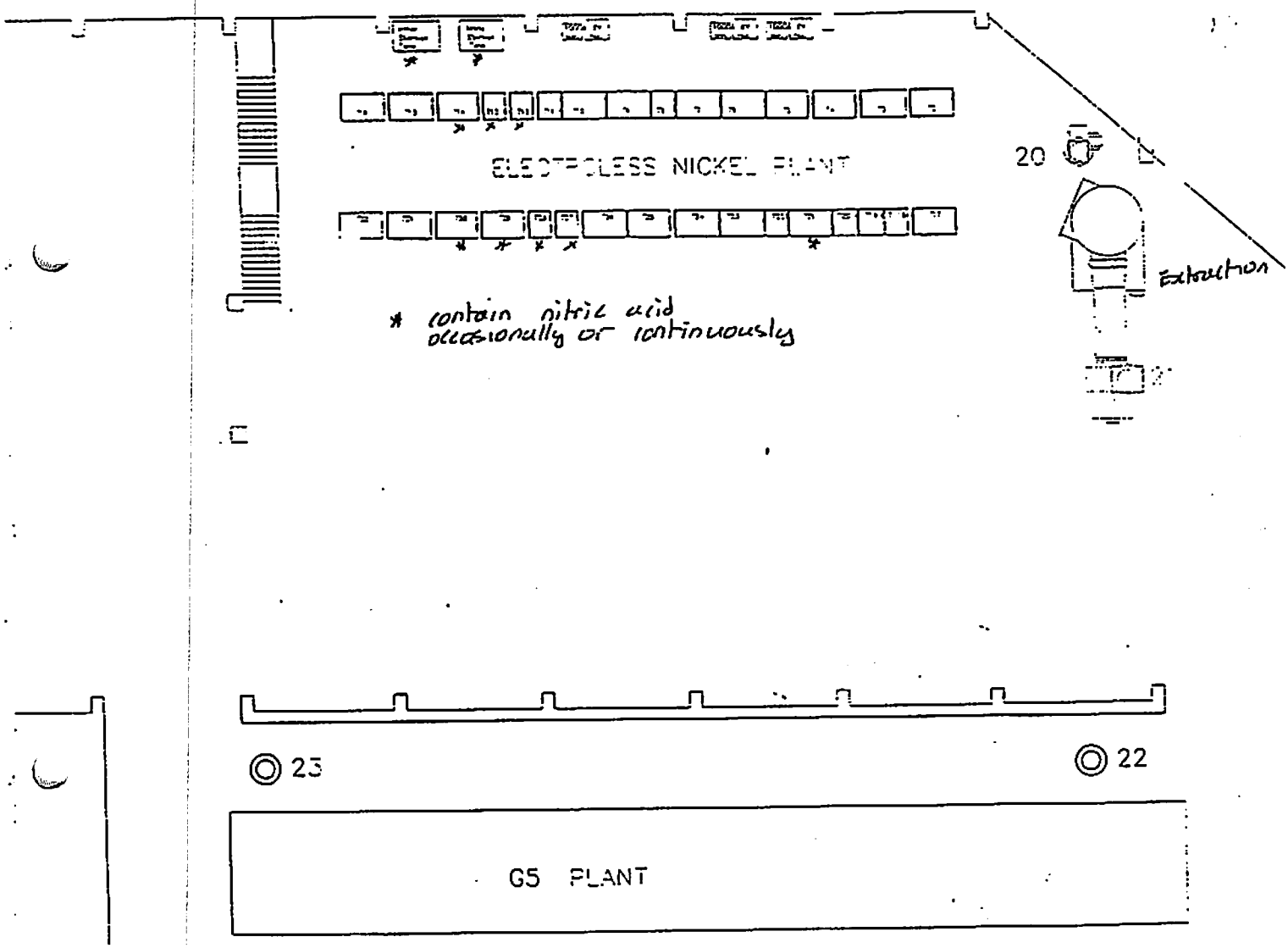
APPENDIX 3

EXTRACTION AND SCRUBBER SYSTEM INFORMATION

APPENDIX 1

Please find enclosed:

1. Block diagram of plant.
2. Chemical content of tanks.
3. Health & Safety information.


ELECTROLESS NICKEL PLANT
20
Extraction
* contain nitric acid occasionally or continuously
23
22
G5 PLANT

7 SEP 1972

APPENDIX 9

ELECTROLESS NICKEL PLANT

Process	Make Up
Soak Clean	Uniclean super soak : corrosive alkali
Electroclean	Sodium cyanide : toxic, corrosive, odourous Caustic soda : sodium hydroxide, corrosive sodium gluconate
[illegible] Acid	[illegible] acid [illegible] : corrosive, oxidising
Hydrochloric Etch	Hydrochloric acid 10% : corrosive, oxidising
Dry Acid	Dry acid PW3000 : [illegible] toxic [illegible] exhaust ventilation
Nickel Strike	Nickel chloride : inorganic salt Hydrochloric acid : see above
Niflor	Electroless nickel and PTFE : aqueous solution containing nickel salts and sodium hypophosphite, may liberate hydrogen gas
Etch Cleaner	5091 etch cleaner : alkaline, corrosive
Nitric Acid HF	Nitric acid 85% } corrosive Hydrofluoric acid 15% } toxic fumes
Zincate	Alumseal : contains hydroxide and cyanide exhaust ventilation recommended
Barrier Coating	Alumseal 1100 nickel strike : contains nickel
Electroless Nickel	Electroless nickel : contains nickel

APPENDIX 2

Please find enclosed:

1. Health & Safety air quality audit.

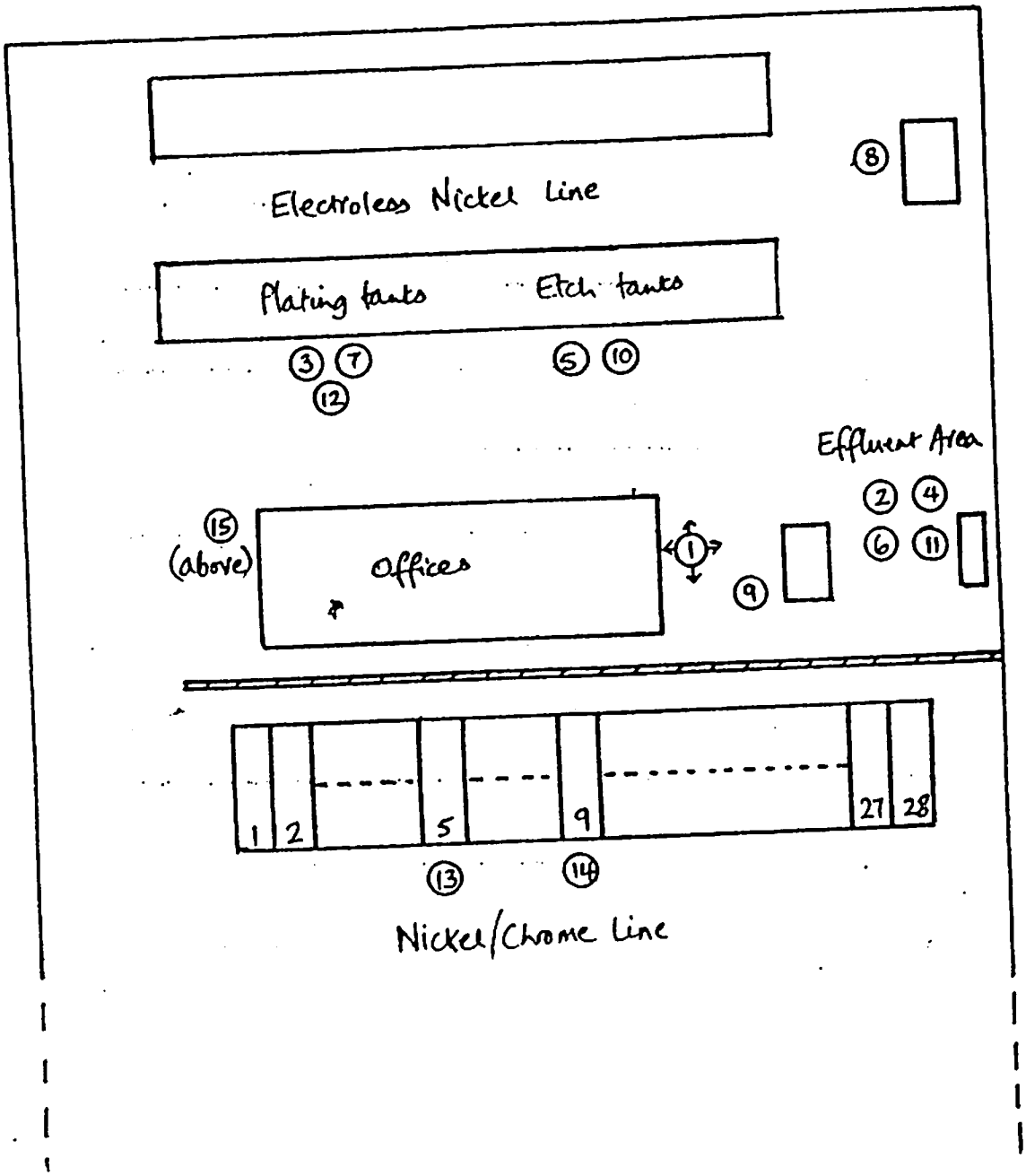


Fig 1 :- Floor plan showing locations of samples

SAMPLING AND ANALYSIS TECHNIQUES

1 Passive dosimeter tube Samples 1 through 7

This consists of placing a glass capsule in the area to be monitored, over a period of several hours. The capsule contains chemicals which react with the substance under observation causing a colour change.

The air to be sampled enters the capsule by diffusion. The colour change progresses along the capsule at a rate dependant on the concentration of the substance under test. At the end of the monitoring period the level (averaged over the period) is read directly from a scale printed on the capsule.

2 Carbon absorption tube Samples 8 and 9

The air to be tested is pumped at a low flow rate of 100 ml per minute through a tube containing activated charcoal. Organic vapours are absorbed onto the surface of the charcoal. These are later desorbed in a suitable solvent and analysed by a gas chromatography technique.

3 Impinger Samples 10 and 11

The air to be tested is bubbled through a solution which will react with the substance under test. In this case acid gases were under observation, and the solution used was 0.1 M NaOH. The sampling rate was 1 litre per minute.

The solution is later analysed by ion chromatography for the level of the relevant anions produced by the reaction.

4 Filter Samples 12 13 and 14

Where the substance under test is in particulate form or in solution in an aerosol or mist, then it can be collected on a filter. The sampled air is pumped through the filter at 3 litres per minute.

The filters are subsequently analysed in the laboratory, using an atomic absorption method.

5. Gravimetritry Sample 15

Where a figure for the total weight of particlate matter is required, as is the case with general dust, the sample is collected on a pre-weighed filter (again at 3 litres per minute). The filter is re-weighed after the test, allowing the level of particulate to be calculated.

RESULTS

Sample 1 Ammonia

Personal sample taken on Electroless Nickel inspector

Level found less than 5 ppm

Sample 2 Ammonia

Effluent area

Level found less than 5 ppm

Sample 3 Ammonia

Electroless line, plating area

Level found less than 5 ppm

Sample 4 Chlorine

Effluent area

Level found less than 0.3 ppm

Sample 5 Chlorine

Electroless line, etching area

Level found less than 0.3 ppm

Sample 6 Sulphur dioxide

Effluent area

Level found less than 0.03 ppm

Sample 7 Nitrogen Dioxide

Electroless line, plating area

Level found less than 0.5 ppm

Sample 8 Arklone

Adjacent to Arklone tank

Level found 104 mg per cu metre of air

Sample 9 1:1:1 Trichloroethane

Adjacent to trike bath

Level found 64 mg per cu metre

Sample 10 Acid gases

Electroless line, etching area

Levels found Nitric acid less than 0.5 mg per cu m of air
Hydrochloric less than 0.5 mg per cu m
Sulphuric less than 2.5 mg per cu m

Sample 11 Acid gases

Effluent area

Levels found as per sample 10

Sample 12 Nickel

Electroless line, plating area

Level found 4.0 µg per cu metre of air

Sample 13 Cyanides

Chrome line bath 5, 1.5 m up on wire mesh guard

Level found less than 0.2 µg per cu metre of air

Sample 14 Chromium vi

Chrome line bath 9, 1.5 m up on wire mesh guard

Level found less than 2.0 µg per cu metre of air

Sample 15 General dust

On balcony adjacent to offices

Level found 0.5 mg per cu metre of air.

All samples were taken over a period between 10.00 and 16.00.

Summary of results

Sample	Substance	Result	OES
1,2,3	Ammonia	< 5 ppm	25 ppm
4,5	Chlorine	< 0.3 ppm	0.5 ppm
6	Sulphur dioxide	< 0.03 ppm	2 ppm
7	Nitrogen dioxide	< 0.5 ppm	3 ppm
8	Arklone	104 mg/m3	7600 mg/m3
9	Trichloroethane	64 mg/m3	1900 mg/m3
10,11	Nitric acid	< 0.5 mg/m3	5 mg/m3
	Hydrochloric acid	< 0.5 mg/m3	7 mg/m3
	Sulphuric acid	< 2.5 mg/m3	1 mg/m3
12	Nickel	4.0 µg/m3	500 µg/m3
13	Cyanides	< 0.2 µg/m3	5000 µg/m3
14	Chromium vi	< 2.0 µg/m3	50 µg/m3
15	Dust	0.5 mg/m3	5 mg/m3

Where a "less than" figure (<) is shown, this indicates that the substance concerned was not detected within the sample, the value quoted being the minimum possible level which could have been detected by the technique used.

Note that the recommended limits quoted in the cases of nickel, chromium vi and 1:1:1 trichloroethane, are Maximum Exposure Limits, specified in schedule 1 of the COSHH regulations, and must not be exceeded.

Comments on results

For the purposes of the COSHH regulations, the results obtained should be compared with the relevant OES set down for the substance. Where an MEL (maximum exposure limit) is applied this must not be exceeded. Above this level harmful effects may become apparent. An OES (occupational exposure standard) is set at the level at which it is considered safe for long term exposure. This may be exceeded if the employer is aware of the reasons for this and is taking steps to correct the situation as soon as is reasonably practicable.

All the results obtained are below the recommended limit with the possible exception of sulphuric acid, where the detection sensitivity was not good enough to detect down to the levels required.

Work being carried out on the day of the survey was said to be normal, however it was noted that odours, particularly of ammonia, appeared to be less than usual. The reason for this was not apparent, but it may indicate that the levels detected during this survey are lower than is sometimes the case.

References

Health and Safety Executive

EH 40/91 Occupational Exposure Limits 1991

ISBN 0 11 885580 8

Health and Safety Commission

Control of Substances hazardous to health Regulations 1988 (Including approved Codes of Practice)

ISBN 0 11 885468 2

Both available from HMSO bookshops

APPENDIX 3

Please find enclosed:

1. Information about which tanks are extracted and which are scrubbed.

2. Block diagram of extractor and scrubber.

3. Information and Specifications of the extraction and scrubber plant.

EXTRACT SYSTEM

The lip exhaust ducts are fabricated from PVC and sufficiently reinforced to support work carriers. A load of 250 kg may be supported in this way, however alternative arrangements must be employed for heavier loads.

Care must also be taken to avoid shock loads being imposed on lip ducts and tank flanges.

The ductwork, supported above the runway support structure, has been arranged to discharge fumes to atmosphere either direct through a non scrubbed system or through a fume scrubber.

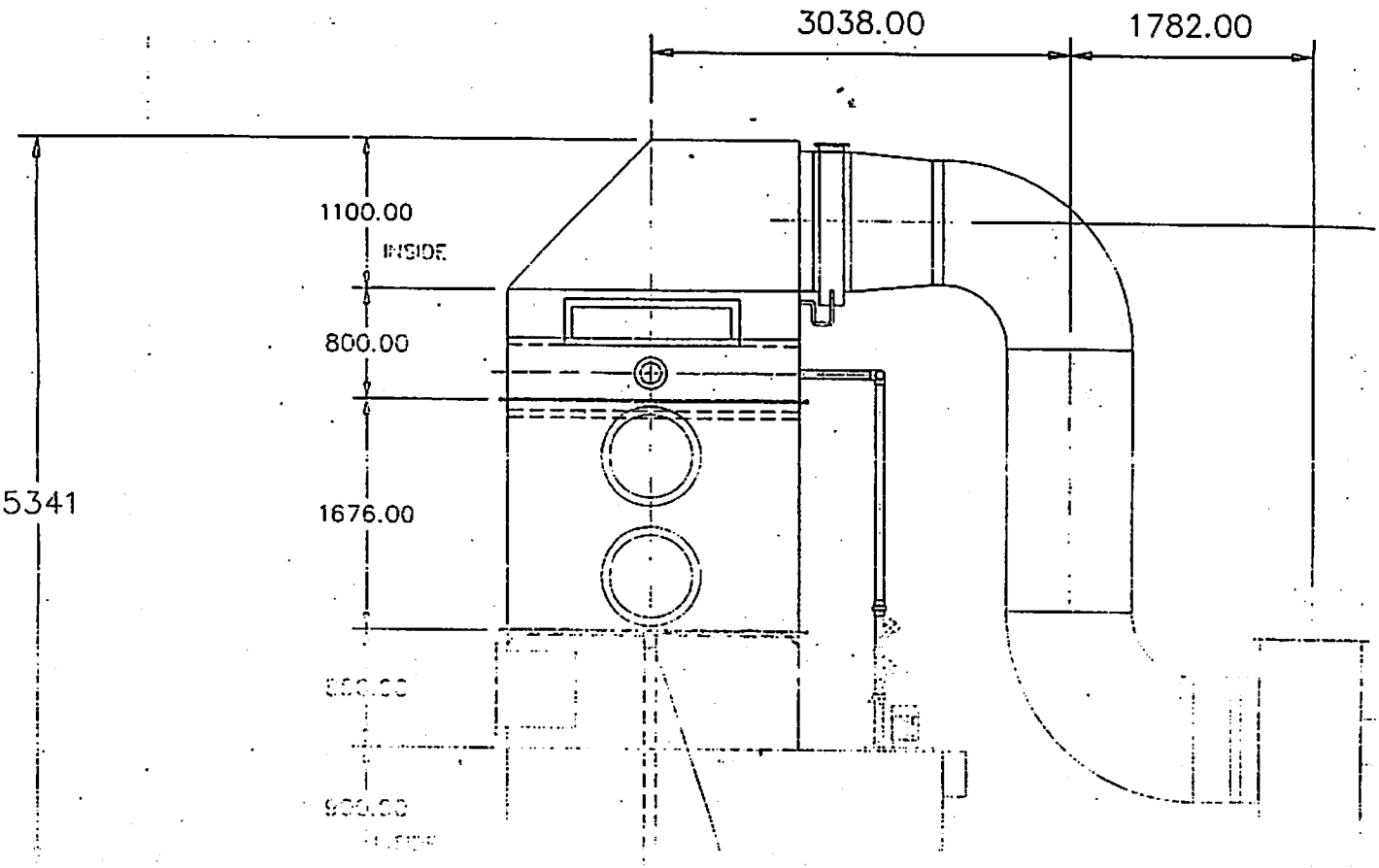
Fume extraction is provided for the following tanks:-

2, 4, 5, 8, 16, 17, 23, 25 and 32 non scrubbed.

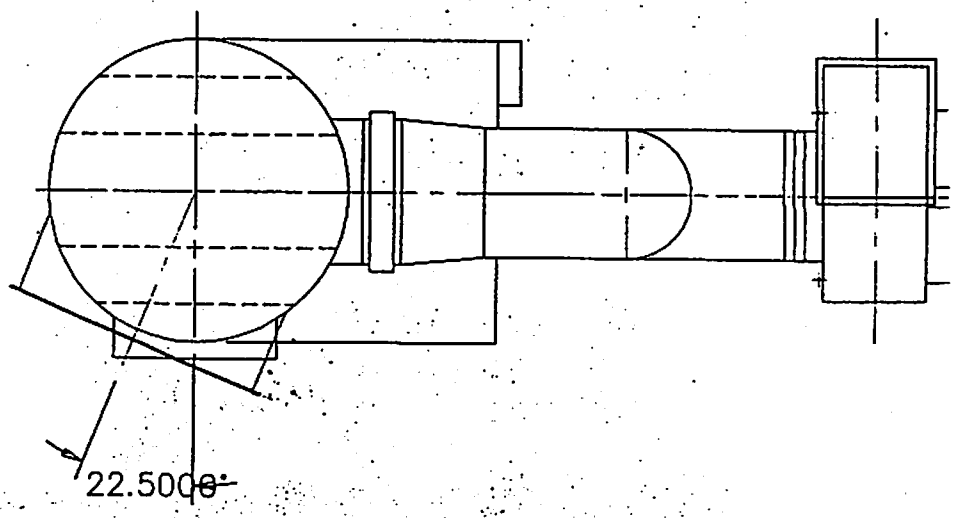
6, 10, 12, 13, 14, 19, 21, 27, 28, 29 and 30 through scrubber.

Both extract fans and the fume scrubber are mounted on steelwork at high level and are provided with exhaust stacks terminating with high velocity discharges at roof apex level.

The scrubbing unit is of standard design having a diameter 2134mm with a base sump 2134 x 3200 x 900mm high. The unit is complete with recirculating pump, spray manifold, packed bed, mist arrestor pad and final eliminator section.

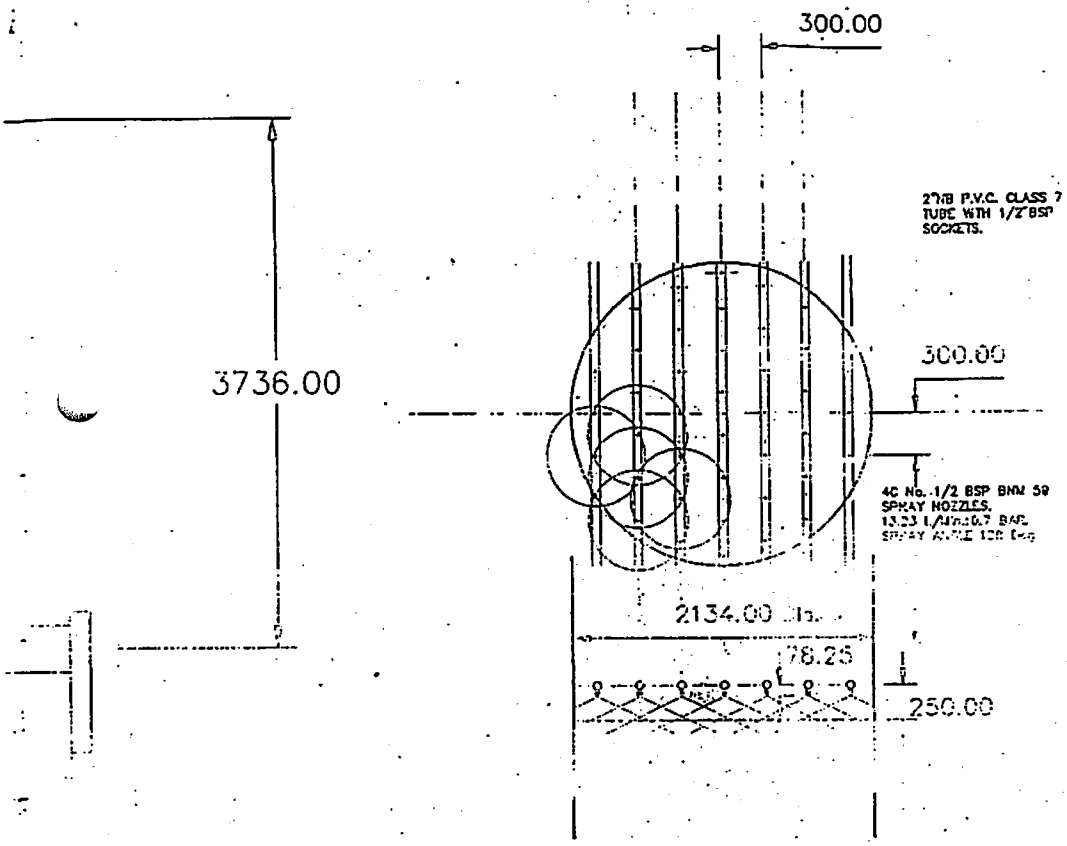


PACK SUPPORT BEAM: 80X80X5 RHS COVERED WITH 3THK P.V.C.
CENTRE POST 76.1 CIRCULAR HOLLOW SECTION INSIDE 3" P.V.C. PIPE. PLATE 9THK. P.V.C. EACH END.

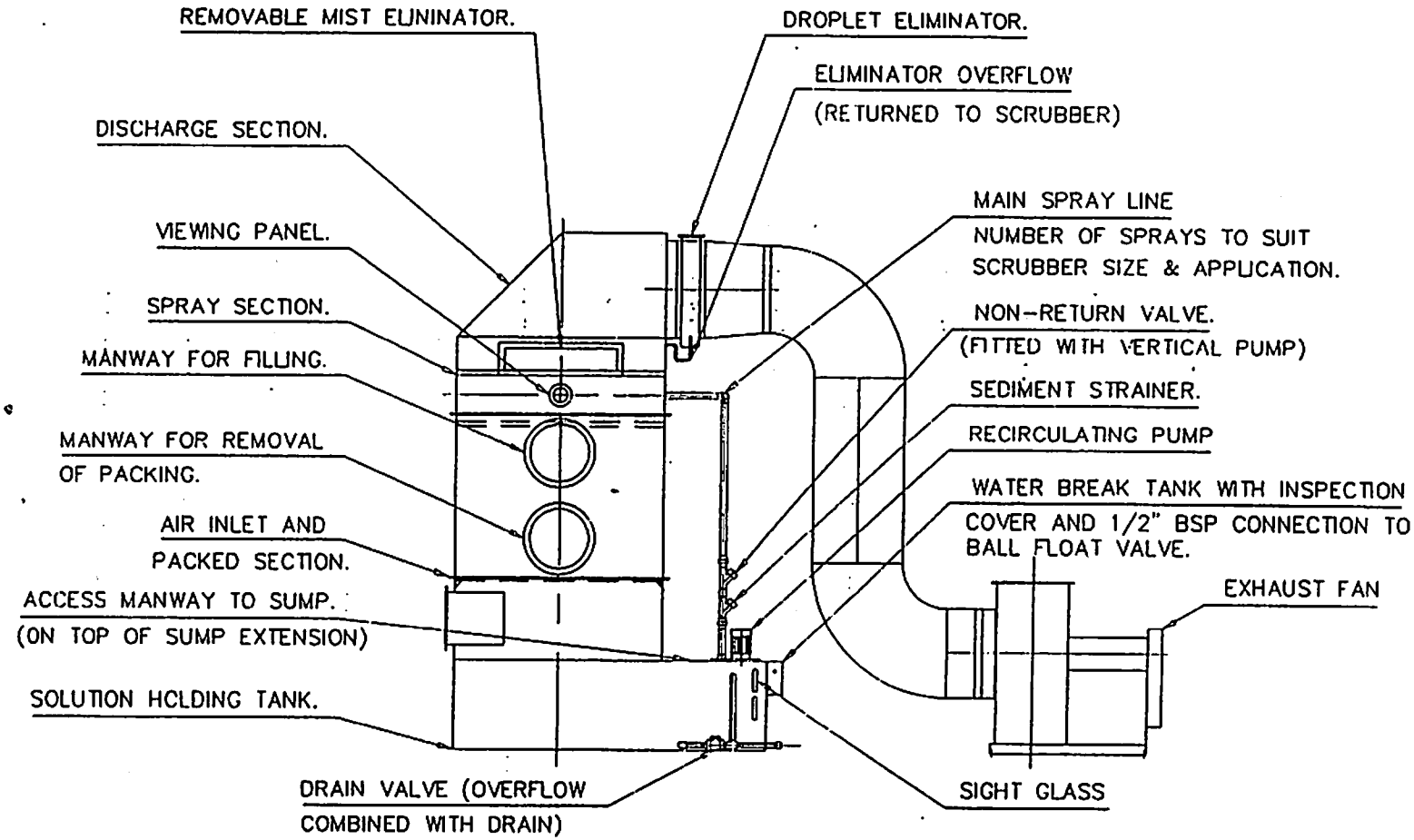


Title. FUME SCRUBBER & SPRAYS.

Client. SURFACE TECHNOLOGY.



	PLASTICRAFT LIMITED. Shenstone Drive, Aldridge. WS9 8TP. Tel.No.0922 54711.	
	Drawn by. M.R.B.	Checked by.
	Date drawn.	Eng. No. P7284/91
	Scale. 1:25	Drg. No. 7005:05



PLASTICRAFT LTD SHENSTONE DRIVE ALDRIDGE WALSALL WS9 8TP	
CUSTOMER	
TITLE FUME SCRUBBING UNIT.	
DRG No CRAFT-01	DATE JAN 92
DRAWN BY MRB	MOD No

AGITATION

Supplier:	Becker UK Limited Unit 32 Bergen Way Sutton Fileds Hull HU8 07Q
Description:	185 cfm @ 2.5 to 2.7 psi Type, side channel blower Series SV5-490/1 5.5kw, 415v, 3ph, 50Hz motor
Quantity:	1 №
Description:	Inlet filter FK450
Quantity:	1 №
Description:	Pressure Relief Valve ST609
Quantity:	1 №

FUME EXTRACT FANS

Supplier:	Wyman Fume Equipment Limited 14 Dollman Street Nechells Birmingham B7 4RP
Description:	11000 cfm fan @ 2" wg Type 24 FV Direct Drive Polypropylene Impeller 15hp 960rpm motor R90 Discharge viewed from drive side
Quantity:	1 №
Description:	13500 cfm fan @ 5" wg Type 36 FV, U/S, B/D Polypropylene Impeller 30hp 1460 rpm motor L90 Discharge viewed from drive side
Quantity:	1 №

ME SCRUBBER

Plasticraft manufacture

Description: Diameter 2134mm
Sump Volume 3.4 cu mtrs
Packed bed volume 6 cu mtrs

CIRCULATING PUMP

Supplier: Thomas Matthews Pumps Limited
Unit 5H
Lynwell Trading Estate
Lynwell Road
Manchester
M30 9QG

Description: Lowara Pump
Model HTS40-125/22

Quantity: 1 №

SPRAY NOZZLES

Supplier: Aquaflow PNR Limited
16 Sugarbrook Road
Aston Fields Industrial Estate
Bromsgrove
Worcester

Description: PVC Spray nozzles ½" BSP
Ref DDW/2235/D1

Quantity: 40 №

PACKED BED

Supplier: Norton Chemical Process Products
Kine Street
Fenton
Stoke on Trent
ST4 2LT

Description: No2 Snowflake

Quantity: 6 cubic metres

MIST ELIMINATOR

Supplier:	Knitmesh Limited Sanderson Station Approach South Croydon Surrey CR2 0YY
Description:	Knitmesh pad type 9036SL Polypropylene 2130 Dia 6" thick
Quantity:	1 set

HOIST EQUIPMENT

Supplier:	H.F. Cranes Limited 85a Huntington Street St. Neots Cambrideshire PE19 1DU
Description:	Kings hoists with chains and pendant 250 kg SWL, single speed 23 metre/min cross travel 8 metre/min hoist speed
Quanity:	3 №

EXTRACT SYSTEMS

Air velocity measurements were taken at the lip extract slots of the non-scrubbed system, also of the scrubbed system using a hot wire probe.

Volumetric measurements were taken for each system using a pitot tube.

The positions of the pitot measuring boles are shown on the attached drawing.

NON SCRUBBED SYSTEM

Lip extract velocities measured 17th December 1991.

Niflor Line		Electroless Nickel Line	
Tank No	Air Velocity ft/min	Tank No	Air Velocity ft/min
2	12100	17	13700
4	2730	23	2600
7	2540	25	4630
8	1850	32	5450
16	5090		

Volumetric Measurement

Vp = 0.395" wg, equates to 2517 ft/min
Duct size 28" CSA = 4.27 sq ft
Volume 2517 ft/min x 4.27 sq ft = 10748 cu ft/min

diameter

SCRUBBED SYSTEM

Lip extract velocities measured 20th January 1992.

Niflor Line		Electroless Nickel Line	
Tank No	Air Velocity ft/min	Tank No	Air Velocity ft/min
6	5000	19	5000 slot velocity
10	4690	21	5970
12	2235	27	2950
13	2350	28	3000
14	2150	29	6450
		30	8220

Volumetric Measurement

Vp = 0.307" wg, equates to 2219 ft/min
Duct size 36" CSA = 7.06 ~~ea~~ ft^2 circle
Volume 2219 ft/min x 7.06 = 15660 cu ft/min

Instruments

Solomat MPM 500C
Serial No 224427
Calibrated 28/08/90

Hot wire probe

36" pitot tube

401 Public Notices

NOTICE PURSUANT TO THE TRUSTEE ACT 1925

Marjorie Maud Thurza Philpot
Deceased

Any person having a claim or an interest in the Estate of Marjorie Maud Thurza Philpot late of 30 Birches Lane, Kenilworth, Warwickshire, who died on the Sixth day of April One Thousand Nine Hundred and Ninety Three is required to send particulars thereof to the undermentioned, the Solicitors for Antony William Moore and David Burton, the Executors of the Will of the said Deceased on or before the Thirtieth day of April One Thousand Nine Hundred and Ninety Three, after which date the said Executors will proceed to distribute the Estate, having regard only to the claims of which they shall then have had notice.

Dated this 12th day of February 1993.

Band Hatton and Company
Solicitors
1 Copthall House
Station Square
Coventry
CV1 2FY
Solicitors for the said Executors
Ref: SNR/1678-6

Surface Technology Plc

at Godiva Place, Coventry, Warwickshire, Midlands, in accordance with Statutory Instrument 1989 No 318, Health and Safety - The Control of industrial air pollution/registration of works/regulation 1989, the above company gives notice that they intend to apply for a certificate of registration in respect to the use of nitric acid as an etchant at the above address.

A copy of the detailed application may be viewed at H.M.I.P., Highwood Pavilions, Jupiter Road, Patchway, Bristol BS12 5SN, during working hours. Representation concerning this application may be made in writing to Her Majesty's Inspectorate of Pollution at the above address within 21 days of the first publication of this notice, and will be taken into consideration in deciding this application

This notice was first published on February 15, 1993

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PUBLIC NOTICE

Surface Technology Plc, at Godiva Place, Coventry, Warwickshire, Midlands in accordance with Statutory Instrument 1989 No 318, Health and Safety - The control of industrial air pollution/registration of works/regulation 1989, the above company gives notice that they intend to apply for a certificate of registration in respect to the use of nitric acid as an etchant at the above address.

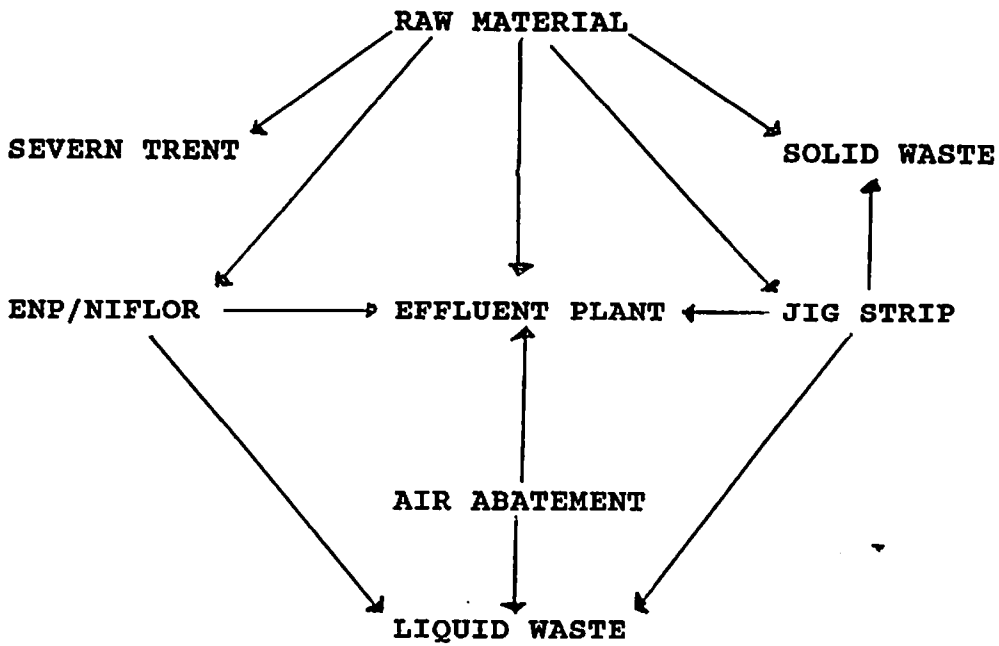
A copy of the detailed application may be viewed at H.M.I.P., Highwood Pavilions, Jupiter Road, Patchway, Bristol, BS12 5SN during working hours. Representation concerning this application may be made in writing to Her Majesty's Inspectorate of Pollution at the above address within 21 days of the first publication of this notice, and will be taken into consideration in deciding this application.

This notice was first published on

11. Application Information

AUTHORISATION INDEX

SUMMARY FLOW SHEET OF RAW MATERIAL ROUTE



SECTION 1

Surface Technology is a contract surface finisher solely owned by Norman Hay Plc. It is located in Coventry and carries out Engineering and Decorative finishes on a variety of metallic substrates. The primary processes carried out are Electroless Nickel, Nickel Chrome and Powder Paint which in general depending on the work load are run between 8 and 22 hours/day, five days a week. Although in the case of Electroless Nickel the hours are limited to 8 hours/day due to the cleaning cycles that are required.

SECTION 2

The scope on this application is to obtain authorisation for the part A process falling under the Environmental Protection Act 1991 No 472 part 4.3(f) acid processes. The areas that this application covers is primarily Electroless Nickel and Jig/Component strip, but does not eliminate any other minor processes that fall within areas covered by Abatement Systems linked to the formentioned primary processes.

The primary release from these processes will be oxides of nitrogen however, trace quantities of cadmium, lead and mercury could be released in the aqueous form from raw materials purchased from chemical suppliers.

Section 2 cont...

Oxides of nitrogen are released when metallic nickel or jigs removed from the tanks by chemical stripping. The nickel is chemically or electrochemically deposited during processing, of parts, as an unwanted side reaction of the process. The following summarises the reactions that could occur.

$$3Ni + 2NO_3^- + 8H^+ \rightarrow 3Ni^{2+} + 2NO_2 + 4H_2O$$

$$Ni + NO_3^- + 3H^+ \rightarrow Ni^{2+} + HNO_3 + H_2O$$

$$NO_2 + NO + H_2O = 2HNO_2$$

$$Ni + 4HNO_3 \rightarrow Ni(NO_3)_2 + 2NO_2 + 2H_2O$$

The actual reaction or reactions that do or can occur during the dissolution of nickel by nitric acid are complex and somewhat variable and the above are only some that have been reported to occur. It is important to note however that other oxides of nitrogen may be released during processing and the above is in no means restrictive in terms of this application. This application also covers the release of oxides of nitrogen in their aqueous and solid form. In both the latter two cases they are produced either as a side product of an abatement process or from chemical swills or obsolete waste products. The products produced are either in the form of

$$Ni + 2HNO_3 \rightarrow Ni(NO_3)_2 + 2H^+$$

or

$$HNO_3 \rightarrow H^+ + NO_3^-$$

Section 2 cont...

or a multitude of other complex or free ions that may be present proceeding or proceeding on effluent plant. In respect to the bulk removal of waste nitric acid which does not proceed through an internal effluent plant, the mixture is made up of a variety of nitric acid breakdown products and possible complexes of nickel.

SECTION 3

Part 3.1

Incoming material covered by this application are as follows:

1)	Nitric Acid	(45 litre drums)	59%
2)	Caustic Liquor	(45 litre drums)	32%
3)	Caustic Soda	(25kg sacks)	
4)	Caustic Liquor	(1000 litres)	70%
5)	Ammonia	(45 litres)	
6)	Electroless Nickel Solutions	(205 litres)	
7)	Hydrofluoric Acid	(45 litres)	70%
8)	Sodium Cyanide	(50kg Drums)	

However, this list in no means eliminates the use of other chemicals that are presently used. It only covers the chemicals that are known to contain or can produce oxides of nitrogen and cadmium or mercury, the latter as impurities or trace metals. The list also only covers chemicals utilised on those plants that can produce or inhibit oxides of nitrogen, such as the Electroless Nickel, jig strips and effulent plants.

Section 3 cont.....

1) Nitric acid is purchased from Ellis & Everard, and comes in 45 litre plastic drums. This is delivered by their own transport and is stored in an external storage area without a bund wall. The total quantity stored on site at any given time would be approximately 900 litres. The storage area drains are linked directly to the fowl sewer with two retaining chambers to control any spillages that occur accidentally. The drums are approximately 66 x 38.1 cm. The nitric acid is utilised for cleaning tanks and jigs as well as an etchant. No known quantities of mercury, lead or cadmium are found in this liquor. However, oxides of nitrogen can be released.

2) Caustic Liquor is purchased from Ellis & Everard and comes in 45 litre, 1000 litre and 25kg sacks. This is delivered by their own transport and is stored in an external unbunded storage area in case of the former two and internally in case of the latter. The tanks are plastic 66 x 38.1 cm and 101 x 116 cm respectively, with the latter mild steel externally strengthened. The total quantity stored on site at any given time would be approximately 2900 litres and 1 tonne respectively. The storage area drains are linked directly to the fowl sewer. The caustic liquor is reported to contain 0.01 ppm of Hg while the pearl material contains less than 1 ppm.

Section 3 cont.....

3) Ammonia liquor is purchased from Ellis & Everard and comes in 45 litre plastic containers (66 x 38.1 cm). This is delivered by their own transport and is stored in an external storage area without a bund wall. The total quantity stored on site at any given time would be approximately 450 litres. The storage area drains are linked directly to the fowl sewer. No known quantities of mercury, lead or cadmium are found in this liquor. However, oxides of nitrogen could be formed under certain circumstances.

$$4NH_3 + 5O_2 = 4NO_2 + 6H_2O$$

However, this only occurs at elevated temperatures of 800 °C and will thus not occur under normal storage conditions.

The caustic liquor is utilised as a pH adjuster and within the effulent plant to assist precipitation.

4) Electroless nickel solutions are presently purchased from Atotec and Fintec in 205 litre (100 x 50 cm) plastic containers. The solutions are used to make up a working solution of electroless nickel. The containers are stored internally in a building which is fully bunded or next to the production plant, in which all drains lead to the effulent plant.

Section 3 cont.....

Each supplier has a proprietory make up which require 3 different parts to prepare the working solution.

In the case of Atotec, part A and part C contain trace amounts of cadmium , mercury and lead in the order of 40, 0.01 and 100 ppm respectively. Similar quantities are found in the concemtrated Fintec solutions in the order of 40, 5 and 30 ppm respectively (please attached analysis sheets).

At any given time the maximum storage of this raw material would be approximately 2000 litres.

The cadmium and lead are added as proprietry additions to act as brighteners and stress relieving agents.

5) Hydrofluoric acid solution is purchased from Ellis & Everard and comes in 45 litre plastic containers, (66 x 38.1 cm). This is delivered by their own transport and is stored in an external storage area which is unbunded. The total quantity stored on site at any given time would be approximately 225 litres. The hydrofluoric acid is used as an etchant during processing and is mixed with nitric acid.

The storage area drains are linked directly to the fowl sewer with two retaining chambers to control any spillage that occurs accidentally.

Section 3 cont.....

6) Sodium Cyanide is purchased from Cannings and comes in 50 kg metal kegs (66 x 38 cm). This is delivered by their own transport and is stored in a locked and alarmed storage area. The total quantity stored on site at any one time would be approximately 500 kg. The cyanide is used with caustic soda to prepare cleaning solutions.

Part 3.2 Electroless nickel

The best description found within the Environmental Protection Act 1990 Guidance note IPR4/11 to cover the application carried out at Surface Technology is dissolution of metals and metal alloys section 4.3.

The chemicals utilised on this plant are used to pre-treat and coat, in the main, Aluminium, Steel and Brass with electroless nickel or Niflor. Both process coatings are usually classified as engineering finishes and are primarily utilised to improve wear and for corrosion resistance of the substrate material.

Figure one shows a plan view of the process plant in question with tables 1 and 2 summarising the solutions found each tank. The process plant is surrounded by a 6 inch tall bunded wall which is utilised to contain any chemical spillages and divert them to the effulent plant.

It should be noted that tanks 4, 12, 13, 14, 19, 21, 27, 28, 29, 30 contain or could possible contain chemicals that can produce oxides of nitrogen or are covered separately as part as A process, for example trace amounts of cadmium, lead and mercury.

Section 3 cont.....

The following summaries the tank, its contents, its primary use and possible air born, aqueous or contained effluent covered by the act. All process solutions are aqueous based and do not contain solvents. All tanks are either 400 or 840 litres in size and measure 76 x 71 x 106 and 76 x 122 x 106 cm respectively.

a) Tank four a 840 litre mild steel tank is utilised for a cyanide based caustic cleaner which is run at ambient temperature and extracted through an unscrubled manifold, the recorded lip duct velocity being 2700 ft/min. The solution contains 200 g/l caustic which by inference contains approximately 2 mg/l mercury.
This solution is static and loss is only through dragout via processed parts. This is equivalent to 25 kg/wk or 25 mg/wk of mercury. The solution is changed every 12 months and is removed by external contractors in drums provided.

b) Twelve, thirteen and fourteen are polypropylene 400 and 840 litre tanks which are utilised for Niflor, an electroless nickel/PTFE dispersion coating, which runs at 84°C and pH 4.5. The tanks are extracted through a scrubbed manifold with lip extract velocity of 2350 ft/min. The solution contains trace amounts of mercury, cadmium and lead in order of 1, 8 and 6 ppm respectively. Over the life time of the bath 480 litres of concentrate is used, approximately 5% of this is dragged out, the remaining is used during plating. Thus 720, 960 and 120 ppm of mercury, cadmium and lead is released over a four week period or 9600 hours.

Section 3 cont.....

The solutions are agitated but non flowing and loss is only through dragout or deposition, the latter at approximately 4 um/hr. Replenishment is carried out manually and is dependent on component throughput. Redundant solutions are removed approximately every 4 weeks by external contractors.

The tanks are leached out with 35% (50% or 75% concentrate) nitric acid every 5 days to remove nickel found on the tank walls. The following summarises the stripping reaction and products produced.

$$Ni + 4HNO_3 \rightarrow Ni(NO_3)_2 + 2NO_2 + 2H_2O$$

1 mole of nickel will produce 2 moles of NO_2.

It has been shown that 0.18 g of nickel is dissolved per litre of nitric acid per cleaning operation. Thus in an 800 litre tank 144 g or 205 g of Niflor (20% PTFE, 10% phos phorces) will be leached.

The surface area of the tank walls are 5.1 m^2 and 144 g deposited on this surface area would be equivalent to 4.0 um. As 35% nitric acid dissolves electroless nickel at approximately 6 microns/hour at 20 °C the leach would be completed in 40 minutes. Therefore in 40 minutes 225 g NO_2 would be produced or 150g NO_2 over a hour period.

Section 3 cont....

The extraction rating of this manifold is 15660 cfm (note greater detail given in Abatement section) thus approximately 5.6 mg NO_2/m^3 would be released in 1 hour or 0.23 mg NO_2/m^3 over a 24 hour period. Taking into account only one tank can be leached at any given time the maximum release would therefore be from tanks 12, 13, 14 5.6 mg NO_2/m^3 per hour.

c) Tanks 19 and 21 are 400 and 840 litre poly propylene tanks respectively and contain 35% nitric acid solutions at ambient temperature which are primarily used to desmut and dezincate aluminium components. In the former no reported release of acids of nitrogen occurs, while in the latter

$$Zn + 4HNO_3 \rightarrow Zn(NO_3)_2 + 2NO_2 + 2H_2O$$

occurs thus producing nitrogen dioxide amongst other possible oxides of nitrogen, for example:

$$Zn + 10HNO_3 \rightarrow 4Zn(NO_3)_2 + 5H_2O + N_2O$$

The amount of Zinc deposited during the Zincate stage of pre treatment

$$3Zn(OH)_2 + 2Al \rightarrow 2Al(OH)_4^- + 3Zn + 4OH^-$$

is reported to be 5 x 10 m or 0.05 um, thus for all intense of purpose this is considered to be trivial as the maximum release would be 0.017 moles of NO /hour or 0.79 g/hr. However, these tanks are extracted through a scrubled manifold, the lip velocity recorded to be 5000 ft/min. The solution is static and contains no known quantities of cadmium or mercury.

Section 3 cont.....

d) Tanks 27, 28, 29 and 30 are polypropylene tanks, the former two being 400 litre, the latter 840 litres. The tanks are utilised for the deposition of electroless nickel, and contains solutions that operate at 96°C and a pH of 4.8. The solutions contain trace amounts of mercury, lead and cadmium in the order of 0, 0.8 and 0.72 ppm respectively. The tanks are extracted through a scrubbed manifold with lip extract velocities of 4000 ft/min.

The solutions are agitated but non flowing and loss is only through dragout or deposition, the latter at approximately 20 um/hr. Replenishment is carried out automatically and is dependent on component throughput. Redundant solutions are removed approximately every two weeks by external contractors. Over the life time of the bath 560 litres of part C is used, approximately 5% of this is dragged out the remainder used during plating. The tanks are leached out with 35% nitric acid, held in storage, every two days to remove nickel found on the tank walls. The following equation summarises the stripping reaction and products produced.

$$Ni + 4HNO_3 \rightarrow Ni(NO_3)_2 + 2NO_2 + 2H_2O$$

It has been shown that 0.18 g of nickel is dissolved per litre of nitric acid per cleaning operation. Thus in an 800 litre tank 144 g or 160 g ENP will be leached.

The surface area of the tank walls are 5.1 m^2 and 160 g of ENP deposited on this surface area would be equivalent to 3.9 um. As 35% nitric acid dissolves electroless nickel at 6 um/hr at 20 °C the leach would take 40 minutes.

Section 3 cont.....

Therefore in 1 hour 225 g NO_2 would be produces or 150 g NO_2 over a hour period.

The extration rating of this manifold is 15660 cmf thus approximately 5.6 mg NO_2/m^3 would be released in 1 hour or 0.23 mg NO_2/m^3 over a 24 hour period. Taking into account only two tanks can be leached at any given time a maximum release from these tanks would be 11.2 mg NO_2/m^3 per hour.

Thus the total release of NO_2 into the extract system is 16.8 mg NO_2/m^3 per hour, when both electroless nickel and niflor are taken into account. Further this release would be completed within 1 hour after which only background NO would be expected. The release of mercury, cadmium and lead into the effulent plant would be expected to be 2880, 3840, 480 ppm respectively, over a four week period, when taking into account the ENP, niflor and cleaner solutions, or 4.2 ppm Hg, 5.7 ppm Cd and 0.5 ppm Pb over a hour period. Assuming water flows of 13,880 litres/hour the concentration of lead, mercury and cadmium from this plant is considered to be trivial.

e) Two 860 litre polypropylene storage tanks are utilised to hold the 35% nitric acid. The tanks are held in a bunded area unextracted but covered. No release of NO_2 has been monitored above the holding tanks and the solution is held at ambient temperatures. The loss of nitric acid to the effulent plant from this source is relatively low and is only found when the transfer pumps are flushed out. The loss is minimised by the sealed recirculation system and is approximately 2 litres/tank or 4 litres/day.

Section 3 cont.....

The nitric acid solutions are exchanged, dependent on throughput, approximately every 6 weeks by external contractors.

Part 3.3 Process Tanks Jig Strip

The best description found within the environmental protection act 1990 Guidance Note IPR4/11 to cover this process is dissolution of metals and metal alloys section 4.3.

The chemicals are used on this plant to remove chrome and nickel from jig tips. These are plated as a side reaction during nickel chrome plating of component parts.

Figure 2 shows a plan view of the process plant in question with table 3 summarising the solutions found in each tank. This plant is still to be installed and the information given in this section is that presently foreseen to be implemented.

The plant will be surrounded by a bund wall capable of holding 2 x the capacity of the largest tank.

It should be noted that only tanks 1 and 5 will contain chemicals covered by this application in a concentrated form. However, the other tanks may contain trace amounts of nitric acid and caustic solution due to dragout.

All tanks are 3000 litre tanks in size and neasure 243 x 68 x 183 cm.

Tank 1 is a mild steel tank and contains an ambient alkaline solution made up of 100 g/l caustic soda. The tank is extracted through a scrubbed manifold with lip velocity of 0.76 m^3.

Section 3 cont.....

It is utilised to remove chrome anodically from the jig tips. The solution is made up with caustic pearl which contains 0.01 ppm mercury. Thus the working solution contains 0.001 ppm of mercury. This solution is an agitated static solution with loss occuring only through dragout. The dragout is approximately about 5% of the solution/wk or 150 litres. This is carried over to the counterflow running water rinse which runs at 10 litre/min. The release of mercury to the effulent plant is therefore less than 1 ppb and is assesed to be trivial. The concentrated caustic solution is removed by external carrier every 3 months and replaced.

Tank 5 is a stainless steel tank that contains ambient concentrated nitric acid (70%) and sulphamic acid (2 g/litre). The solution is used to chemically strip nickel from jig tips. The solution is non-running but agitated and loss is only through dragout. The tank is extracted through a scrubbed manifold with a lip velocity of 1.46 m^3/sec. The solution loss is approximately 5%/wk, however, the dragout is recirculated back into the tank.

Thus chemical loss is relatively small and is expected to be 50 litre/wk from past experience.

The removal of nickel however, being chemical in nature releases oxides of nitrogen.

$$Ni + 4HNO_3 \rightarrow Ni(NO_3)_2 + 2NO_2 + 2H_2O$$

The stripping rate is reported to be in the order of 5 um/min.

Section 3 cont.....

In general a jig tip will be coated with approximately 15 um of nickel and is approximately 2.15 cm^2 in area. There will be approximately 208 tips/jig and 700 jigs/day stripped. Thus, total area stripped over a 24 hour period would be 31 m^2 or 469 cm^3 of nickel. This is equivalent to 4.1 kg or 69 moles of nickel metal. Thus one can assume over a similar period that 139 moles of NO_2 is released or 12.8 kg or 533 g NO_2/hr. The extraction rating of the fan is 11052 m^3/hour thus maximum concentration will be in the order of 48 mg NO_2/m^3 prior to the scrubbing system.

The remaining tanks on the plant are either running water swills or hot water rinses and contain no noxious chemicals other than those acused by dragout. Thus being relatively small due to the recirculation system. All drainage and tank water flow to the effulent plant for treatment.

SECTION 4 Abatement Measures

4.1 Atmospheric Emissions ENP

The plant under question is fitted with a comprehensive extraction ventilation system. All tanks other than the water swills and storage tanks are extracted. Further, the tanks that contain the electroless nickel solutions and nitric acid, where stripping or etching occurs, as described in previous section, are extracted and the extract taken through a scrubber system (plan included, appendix 3), to minimise the emission of any oxides of nitrogen to the atmosphere. The plant and extraction were both installed and built by Plasticraft.

The extract system was set and tested by the manufacturer to meet recommended levels. Recent lip velocity measurements of the scrubled tanks are summarised below:

Tank	ft/min
6	5000
10	4690
12	1880
13	2125
14	2090
19	5000
21	5970
27	2950
28	3000
29	6450
30	8220

Section 4 cont.....

The air velocities are checked every 12 months, and the fan adjusted to maintain flows to manufacturers guidelines.
Variations found since the original installations 12 months previously were relatively low. Total extract volume was equivalent to 15560 cfm. Emissions taken in 1992 showed that <0.3 ppm was detectable prior to the scrubber. However, to complement and confirm this finding on line monitoring over a 8 hour continuous period was recently undertaken prior and subsequent to the scrubber. The results are tabulated in Section 7.
However, in summary it would appear that the total NOx concentration falls well below the limit stated in IPR 4/11 of 300 mg/m^3 prior and subsequent to the scrubber, with the converted NO value equivalent to 36 mg/m^3 /NO_2 at its maximum. No detectable level of NO_2 was measured over the eight hour period in question. It should also be noted that the post scrubber concentration was greater then the pre scrubber value, which indicated that interference subsequent to the scrubber may be causing ambigous results . These results correlated closely with the expected values predicted from first principles and discussed in section 3(d).
The scrubber system is wet based and utilises 2% w/w caustic solution which is held in a 6000 litre holding tank at ambient temperature. The liquor is routinely checked once a day and the pH and nickel content logged.

Section 4 cont.....

A ball value system enables the storage tank to be held at a present level and excess water/liquor is drained via an overflow part to the effulent plant. Manual additions are routinely added to maintain the correct pH, to optimally remove any noxious gas (acidic).

The holding tank is cleaned once every 12 months, with the liquor removed and replaced by a new make up.

The gases removed from the scrubber, are not presently routinely checked but pass up an exhaust stock, 91.4 cm in diameter, at 11 m/sec. This stack rising three metres above the apex of the roof at a diameter of 850. The temperature of the discharge gas is ambient as no cooling or heating systems are provided on the stock and the reactions that occur in the process tanks, although exothermic, are insufficient to warm the scrubber solution above the ambient temperature that it operates at.

4.1(b) Atmospheric Emission Jig Strip

The plant under question is not presently installed but will be fitted with a comprehensive extract ventilation system. All tanks other than the water swills will be extracted and scrubbed.

The scrubber system will be based on a similar arrangement to that covered in the previous section and will be built by the same manufacturers. The extract system will be set and tested to ensure lip velocity of 10 m/sec. The extract volume being equivalent to 6500 cfm or 3.07 m^3/sec.

Section 4 cont.....

The scrubber capacity will be 2.3 m^3 and hold 2% w/w caustic solution, which will be continuously monitored for pH and dosed to correct the pH to the optional value to remove any noxious acid gases. The pH and dosed values will be logged daily. The scrubbed gas will pass up a 66 cm diameter stock at 8.97 m/sec and be released 3 metres above the roof apex. Gases will be checked in accordance with doses set in the authorisation.

Section 4.2 Water Emission

Both plants in question will utilise a single multi purpose effulent plant presently installed and operational.

Figure 6 gives a pictorial sketch of the plant and its drainage and dosing systems. The plant works on the basis of precipitation and solid waste removal.

In the case of the electroless nickel and jig strip plants the effulent will be divided into relevant streams, i.e. chrome strip rinses to chrome pit with the other effulent streams going to the main mixing pit.

The chrome pit is automatically monitored and controlled by both redox and pH meters. Within the pit the chrome solution in the hexavalent state is converted to the trivalent state to enable it to be precipitated out in the main precipitation pit. The conversion is carried out by meta-bisulphide, which is automatically dosed when required. The converted solution is automatically transfered to the precipitation pit where it is mixed with other effulent streams from the electroless nickel, jig strip and other production plants.

Section 4 cont.....

The solution within this initial precipitation pit is adjusted automatically to a pH of 10.5 by caustic liquor (70%) containing 0.01 ppm mercury or hydrochloric acid (36%) dependent upon incoming solution pH. The pH of this pit is continuously automatically logged on a chart recorder.

The initial precipitation pit has a capacity of 38,000 litres and measures 6.8 x 1.9 x 3 metres in size. The solution from this pit weirs over into a secondary settlement pit with a capacity of 19,000 litres. At the weir a polyelectrolyte is continuously dosed into the aqueous stream to assist floculation and agglomeration of the precipitate. The solution weirs to the bottom of the second pit where the precipitate settles and is removed either directly to the filter press or to the sludge holding tank (13,000 litres), the latter pumped to the filter press continuously. The liquor removed from the filter press is recirculated back to the first precipitation pit. The treated liquor from the secondary precipitation pit is weired over at the sump top and flows into the fowl sewer. The outgoing water is monitored continuously for both pH and flow rate and is automatically recorded.

The outgoing water is further spot monitored manually 5 times daily for hexaveilent chrome, pH, nickel and suspended solids. The effulent is required to be kept within stringent consent limits set by Severn Trent (see section 7).

Section 4 cont.....

All running rinses not containing chrome or cyanide are directed to the initial precipitation pit with one exception. These are the rinses subsequent to the electroless nickel and niflor solutions. The effulent from these rinses go directly to the second pit to eliminate complexation of the other metals released during processing. This is carried out in accordance with approval from Severn Trent.

Analysis for lead, mercury and cadmium are not carried out presently as they are only found as impurities or proprietry additions in incoming raw materials in trace amounts.

The caustic liquor utilised within the plant is consumed, dependent on demand, at approximately 1000 litres/week.

Previous calculations indicated that 0.3 mg of Hg were released per hour from the process plants to the effulent plant. Taking into account 5.9 litres of caustic soda solution is released per hour from the effulent dosing unit a total mercury content of 0.36 mg of mercury is released per hour. However as the water flow rate is 13,880 litre/hour the mercury content will therefore be below 0.4 micrograms per litre and thus below the weighted monthly average of 5 ug/litre that it should not exceed.

The cadmium content will be less than 0.4 ug/litre and thus below the maximum permitted level of 10 ug/litre. It should be noted that all water released during processing and that found from normal precipitation and collected on Surface Technology premises is routed to the fowl sewer and does not go into the river water course directly. Thus, no NRA approvals are required. This has been acknowledged by the NRA.

4.3 Solid Waste

Solid and liquid waste is produced from both electroless nickel and the jig strip plants as well as a by product of the effulent plant.

Year to date the following has been removed in regard to the plants in operation.

Electroless Nickel Solution	90,000 litres
Electrolytic Nickel Waste	8400 litres
Jig Strip Proposed	6000 litres
Excillary Plant and Equipment	25,000 litres

Solid Waste

All solid and liquid waste is removed in accordance with present regulations and is carried out by B V H. Section 17 are raised prior to removal from Surface Technologies premises.

Surplus and empty containers are washed out after use and either returned to the original supplier or disposed of by B V H.

Section 5 Planned Maintenance and Training

All plant maintenance is carried out in accordance with an agreed schedule set down by either the plant manufacturers or chemical suppliers. Spare parts are held in accordance with recommendations of plant suppliers. A comprehensive maintenance manual has been provided by the manufacturers of both the effulent and electroless nickel plants. Training in respect to contract and maintenance of the abatement systems is regularly carried out to ensure that at least 5 people are knowledgeable in respect to the running of the forementioned plants and equipment. This training is carried out by the plant manufacturers.

Process plant training is carried out in acordance with company training procedures and is logged in reference to BS5750.

Section 6

6.1 House Keeping

House keeping is kept up to company standards by both internal audits, carried out by a competent staff member in accordance with external insurance company demands, and by external audits carried out by Health and Safety auditors.

Unloading of trucks is carried out only by fully qualified and licenced fork lift drivers. Chemicals are segregated by type. A full ongoing inventory is kept and formal chemical stock checks are carried out every 6 months.

6.2 Contingency Planning

In the case of chemical spillages of raw materials, clean up and absorbant materials are kept on site to reduce the chance of chemicals reaching the water course. The on site drainage pipeline has been installed with two seperate oil seperation pits prior to it reaching the fowl sewer link. This enables not only oil but any chemical spillage to be retained, treated and removed prior to meeting the main sewer. Process spillages are retained by bund walls surrounding the plants and drainage is directly to the effulent plant.

Breakdown or malfunctions within the air or water abatement systems is rectified by on site maintenance or manual controls. Plant closure and/or reduced operations in respect to water flow etc. are implemented until satisfactory repairs are undertaken and completed.

In the case of uncontrolled polluted water/chemical spillages reaching the fowl sewer or water course accidently the relevant authorities are informed immediately using emergency 24 hour numbers provided.

Section 7 Authorisation

7.1 Water Consents

The local water authority to the Coventry site covered by this application is Severn Trent Water Plc. Effulent consent limits have been set by the above forementioned in regard to aqueous waste leaving the premises and reaching the fowl sewer. (Appendix 2) Severn Trent routinely check the outgoing water leaving the effulent plant to ensure it meets the required standards and to calculate effulent charges.

Section 7 cont.....

No water or waste is envesaged to directly reach the water course and thus NRA approval has not been obtained. Consultation however, with this body did take place as a licence to pump water directly from an underground water source, presently not in use, is held by the company.

7.2 Atmospheric Emissions

HIMP approval under the alkali act 1974 has been submitted and approved dependent on an exhaust stock extention. This is awaiting planning permission and should be completed by January 1994.

7.3 Other Authorisations

Local authority authorisation for the coating of metal and plastic products has been approved and granted (copy enclosed).

Section 8 Site Plans

All available site plans are enclosed within this application.

Section 9 Mass Balance

a) Electroless nickel contains trace amounts of cadmium a prohibited substance. Over twelve months the following was purchased containing this element.

2500 part A	(17,462 litres)
2500 part B	(3906 litres)
2500 part C	(13,046 litres)
MP4-M	(3505 litres)
MP4-F	(5590 litres)

Section 9 cont.....

Total Cadmium Content = 1.10 kg

Usage a) Effulent plant = 55.3 g (5%)

b) Plated out = 810.3 g

c) Liquid Waste = 183.5 g

Note a) Based on 5% loss due to dragout

b) Liquid waste equivalent to 12.5% or 25% dependent on process

Thus on the basis 14,000 litres/hr of water is utilised in a normal year 89 x 10 litres of water is used. Thus average yearly cadmium content in the effulent plant is equivalent to 0.6 ug/litre.

b) Caustic soda contains trace amounts of mercury a prohibited substance. Over twelve months the following was purchased containing this element:

Caustic Pearl = 5315 kg

Caustic Solution (70%) = 16,530 litres

Assume that 0.01 ppm Hg in both types of raw material than total mercury content is equivalent to 53.3 g over 12 months or 0.59 ug/litre. This assumes that all caustic content is released through the effulent plant. Not all the caustic utilised was however used on the plants in question and this would indicate the worst situation.

Section 9 cont.....

c) Nitric acid is utilised to strip out electroless nickel tanks or unwanted nickel plates as a side reaction on the tank walls. The process can release oxides of nitrogen into the atmosphere a prohibited substance. Over twelve months the following has been purchase of

Nitric Acid 70%	(7626 litres)	
Present Virgin Stock	(310 litres)	
Dragout to Effulent	(381.3 litres)	or (373 g)
Present Storage	(1200 litres)	(70%)
Liquid Waste Removal	(3400 litres)	
Difference	(2335)	

Assuming that all waste acid utilised to etch tanks is fully degraded. Total acid content used for etchant of nickel will be (5735 litres).

$$Ni + 4HNO_3 \rightarrow Ni(NO_3)_2 + 2NO_2 + 2H_2O$$

5735 litres of HNO_3 = 5620 g of nitric acid.

This will provide 2 moles of gaseous nitrogen dioxide and two moles of aqueous nitrate for every 4 moles of nitric acid.

Thus 89 moles of nitric acid will produce 44 moles of nitrogen dioxide and 44 moles of nitrates or 2024 g of NO_2 and 3520 g of NO_2 a year. The former equivalent to 8.096 g NO_2/day (250 working days a year).

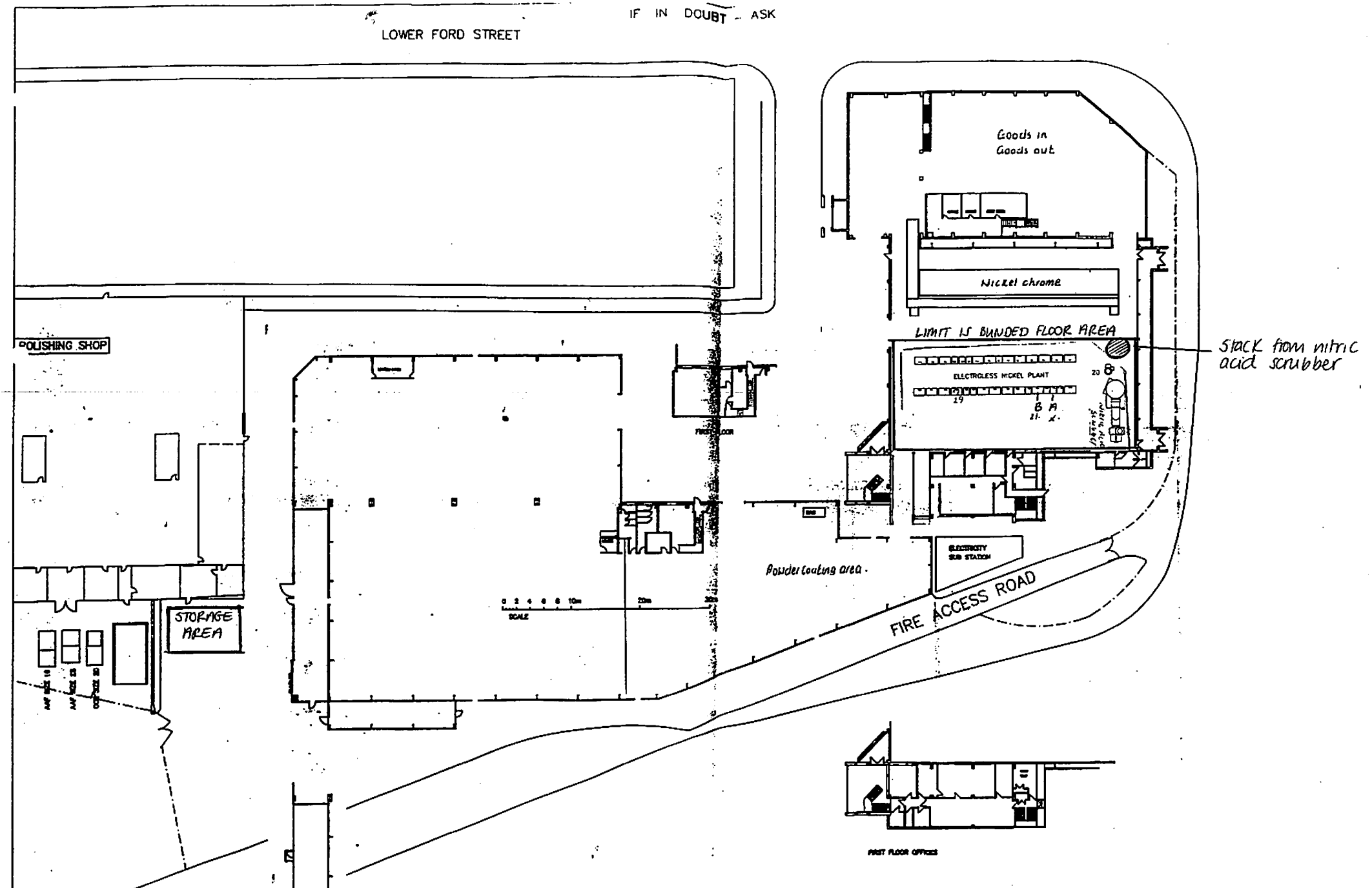
No other chemicals purchased are reported to contain cadmium or mercury in any detectable quantities. Further no other raw material is expected to release oxide of nitrogen into the water course or atmosphere.

Section 10 Proposed Plant Modifications

The jig strip plant has not yet been installed and will be built with equipment and control systems to meet present and future regulations and requirements. The electroless nickel plant is predicted to be improved and moved over the next 24 months. However, the atmospheric abatement system attached to this plant is not expected to be changed in any major way other than improved automation of detection, monitoring and dosing of the scrubber holding tank liquor and gas release.

The effulent plant has recently been modified and improved to meet present consent limits. Further reductions in out going limits would require major alterations and changes to the plant and are not presently envisaged. However, new technologies are always being evaluated.

Storage of raw materials is planned to be improved, with wet chemicals held segregated dependent on type in caged bunded areas. While dry chemicals will be held in caged palleted racked areas.



Amendments	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.	REV.	Date	Appd.
	A	30.04.93	BUILDING CONTROL OPT															

PROJECT '92

Client. SURFACE TECHNOLOGY PLC

PLASTICRAFT LIMITED.

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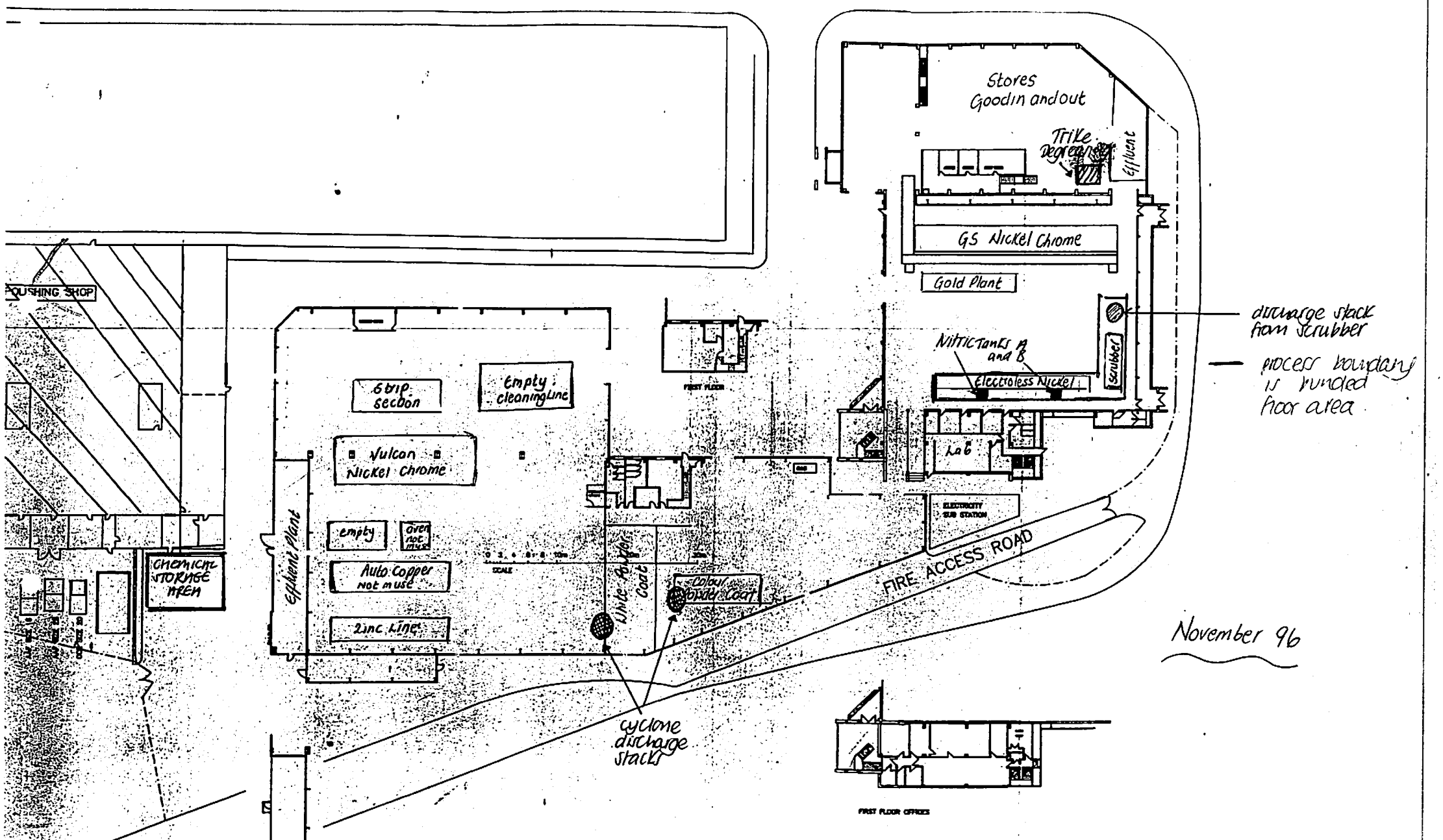
Date drawn. 13 JAN 1993	Enq. No.
Scale. 1:250	Drg. No. 7419-03A

IF IN DOUBT – ASK

LOWER FORD STREET



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	A	30.04.93																
	BUILDING CONTROL OPT PHASE 2 RE-ISSUED 12.05.93																	

PROJECT '92

Title. GODIVA PLACE, COVENTRY

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Drawn by. MRB	Checked by.
Date drawn. 13 JAN 1993	Eng. No.