ENVIRONMENTAL
INFORMATION
MANUAL

CONOCO, INC.
VCM PLANT
WESTLAKE, LOUISIANA

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CONOCO VCM PLANT

ENVIRONMENTAL INFORMATION MANUAL

TABLE OF CONTENTS

SECTION IV. HAZARDOUS WASTE REGULATIONS AND GUIDELINES

RCRA GUIDELINES

FACILITY INSPECTION PLAN

CONTINGENCY PLAN

EMERGENCY AND DISASTER PLAN

MANIFEST SYSTEM

SUPERFUND REPORTING

ASBESTOS HANDLING PROCEDURE

DTH 000120198

SECTION I

GENERAL POLICIES

AND GUIDELINES

SECTION I

COMPANY POLICY

The worldwide activities of CONOCO, Inc. involve extensive uses of natural resources. CONOCO accepts wholeheartedly its corporate responsibility for maintaining and improving the quality of the environment.

Specifically, it is the policy of CONOCO to conduct all its activities in such a way as to effect prudent and responsible use of air, water, land and other natural resources. Moreover, CONOCO recognizes that because the beauty of the environment and the protection of wildlife are of prime importance to man's well-being, these also are among its essential concerns. In making decisions on the use of natural resources, the resultant benefits to society will be weighed against the costs of maintaining and improving the environment.

CONOCO, Inc. adopts these goals:

1. To recognize the need for environmental improvement and to work vigorously toward carrying out the necessary programs of developing, installing, operating and maintaining effective control equipment.

2. To continue the search for new products and new processes compatible with the environment.

3. To anticipate possible emergencies threatening environmental quality and to prepare plans for the prompt handling of these emergencies.

4. To accumulate and disseminate scientific and technical information on environmental matters to the end that abatement implementation will be by the best available methods and at the lowest possible cost.

5. To use aggressively scientific and technical knowledge and skill in anti-pollution and conservation activities throughout all of CONOCO's operations.

6. To continue to cooperate with those governmental agencies charged with promulgating, administering and enforcing laws and regulations pertaining to natural resources.

7. To maintain an awareness of and sensitivity to environmental responsibility among all CONOCO employees through a strong program of information and education.

8. To communicate to the public CONOCO's commitment to environmental conservation.

SECTION I

PLANT POLICY

At the VCM Plant, each individual is responsible for minimizing pollution and for seeing that a good sound pollution abatement program is practiced.

Should a large spill or large gas emission occur, the Plant Manager will be notified immediately. Large spills or large gas emissions which do not endanger life or property, but which may violate federal or state pollution regulations will be handled by the guidelines set forth in this manual. Major spills or major gas emissions which endanger life or property and violate federal or state regulations will be handled by the Emergency and Disaster Plan in section IV of this manual.

Because of familiarity with most possible plant pollutants, Operations will be responsible for cleanup of a pollution problem. In addition, the Chief Process Engineer will be available to act as technical advisor.

It is plant policy that only the Plant Manager or his specific designee will issue any statements to local, state or federal agencies, news media or company management.

SECTION I

POSSIBLE SOURCES OF POLLUTANTS

A. Water

The plant process effluent is composed of several streams which leave the plant and flow into the secondary waste treatment system, and then into Bayou Verdine.

The rainwater effluent exhausts into two areas. The battery limits and 75% of the offsites drain to the secondary waste treatment system. The other 25% drains into the pond south of the Vinyl Chloride Plant.

Major Water Effluent Sources	Possible Pollutants
1. EDC Purification Water Wash System	Ethyl Chloride Ethylene Dichloride Hydrochloric Acid Sodium Chloride Sodium Formate Sodium Hydroxide Ethylene Glycol Ethylene Chlorohydrin Vinyl Chloride
2. Process Sewers, Block I	Anti-foulants Ethyl Chloride Ethylene Dichloride Heavy Tars Sodium Hydroxide Steam Condensate (Temperature)
3. Process Sewers, Block II	Cu Catalyst During Oxy Reactor Washing Ethylene Dichloride Furnace Decoking Organics Heavy Tars Hydrochloric Acid Steam Condensate (Temperature)
4. C-500 Bottoms	Chlorine Ethylene Dichloride Hydrochloric Acid Iron Sulfuric Acid Cooling Tower Biocides Cooling Tower Dispersents

5. Offsites, NE Section	Cooling Tower Makeup Chemicals Suspended Solids
6. Offsites, SE Section	Chlorine Ethylene Dichloride Oils Other Organic Chlorides Sodium Hydroxide Suspended Solids Calcium Chloride
7. Offsites, W Section (Rainwater runoff to pond due south of VCM Plant)	Oils Suspended Solids

B. Air

The plant air emissions presently come from six major sources. (See the Plant EIQ in Appendix.)

Source	Possible Emission
1. R-201 A & B	Carbon Monoxide Sulfur Dioxide Hydrocarbons Nitrogen Dioxide Particulate Matter
2. C-500	Particulate Matter Sulfur Dioxide Nitrogen Dioxide Carbon Monoxide Hydrogen Chloride Chlorine VCM Ethylene Ethane Methane Hydrogen Ethylene Dichloride Ethyl Chloride 1,1,2 Trichloroethane
3. Dock EDC Tank (T-415)	Ethylene Dichloride Other chlorinated hydrocarbons Hydrogen Chloride
4. Dock VCM Vent Recovery	VCM

5. Vent Incinerator

Particulate Matter
Sulfur Dioxide
Nitrogen Dioxide
Carbon Monoxide
VCM
Chlorine
Hydrogen Chloride

C. Solid and Liquid Wastes

The solid and liquid wastes that are generated in the plant are classified into two major categories, hazardous and non-hazardous, according to the Resources Conservation and Recovery Act (RCRA). Wastes at the VCM Plant are defined as hazardous if they contain or are contaminated by VCM or EDC. Wastes are also hazardous if they fail any one of the following tests: 1) Ignitability, 2) Corrosivity, 3) Toxicity, and 4) Reactivity. Hazardous wastes as defined by RCRA regulations must be handled, stored, and disposed of according to the requirements set forth in this manual. The following wastes have been classified as hazardous:

1) Heavy ends from the distillation of ethylene dichloride in ethylene dischloride production (EDC tars).

2) Heavy ends from the distillation of vinyl chloride in vinyl chloride production (VCM tars).

3) Asbestos insulation.

4) Vinyl Chloirde (VCM) contaminated material.

5) Ethylene Dischloride (EDC) contaminated material.

6) Copper Pit Sludge.

7) T-1 Pit Sludge.

8) T-2 Pit Sludge.

9) VCM Plant Wastewater.

10) Incinerator Wastewater.

11) Laboratory Hood Charcoal Beds.

12) EDC and VCM Filter Cartridges.

13) T-500 Pit Limestone.

14) Spent Calcium Chloride.

15) Laboratory Sample Bottles.

16) Laboratory Chemical Reagent Bottles.

17) Copper Chloride Catalyst.

18) Raschig Rings.

19) T-500 Pit Sludge.

20) Secondary West Equalization Basin Sludge.

21) Secondary South Equalization Basin Sludge.

22) Secondary Activated Sludge Unit (A.S.U.) Material.

23) T-981 Pit Sludge.

24) T-982 Pit Sludge.

25) Incinerator Overflow Box Sludge.

26) Quench Column Coke.

SECTION I

GUIDELINES FOR DAILY POLLUTION CONTROL

1. C-500

   During upsets in the system which cause a heavy load on the C-500 vent scrubber, the large water dumps should be used to minimize possible air pollution.

2. C-500 Venturi Scrubber

   The venturi scrubber pump will be run continuously. The T-509(T-1) pit should be acidic when this pump is running. Pumping caustic will cause severe corrosion to C-500 tower.

3. Cleaning Contractors

   Maintenance will have the responsibility of instructing cleaning contractors on safety and pollution hazards. No organic solvents can be dumped into the effluent water system under any conditions.

4. Cooling Tower Blowdown

   An excessive number of blowdown points can cause relatively low cycles of concentration in the cooling tower operation. This results in high chemical treating costs. Unnecessary blowdown points should be minimized whenever possible.

5. Drainage Ditches

   Plant storm and process sewers should be cleaned frequently. Residue considered hazardous under RCRA regulations should be disposed into appropriate hazardous waste containers.

6. Filter Servicing

   Spills from filter servicing should be minimized whenever possible. All spills should be water washed to the process sewers immediately.

7. Housekeeping Practices

   When spills do occur, it is the person's responsibility who is causing the spill to clean the area promptly. Spills should be prevented when possible.

8. Outdoor Burning

   No open burning is permitted in this plant unless prior approval is obtained from the Plant Manager.

9. Pump Priming and Servicing

Corrective action should be taken immediately to repair leaks or other mechanical problems to insure minimum effluent contamination.

Priming or servicing spills should be hosed down immediately with water into the process sewers.

10. Sampling

Special VCM sampling systems must be used at all times. Special EDC sampling systems will be available and should be used at that time. Samples other than VCM should be flushed to the process sewers for the minimum period required to insure an accurate sample. All spills should be hosed down with water when they occur.

11. T-510(T-2) Pit

The T-510 pit west of the C-500 vent scrubber should be checked periodically to insure that the EDC level is low enough to prevent free EDC from reaching the secondary water waste treatment system. EDC should be pumped to the wash system for recovery.

12. T-500 Neutralization Pit/Feed to Secondary pH Control

The T-500 neutralization pit acts to neutralize hydrochloric acid by passage through clam shell or limestone rock. It is the Shift Supervisor's responsibility to have this pit checked at least once per shift and to order clam shell as needed. The pit should be checked each shift to insure that channeling through the bed does not occur. The feed to the secondary pH should be maintained at 5.0 to 6.0 by adjustment of the trim neutralization system.

13. Venting of Gases

The venting of gases to the atmosphere should be minimized whenever practical.

14. Steam Stripper

One of the two plant steam strippers must be kept in operation at all times. The column must never handle and liquid over 7.0 pH.

15. Secondary Waste Treatment System

The pumper/loader will be responsible for control of the secondary system except for the in-plant pH control system which will be operated by a boardman. Secondary operating and maintenance guidelines are included in Section III.

16. Closed Process Sewer

Pump casing, vessel contents, column washes, etc. shall be drained to the closed process sewer for the processing through the steam stripper for removal of vinyl chloride and ethylene dichloride.

SECTION I

GOVERNMENT REQUIRED ROUTINE POLLUTION SAMPLING

I. Water

EPA NPDES Permit Compliance samples (see appendix) are the only required routine water samples.

II. Air

The following emission points will be monitored to demonstrate compliance with EPA vinyl chloride regulations.

A. Incinerator - The exit gases will be continuously monitored for VCM content. For compliance this stream must contain less than 10ppm Vinyl. Continuous vinyl chloride vent concentrations will be fed to the Interdata Computer for tabulation.

B. Oxy Vent - Vinyl Chloride emissions must be limited to 0.2 grams per kilogram of ethylene dichloride produced from the oxychlorination process. Continuous vinyl chloride vent concentrations will be fed to the Interdata Computer for calculation of emission quantities.

C. Carbon Beds at Docks - Vent gases from these carbon beds will be monitored by the dock area fixed point monitor. Vinyl chloride content is limited to less than 10 ppm as established in the vinyl standard.

III. Solid and Liquid Waste

All wastes which were suspected of possibly being hazardous were sampled and tested for purposes of compliance with the November 19, 1980, date for submittal of the RCRA Phase I permit application and in accordance with DNR Analytical Operations Procedure Manual. These wastes were sampled and analyzed in accordance with the EPA procedures to determine whether each waste would qualify as hazardous based on the criteria as given in RCRA 261 Subpart C, if the waste stream did not already qualify under Subpart D. All wastes were sampled with these determinations as priority, a secondary consideration being the proper handling of the waste, based on the analytical information generated, to supplement historical handling information already a part of normal operating procedures.

The results of the analysis of each waste will be considered to be representative of that waste until such time as information is received or generated which indicates analysis of the specific waste has changed. This indicator could be results of an analysis performed by an offsite disposal facility, a change in the waste generation process, an indication in the storage or treatment process, or simply a suspicion by the specific facility operator that certain characteristics of the waste have changed.

At such time that changes in the waste generation process occur that may change the characteristics of the waste, the specific stream will be sampled and analyzed in accordance with EPA procedures (or an equivalent method), to determine the extent of the change in analysis and the hazardous/non-hazardous waste status. Handling and disposal of the wastes will, at that time, be based upon the degree and type of hazard the analysis indicates.

SECTION I

EMERGENCY POLLUTION GUIDELINES

The possibility of an emergency pollution problem is minimized by proper operation and maintenance of all process equipment. In the event of such an emergency, the following procedure should be followed.

1. The Plant Manager will be notified of a large spill or gas emission immediately after precautions are taken for the safety of personnel in the area of the spill or emission.

2. Only the Plant Manager or his designee will report, to the proper authorities, a pollution problem which has spread beyond the plant boundary limits.

3. Operations will be responsible for coordination and control of all efforts necessary to minimize the pollution hazard. The Chief Process Engineer will act as technical advisor.

4. The following steps shall be taken immediately to minimize a pollution hazard.

   a. Water Pollution Hazard

      Should a large liquid spill occur, first efforts should be directed toward preventing further spillage. The spill should be trapped in an existing pit (T-500, T-509(T-1), T-510(T-2), or secondary system pits) to prevent it getting into the plant effluent outfall.

      Vacuum trucks should be ordered as necessary to recover any liquid spill (such as ethylene dichloride) which cannot be neutralized into an inorganic salt compound. In the event of an acid spill, clam shell or caustic should be added to the trapping pit to provide neutralization.

      Should a spill occur in an area which does not drain into an existing effluent pit, efforts should be made to contain the spill within the plant boundary limits. A possible method is the damming of a drainage ditch; and then, using vacuum trucks or neutralization as required to minimize the problem.

      If a hazardous chemical spill reaches Bayou Verdine then action should be taken to report the spill to state and federal authorities.

   b. Air Pollution Hazard

      Should a large gas emission occur, first efforts should be directed toward preventing further gas emission. Since most gases in the VCM Plant are toxic, flammable, or both, extreme care should be taken when attempts are made to stop a gas emission. Water sprays should be used when required to prevent a fire or an explosion hazard. The proper safety equipment must be used at all times.

      If the released gas is vinyl chloride, refer to the Operational Emergency Plan in the VCM Compliance Plan for specific information on how to handle and report the gas emission.

If the gas emission creates an actual or potential disaster situation, refer to the plant's Emergency and Disaster Plan in Section III.

The Department of Natural Resources has set up a procedure designed to minimize the danger of air pollution emergencies due to stagnant atmospheric conditions. Each industry in the state has submitted an action plan to the state showing how that industry will reduce an emission whenever air stagnation conditions develop. The action plan for the VCM Plant is appended to this section.

If the state Department of Natural Resources (DNR) determines that dangerous atmospheric conditions exist, they will contact each industry and request that one of the three classifications (alert, warning, emergency) of the air emergency episode plan be implemented. Upon notification, the Plant Manager should be immediately notified and he will order any required changes. No action should be taken until the Plant Manager has been contacted. Plant production rates will be reduced only under the most severe condition (the "emergency") and the Plant Manager's approval must be obtained before any rate reductions are started.

EMERGENCY EPISODE PLAN FOR DNR

CONOCO VCM PLANT

Alert Level

1) Minimize all vehicle traffic.
2) Defer all possible truck or rail loading.
3) In winter, cut off cooling tower fans and steam turbine if cooling load will permit.
4) Notify all employees of alert and request that they curtail all vehicle use.
5) Defer any cooling tower chlorination.
6) Defer liquid chlorine car unloading.
7) Cease any spray painting work or sandblasting work.
8) Cease any solvent cleaning operations by maintenance.
9) Cease all fire training school operations.

Warning Level

1) Stop all loading operations of VCM, EDC, and light ends.
2) Shutdown all non-essential motors in plant. Cut night time lighting load to minimum allowable by safety.
3) Defer cleanouts of bauxite and flake caustic beds, unless critical.
4) Cut off or curtail any non-essential production. Eliminate any material "reworking".
5) Notify employees of warning and of requirement for use of car pools.

Emergency Level

1) Cease all non-emergency vehicle use. Release all non-essential people from reporting to work.
2) Cut back plant to 80% of design (1.6 MM lbs/day VCM) and minimize oxy vent gas hydrocarbons.
3) Cut back cracking furnaces to maximum possible degree.
4) Cut off spare pumps wherever possible. Minimize steam supply to all reboilers.

SECTION I

EMERGENCY TELEPHONE NUMBERS

A. State and Local Agencies

Agencies to contact in case of --

1. Water Pollution Incident

a. Division of Water Pollution Control	(504) 342-6364
Office of Environmental Affairs	(504) 342-6363
Department of Natural Resources	
Baton Rouge Office	
Holidays, Nights or for Hazardous Wastes	(504) 342-5595
b. Alternative to above call:	
La. Office of Conservation	(504) 342-5540
c. U.S. Coast Guard	
Duty Officer, New Orleans	(504) 589-6275
Duty Officer, Port Arthur	(713) 971-2261
d. Calcasieu Sheriff's Office	491-3702

Agencies to contact in case of --

2. An Air Pollution Incident

a. Calcasieu Lake Charles Health Unit	491-2040
Dr. Russell R. Conley(Director)	478-6020
	491-2040
b. Alternate to above call:	
Dept. of Natural Resources	(504) 568-5122
Mr. Gus Von Bodungen	(504) 568-5123
	(504) 342-1206

3. Other Area Industry (if affected)

a. PPG Industries, Inc.	
Contact guard and request guard to contact Shift Supervisor	491-4242
b. Olin Corporation, guard	491-3310
After 4:00 PM	491-3000
c. Cities Service Oil Co., guard	491-6230

SECTION I

EMERGENCY TELEPHONE NUMBERS (Con't)

B. Federal Agencies

1. National Response Center (Superfund Incidents) (24 hours) 1-800-424-8802

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SECTION I

ENTRY RECORD

Visits to the VCM Plant by air/water/solids waste pollution authorities must be noted on the "Entry Record" which follows.

Visitors to the VCM Plant for pollution control surveys may make inspections only under the supervision of the Chief Process Engineer or his designee. In his absence the Plant Manager shall be responsible.

This entry record will provide a complete report of a pollution control visit.

REQUEST FOR ENTRY
TO A CONOCO, INC. FACILITY

1. My name is ______________________. I represent ______________
(agency or bureau)
______________________, which is established by the laws of the (United States) (State of ______________). My official title or position is ______________________. My business address is ______________________________________.

2. In my official capacity, I am requesting admission to ______________
(plant or facility)
______________________, for the purpose of:

( ) a. gathering scientific research information and/or studying technology development, under ______________________;
(statute or popular name of act)

( ) b. making a regularly scheduled inspection of the facilities, under ______________________;
(statute or popular name of act)

( ) c. taking samples of water, air, or ______________ (circle)
type of air monitoring equipment ______________________
water chemical analyses (tests and methods) ______________
location(s) for sampling ______________________

( ) d. making a special inspection of the facilities for the following purposes:
____
____
under ______________________________________;
(statute or popular name of act)

( ) e. gathering evidence for pending or potential criminal or civil proceedings, under ______________________;
(statute or popular name of act)

( ) f. other; specifically ______________________________
____
under ______________________________________.
(statute or popular name of act)

3. I specifically wish to see the following units or activities:
____
____
____

4. I will split samples and furnish you the analytical results of the tests.

5. I understand that I will be furnished a guide and such other assistance as I may require for information or safety. I will comply with all safety regulations and instructions, whether written or oral, while on the premises.

______________ ______________________________
(date) (Visitor)

______________ Title: ______________________
(time)

Visit authorized by:

____
Plant Manager

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SECTION II

VCM EMISSION REGULATIONS

AND PLANS

SECTION II

NATIONAL EMISSION STANDARD

FOR

VINYL CHLORIDE

Subpart F—National Emission Standard for Vinyl Chloride

[41 FR 46559, October 21, 1976]

§ 61.60 Applicability.

(a) This subpart applies to plants which produce:

(1) Ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene,

(2) Vinyl chloride by any process, and/or

(3) One or more polymers containing any fraction of polymerized vinyl chloride.

(b) This subpart does not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of no more than 0.19 m^3 (50 gal)

(c) Sections of this subpart other than §§61.61; 61.64 (a)(1), (b), (c), and (d), 61.67; 61.68; 61.69; 61.70; and 61.71 do not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of greater than 0.19 m^3 (50 gal) and no more than 4.07 m^3 (1100 gal).

[42 FR 29005, June 7, 1977]

§ 61.61 Definitions.

Terms used in this subpart are defined in the Act, in subpart A of this part, or in this section as follows:

(a) "Ethylene dichloride plant" includes any plant which produces ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene.

(b) "Vinyl chloride plant" includes any plant which produces vinyl chloride by any process.

(c) "Polyvinyl chloride plant" includes any plant where vinyl chloride alone or in combination with other materials is polymerized.

(d) "Slip gauge" means a gauge which has a probe that moves through the gas/liquid interface in a storage or transfer vessel and indicates the level of vinyl chloride in the vessel by the physical state of the material the gauge discharges.

(e) "Type of resin" means the broad classification of resin referring to the basic manufacturing process for producing that resin, including, but not limited to, the suspension, dispersion, latex, bulk, and solution processes.

(f) "Grade of resin" means the subdivision of resin classification which describes it as a unique resin, i.e., the most exact description of a resin with no further subdivision.

(g) "Dispersion resin" means a resin manufactured in such away as to form fluid dispersions when dispersed in a plasticizer or plasticizer/diluent mixtures.

(h) "Latex resin" means a resin which is produced by a polymerization process which initiates from free radical catalyst sites and is sold undried.

(i) "Bulk resin" means a resin which is produced by a polymerization process in which no water is used.

(j) "Inprocess wastewater" means any water which, during manufacturing or processing, comes into direct contact with vinyl chloride or polyvinyl chloride or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product containing vinyl chloride or polyvinyl chloride but which has not been discharged to a wastewater treatment process or discharged untreated as wastewater.

(k) "Wastewater treatment process" includes any process which modifies characteristics such as BOD, COD, TSS, and pH, usually for the purpose of meeting effluent guidelines and standards: it does not include any process the purpose of which is to remove vinyl chloride from water to meet requirements of this subpart.

(l) "In vinyl chloride service" means that a piece of equipment contains or contacts either a liquid that is at least 10 percent by weight vinyl chloride or a gas that is at least 10 percent by volume vinyl chloride.

(m) "Standard operating procedure" means a formal written procedure officially adopted by the plant owner or operator and available on a routine basis to those persons responsible for carrying out the procedure.

(n) "Run" means the net period of time during which an emission sample is collected.

(o) "Ethylene dichloride purification" includes any part of the process of ethylene dichloride production which follows ethylene dichloride formation and in which finished ethylene dichloride is produced.

(p) "Vinyl chloride purification" includes any part of the process of vinyl chloride production which follows vinyl chloride formation and in which finished vinyl chloride is produced.

(q) "Reactor" includes any vessel in which vinyl chloride is partially or totally polymerized into polyvinyl chloride.

(r) "Reactor opening loss" means the emissions of vinyl chloride occurring when a reactor is vented to the atmosphere for any purpose other than an emergency relief discharge as defined in § 61.65(a).

(s) "Stripper" includes any vessel in which residual vinyl chloride is removed from polyvinyl chloride resin, except bulk resin, in the slurry form by the use of heat and/or vacuum. In the case of bulk resin, stripper includes any vessel which is used to remove residual vinyl chloride from polyvinyl chloride resin immediately following the polymerization step in the plant process flow.

(t) "Standard temperature" means a temperature of 20° C (69° F).

(u) "Standard pressure" means a pressure of 760 mm of Hg (29.92 in. of Hg).

[42 FR 29005, June 7, 1977]

§ 61.62 Emission standard for ethylene dichloride plants.

[42 FR 29005, June 7, 1977]

(a) Ethylene dichloride purification: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in ethylene dichloride purification is not to exceed 10 ppm, except as provided in § 61.65(a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in § 61.65(b)(6)(i) before being opened.

(b) Oxychlorination reactor: Except as provided in § 61.65(a), emissions of vinyl chloride to the atmosphere from each oxychlorination reactor are not to exceed 0.2 g/kg (0.0002 lb/lb) of the 100 percent ethylene dichloride product from the oxychlorination process.

§ 61.63 Emission standard for vinyl chloride plants.

An owner or operator of a vinyl chloride plant shall comply with the requirements of this section and § 61.65.

(a) Vinyl chloride formation and purification: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in vinyl chloride formation and/or purification is not to exceed 10 ppm, except as provided in § 61.65(a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in § 61.65(b)(6)(i) before being opened.

§ 61.64 Emission standard for polyvinyl chloride plants.

An owner or operator of a polyvinyl chloride plant shall comply with the requirements of this section and § 61.65.

(a) Reactor: The following requirements apply to reactors:

(1) The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each reactor is not to exceed 10 ppm, except as provided in paragraph (a)(2) of this section and § 61.65(a).

(2) The reactor opening loss from each reactor is not to exceed 0.02 g vinyl chloride/Kg (0.00002 lb vinyl chloride/lb) of polyvinyl chloride product, with the product determined on a dry solids basis. This requirement applies to any vessel which is used as a reactor or as both a reactor and a stripper. In the bulk process, the product means the gross product of prepolymerization and postpolymerization.

(3) Manual vent valve discharge: Except for an emergency manual vent valve discharge, there is to be no discharge to the atmosphere from any manual vent valve on a polyvinyl chloride reactor in vinyl chloride service. An emergency manual vent valve discharge means a discharge to the atmosphere which could not have been avoided by taking measures to prevent the discharge. Within 10 days of any discharge to the atmosphere from any manual vent valve, the owner or operator of the source from which the discharge occurs shall submit to the Administrator a report in writing containing information on the source, nature

lated vessel; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in § 61.66.

(4) Leakage from relief valves: Vinyl chloride emissions due to leakage from each relief valve on equipment in vinyl chloride service are to be minimized by installing a rupture disk between the equipment and the relief valve, by connecting the relief valve discharge to a process line or recovery system, or equivalent as provided in § 61.66.

(5) Manual venting of gases: Except as provided in § 61.64(a)(3), all gases which are manually vented from equipment in vinyl chloride service are to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in § 61.66.

(6) Opening of equipment: Vinyl chloride emissions from opening of equipment (including loading or unloading lines that are not opened to the atmosphere after each loading or unloading operation) are to be minimized as follows:

(i) Before opening any equipment for any reason, the quantity of vinyl chloride is to be reduced so that the equipment contains no more than 2.0 percent by volume vinyl chloride or 0.0950 m^3 (25 gal) of vinyl chloride, whichever is larger, at standard temperature and pressure; and

(ii) Any vinyl chloride removed from the equipment in accordance with paragraph (b)(6)(i) of this section is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in § 61.66.

(7) Samples: Unused portions of samples containing at least 10 percent by weight vinyl chloride are to be returned to the process, and sampling techniques are to be such that sample containers in vinyl chloride service are purged into a closed process system.

(8) Leak detection and elimination: Vinyl chloride emissions due to leaks from equipment in vinyl chloride service are to be minimized by instituting and implementing a formal leak detection and elimination program. The owner or operator shall submit a description of the program to the Administrator for approval. The program is to be submitted within 45 days of the effective date of these regulations, unless a waiver of compliance is granted under § 61.11. If a waiver of compliance is granted, the program is to be submitted on a date scheduled by the Administrator. Approval of a program will be granted by the Administrator provided he finds:

(i) It includes a reliable and accurate vinyl chloride monitoring system for detection of major leaks and identification of the general area of the plant where a leak is located. A vinyl chloride monitoring system means a device which obtains air samples from one or more points on a continuous sequential basis and analyzes the samples with gas chromatography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry flame ion detection, or an equivalent or alternative method.

(ii) It includes a reliable and accurate portable hydrocarbon detector to be used routinely to find small leaks and to pinpoint the major leaks indicated by the vinyl chloride monitoring system. A portable hydrocarbon detector means a device which measures hydrocarbons with a sensitivity of at least 10 ppm and is of such design and size that it can be used to measure emissions from localized points.

(iii) It provides for an acceptable calibration and maintenance schedule for the vinyl chloride monitoring system and portable hydrocarbon detector. For the vinyl chloride monitoring system, a daily span check is to be conducted with a concentration of vinyl chloride equal to the concentration defined as a leak according to paragraph (b)(8)(vi) of this section. The calibration is to be done with either:

(A) A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.2 of Test Method 106 and in accordance with section 7.1 of Test Method 106, or

(B) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard is to have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than ±5 percent from the certified value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in section 5.2.3.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of calibration standards are to be followed.

[42 FR 29005, June 7, 1977]

(iv) The location and number of points to be monitored and the frequency of monitoring provided for in the program are acceptable when they are compared with the number of pieces of equipment in vinyl chloride service and the size and physical layout of the plant.

(v) It contains an acceptable plan of action to be taken when a leak is detected.

(vi) It contains a definition of leak which is acceptable when compared with the background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system. Measurements of background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system are to be included with the description of the program. The definition of leak for a given plant may vary among the different areas within the plant and is also to change over time as background concentrations in the plant are reduced.

(9) Inprocess wastewater: Vinyl chloride emissions to the atmosphere from inprocess wastewater are to be reduced as follows:

(i) The concentration of vinyl chloride in each inprocess wastewater stream containing greater than 10 ppm vinyl chloride measured immediately as it leaves a piece of equipment and before being mixed with any other inprocess wastewater stream is to be reduced to no more than 10 ppm by weight before being mixed with any other inprocess wastewater stream which contains less than 10 ppm vinyl chloride; before being exposed to the atmosphere, before being discharged to a wastewater treatment process; or before being discharged untreated as a wastewater. This paragraph does apply to water which is used to displace vinyl chloride from equipment before it is opened to the atmosphere in accordance with § 61.64(a)(2) or paragraph (b)(6) of this section, but does not apply to water which is used to wash out equipment after the equipment has already been opened to the atmosphere in accordance with § 61.64(a)(2) or paragraph (b)(6) of this section.

(ii) Any vinyl chloride removed from the inprocess wastewater in accordance with paragraph (b)(9)(i) of this section is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in § 61.66.

(c) The requirements in paragraphs (b)(1), (b)(2), (b)(5), (b)(6), (b)(7) and (b)(8) of this section are to be incorporated into a standard operating procedure, and made available upon request for inspection by the Administrator. The standard operating procedure is to include provisions for measuring the vinyl chloride in equipment ≥4.75 m^3 1,250 gal in volume for which an emission limit is prescribed in § 61.65(b)(6)(i) prior to opening the equipment and using Test Method 106, a portable hydrocarbon detector, or an equivalent or alternative method. The method of measurement is to meet the requirements in § 61.67(g)(5)(i)(A) or (g)((5)(i)(B).

[41 FR 53017, December 3, 1976]

§ 61.66 Equivalent equipment and procedures.

Upon written application from an owner or operator, the Administrator may

(5) The reactor opening loss for which an emission limit is prescribed in § 61.64 (a)(2) is to be determined. The number of reactors for which the determination is to be made is to be specified by the Administrator for each individual plant at the time of the determination based on the plant's operation. For a reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

(i) Except as provided in paragraph (g)(5)(ii) of this section, the reactor opening loss is to be determined using the following equation:

$$C = \frac{W\ (2.60)\ (10^{-6})\ (Cb)}{YZ}$$

where:

C = kg vinyl chloride emissions/kg product.
W = Capacity of the reactor in m³.
2.60 = Density of vinyl chloride at one atmosphere and 20° C in kg/m³.
10^{-6} = Conversion factor for ppm.
Cb = ppm by volume vinyl chloride as determined by Test Method 106 or a portable hydrocarbon detector which measures hydrocarbons with a sensitivity of at least 10 ppm.
Y = Number of batches since the reactor was last opened to the atmosphere.
Z = Average kg of polyvinyl chloride produced per batch in the number of batches since the reactor was last opened to the atmosphere.

(A) If Method 106 is used to determine the concentration of vinyl chloride (Cb), the sample is to be withdrawn at a constant rate with a probe of sufficient length to reach the vessel bottom from the manhole. Samples are to be taken for 5 minutes within 6 inches of the vessel bottom, 5 minutes near the vessel center, and 5 minutes near the vessel top.

(B) If a portable hydrocarbon detector is used to determine the concentration of vinyl chloride (Cb), a probe of sufficient length to reach the vessel bottom from the manhole is to be used to make the measurements. One measurement will be made within 6 inches of the vessel bottom, one near the vessel center and one near the vessel top. Measurements are to be made at each location until the reading is stabilized. All hydrocarbons measured are to be assumed to be vinyl chloride.

(C) The production rate of polyvinyl chloride (Z) is to be determined by a method submitted to and approved by the Administrator.

(ii) A calculation based on the number of evacuations, the vacuum involved, and the volume of gas in the reactor is hereby approved by the Administrator as an alternative method for determining reactor opening loss for postpolymerization reactors in the manufacture of bulk resins.

§ 61.68 Emission monitoring.

(a) A vinyl chloride monitoring system is to be used to monitor on a continuous basis the emissions from the sources for which emission limits are prescribed in § 61.62(a) and (b), § 61.63(a), and § 61.64(a)(1), (b), (c), and (d), and for any control system to which reactor emissions are required to be ducted in § 61.64(a)(2) or to which fugitive emissions are required to be ducted in § 61.65 (b)(1)(ii), and (b)(2), (b)(5), (b)(6)(ii), and (b)(9)(ii).

[41 FR 53017, December 3, 1976]

(b) The vinyl chloride monitoring system(s) used to meet the requirement in paragraph (a) of this section is to be a device which obtains air sampels from one or more points on a continuous sequential basis and analyzes the samples with gas chromotography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry, flame ion detection, or an equivalent or alternative method. The vinyl chloride monitoring system used to meet the requirements in § 61.65(b)(8)(i) may be used to meet the requirements of this section.

(c) A daily span check is to be conducted for each vinyle chloride monitoring system used. For all of the emission sources listed in paragraph (a) of this section, except the one for which an emission limit is prescribed in § 61.62(b), the daily span check is to be conducted with a concentration of vinyl chloride equal to 10 ppm. For the emission source for which an emission limit is prescribed in § 61.62(b), the daily span check is to be conducted with a concentration of vinyl chloride which is determined to be equivalent to the emission limit for that source based on the emission test required by § 61.67. The calibration is to be done with either:

[41 FR 53017, December 3, 1976]

(1) A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.2 of Test Method 106 and in accordance with section 7.1 of Test Method 106, or

[42 FR 29005, June 7, 1977]

(2) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard is to have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than ±5 percent from the certified value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in sections 5.2.3.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of calibration standards are to be followed.

[42 FR 29005, June 7, 1977]

§ 61.69 Initial report.

(a) An owner or operator of any source to which this subpart applies shall submit a statement in writing notifying the Administrator that the equipment and procedural specifications in §§ 61.65 (b)(1), (b)(2), (b)(3), (b)(4), (b)(5), (b)(6), (b)(7), and (b)(8) are being implemented.

(b)(1) In the case of an existing source or a new source which has an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the effective date, unless a waiver of compliance is granted under § 61.11, along with the information required under § 61.10. If a waiver of compliance is granted, the statement is to be submitted on a date scheduled by the Administrator.

(2) In the case of a new source which did not have an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the initial startup date.

(c) The statement is to contain the following information:

(1) A list of the equipment installed for compliance.

(2) A description of the physical and functional characteristics of each piece of equipment.

(3) A description of the methods which have been incorporated into the standard operating procedures for measuring or calculating the emissions for which emission limits are prescribed in §§ 61.65 (b) (1)(i) and (b)(6)(i).

(4) A statement that each piece of equipment is installed and that each piece of equipment and each procedure is being used.

§ 61.70 Semiannual report.

(a) The owner or operator of any source to which this subpart applies shall submit to the Administrator on September 15 and March 15 of each year a report in writing containing the information required by this section. The first semiannual report is to be submitted following the first full 6 month reporting period after the initial report is submitted.

[41 FR 53017, December 3, 1976]

(b)(1) In the case of an existing source or a new source which has an initial startup date preceding the effective date, the first report is to be submitted within 180 days of the effective date, unless a waiver of compliance is granted under § 61.11. If a waiver of compliance is granted, the first report is to be submitted on a date scheduled by the Administrator.

(2) In the case of a new source which did not have an initial startup date preceding the effective date, the first report is to be submitted within 180 days of the initial startup date.

(c) Unless otherwise specified, the owner or operator shall use the Test Methods in Appendix B to this part to conduct emission tests as required by paragraphs (c)(2) and (c)(3) of this section, unless an equivalent or an alternative method has been approved by the Administrator. If the Administrator finds reasonable grounds to dispute the

[Sec. 61.70(c)]

SECTION II

NATIONAL EMISSION STANDARD

FOR

VINYL CHLORIDE

LEAK DETECTION AND ELIMINATION

The CONOCO VCM Plant Leak Detection and Elimination Plan is designed to provide a formalized procedure for controlling leaks from equipment in vinyl chloride service. The plan is organized following the requirements of the leak detection and elimination section of the national emission standard for vinyl chloride. This plan will be reviewed semi-annually to determine if the plan meets the original purpose.

Continuous Monitoring System

A. Purpose

A continuous monitoring system provides a permanent, dependable means to monitor the vinyl chloride concentration at representative points throughout the plant under all wind conditions and directions.

B. Description

Three multipoint area monitors, Honeywell Model 1000 gas chromatographs (CAR) will be used for detection of major leaks and identification of the general area of the plant where a leak is located. The monitors will sample the air at each sample point on a continuous sequential basis, with each point being sampled once every 10 minutes. These chromatographs are CAR-171 for the plant process area, CAR-401 for the offsites area, and CAR-678 for the dock area. The CAR's are presently being utilized for the VCM monitoring plan and have proven to be reliable area monitors. Honeywell has stated that their accuracy is ± 5% at VCM concentrations over 1.0 ppm.

The output from each of the monitoring points of CAR-171 and CAR-401 is printed on a recording chart. The number corresponding to each sampling location is indicated as well as the vinyl chloride concentration in ppm. An analog output from CAR-171 and CAR-401 is also transmitted to a Perkin-Elmer Computer located in the main control room. The computer is programed to average the individual analyses for each monitor point and print the hourly averages for each point at the end of a 24 hour period. Current averages for any point can also be obtained at any time by operator command. Since CAR-678 is used only during ship or barge loading and is located at the dock, it is not tied into the computer system.

C. Location and Number of Monitor Points

The vinyl chloride monitors will utilize the ten monitoring points located in the plant process, offsites and dock areas as shown in Figures 1, 2, and 3, respectively.

Each point is monitored once every ten minutes. However, CAR-678 located at the dock is only operated during ship loading since the dock is staffed and all equipment in vinyl chloride service is in operation only during ship loading.

D. Calibration and Maintenance

The vinyl chloride monitoring system will be maintained, calibrated, and span checked on a weekly schedule. CAR-171 and 401 will have an elution check three times a week to ensure that they are reading the correct chromatograph peaks. CAR-678 will have an elution check before each ship loading. In using the CAR's for OSHA monitoring, it has been the plant's experience that the span changes very little with time and that a weekly span check is sufficient to ensure reliable and accurate readings.

E. Definition of a Leak

A leak shall be defined as any hourly average concentration of VCM over 15 ppm in the process and offsites areas and six consecutive readings of over 5 ppm in the dock area. An audio and a visual alarm will be given whenever a leak occurs in the process and offsites areas. An audio and visual alarm will be given with each analysis of 5 ppm or greater in the dock area.

Weekly Leak Patrol

A. Purpose

The weekly leak patrol will be used as a check on the plant continuous monitoring system. This leak patrol will determine if any area in the plant is not adequately covered by the monitoring system and will also indicate any unnoticed monitoring equipment failure.

B. Description

A Bacharach Instrument "TLV Sniffer" will be used to detect leaks on a weekly leak patrol. This weekly patrol will follow the route shown in Figures 4 and 5. This portable analyzer will also be used to pinpoint major leaks indicated by the vinyl chloride monitoring system.

A log book will be used to record the date, starting time, and ending of each patrol. Persons conducting the patrol will sign each log entry, record each leak found, and record the action taken.

C. Calibration and Maintenance

The portable detector will be maintained, calibrated, and span-checked on a weekly schedule.

D. Definition of a Leak

A leak shall be defined as a background concentration of VCM over 15 ppm in the process and offsites areas. An audio alarm is given by the "TLV Sniffer" whenever a concentration of combustible gases exceeding 15 ppm is detected.

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The operators involved in the leak patrol must then determine the origin of the high concentration of gases. The Action Plan should then be implemented even if the gases are not from a vessel in vinyl service. The type of gas escaping should be noted on the Leak Detection Form.

Action Plan

The action plan upon detection of a leak will be as follows:

1) The person finding the leak will attempt to control the leak.

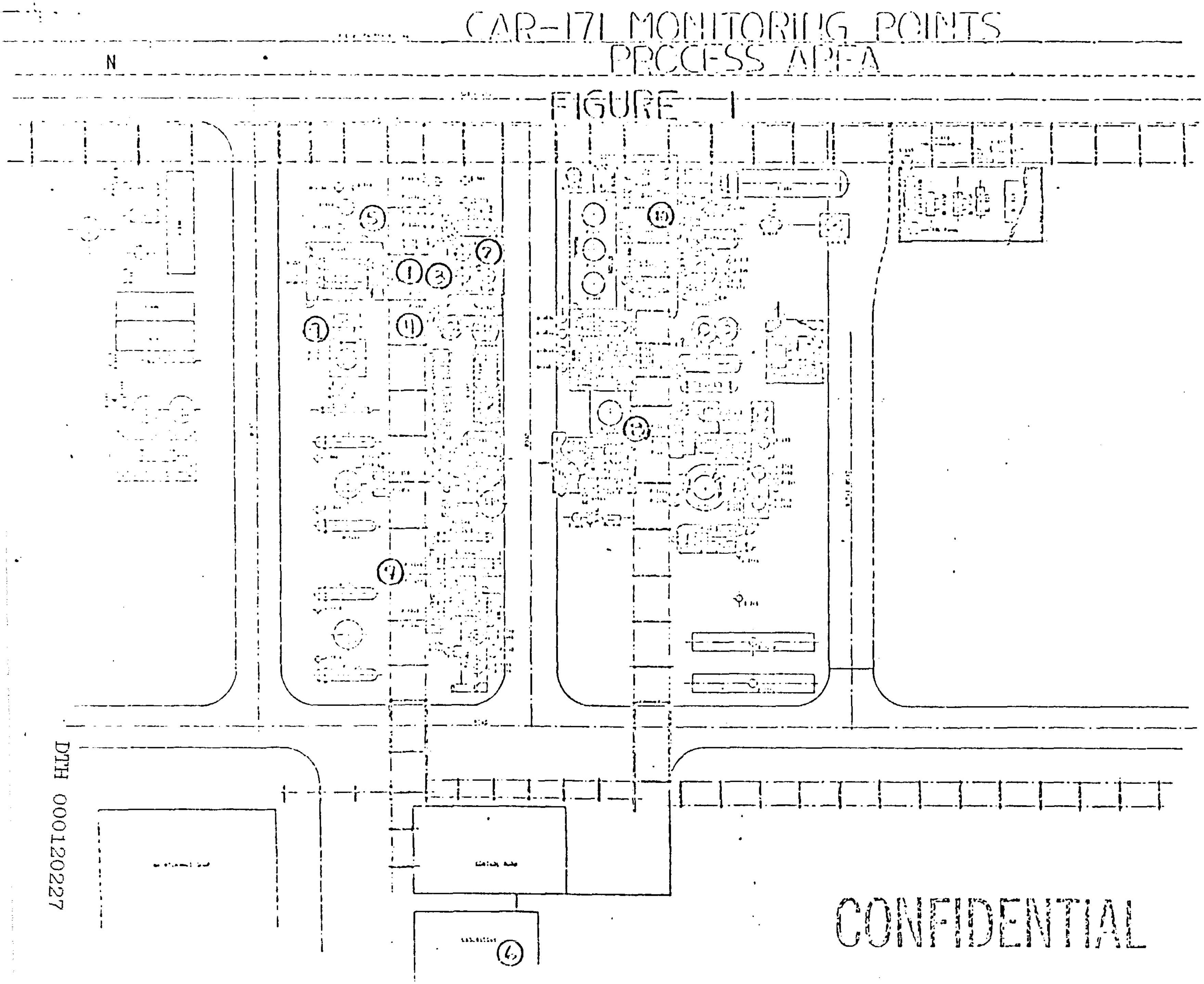
2) If that person is unable to control the leak, the Operations Shift Supervisor will be notified. The Shift Supervisor will take one of the following actions.

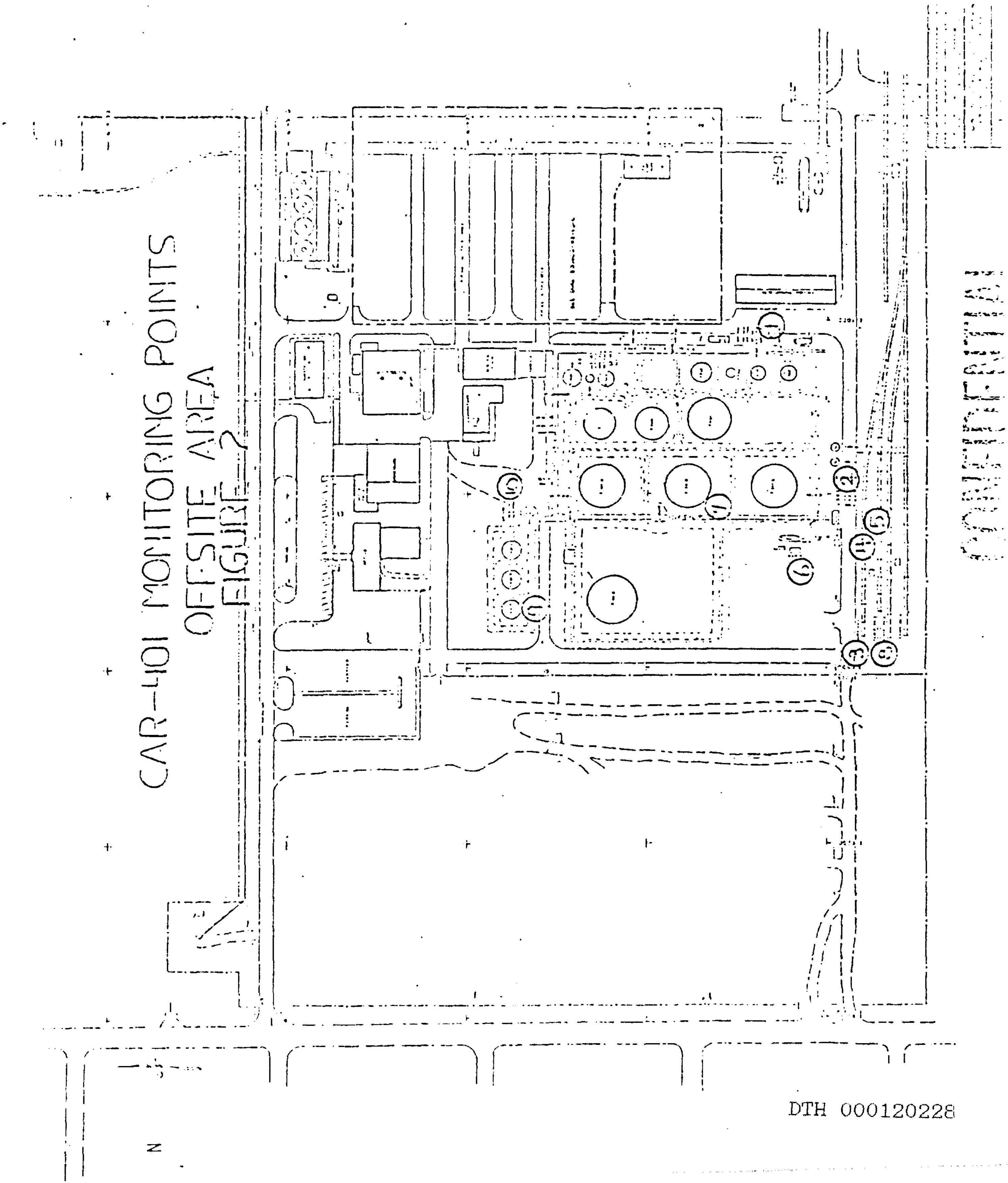
   a) Repair the leak, or

   b) Notify the Maintenance Department to take corrective action to control the leak.

3) The Leak Detection Form (Figure 6) will be initiated by the person finding the leak and given to the Operations Shift Supervisor. If the person finding the leak cannot correct the leak, the Shift Supervisor will either take action to correct the leak or notify the Maintenance Department to correct the leak. The Shift Supervisor will then record the action taken to control the leak.

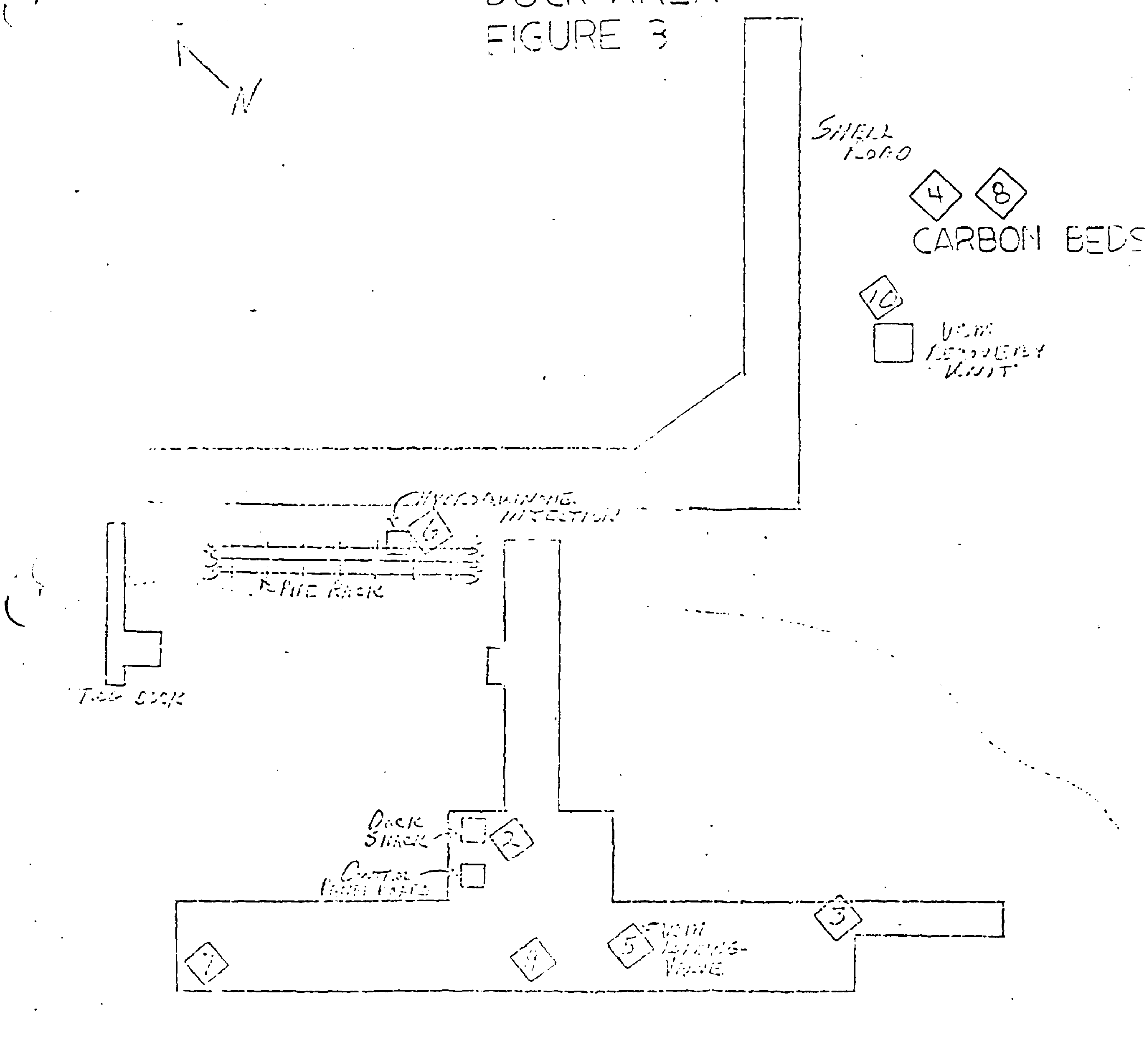
CAP-171 MONITORING POINTS
PROCESS AREA
FIGURE 1





CAR-401 MONITORING POINTS
OFFSITE AREA
FIGURE 2

CAR-678 MONITORING POINTS
DOCK AREA
FIGURE 3



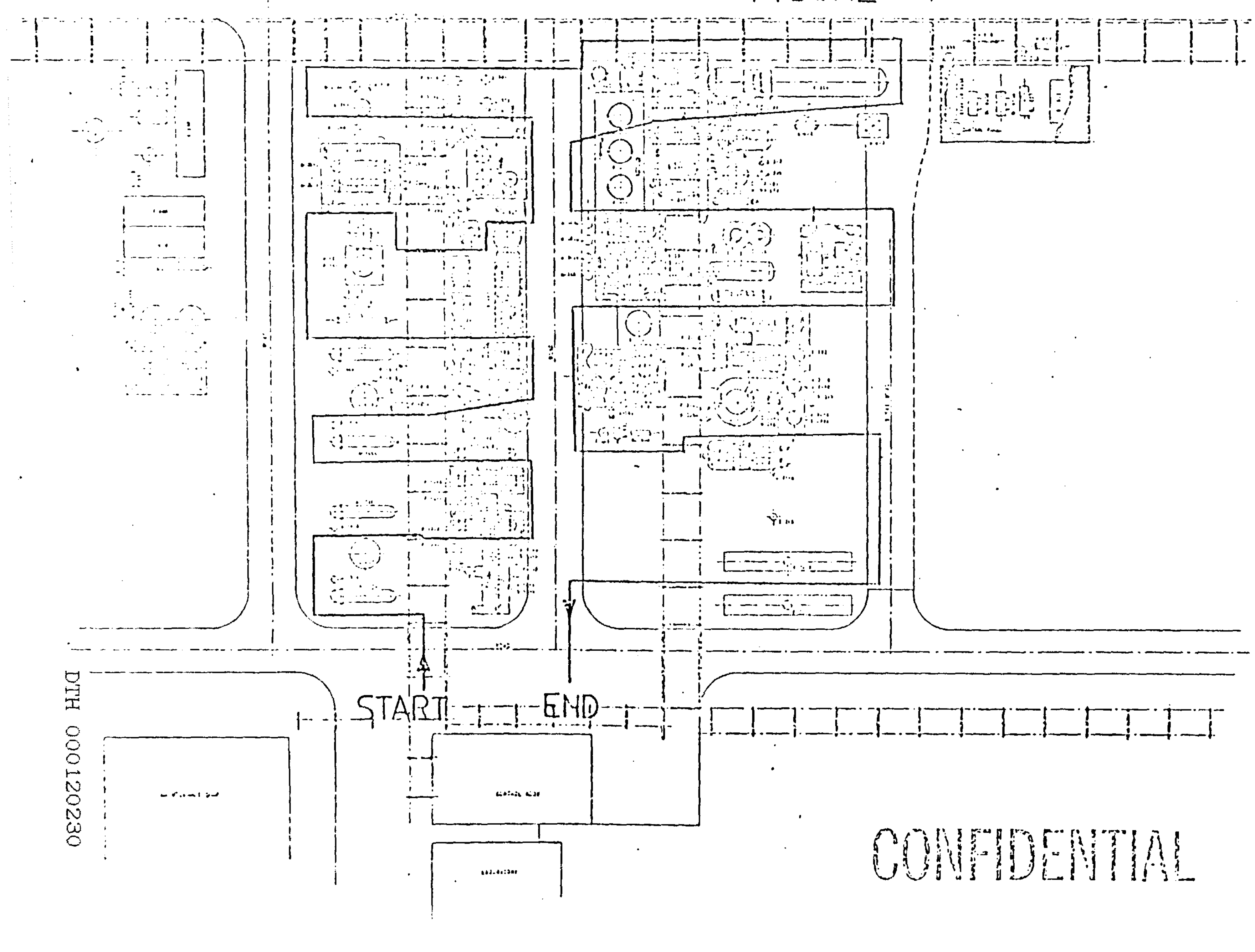
Legend

◇ Sample point no. corresponds to sample point on VCM monitor recorder.

◇1 IS NOT IN SERVICE

DTH 000120229

WEEKLY LEAK PATROL ROUTE
PROCESS AREA
FIGURE 4



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WEEKLY LEAK PATROL ROUTE

OFFSITE AREA

FIGURE 5

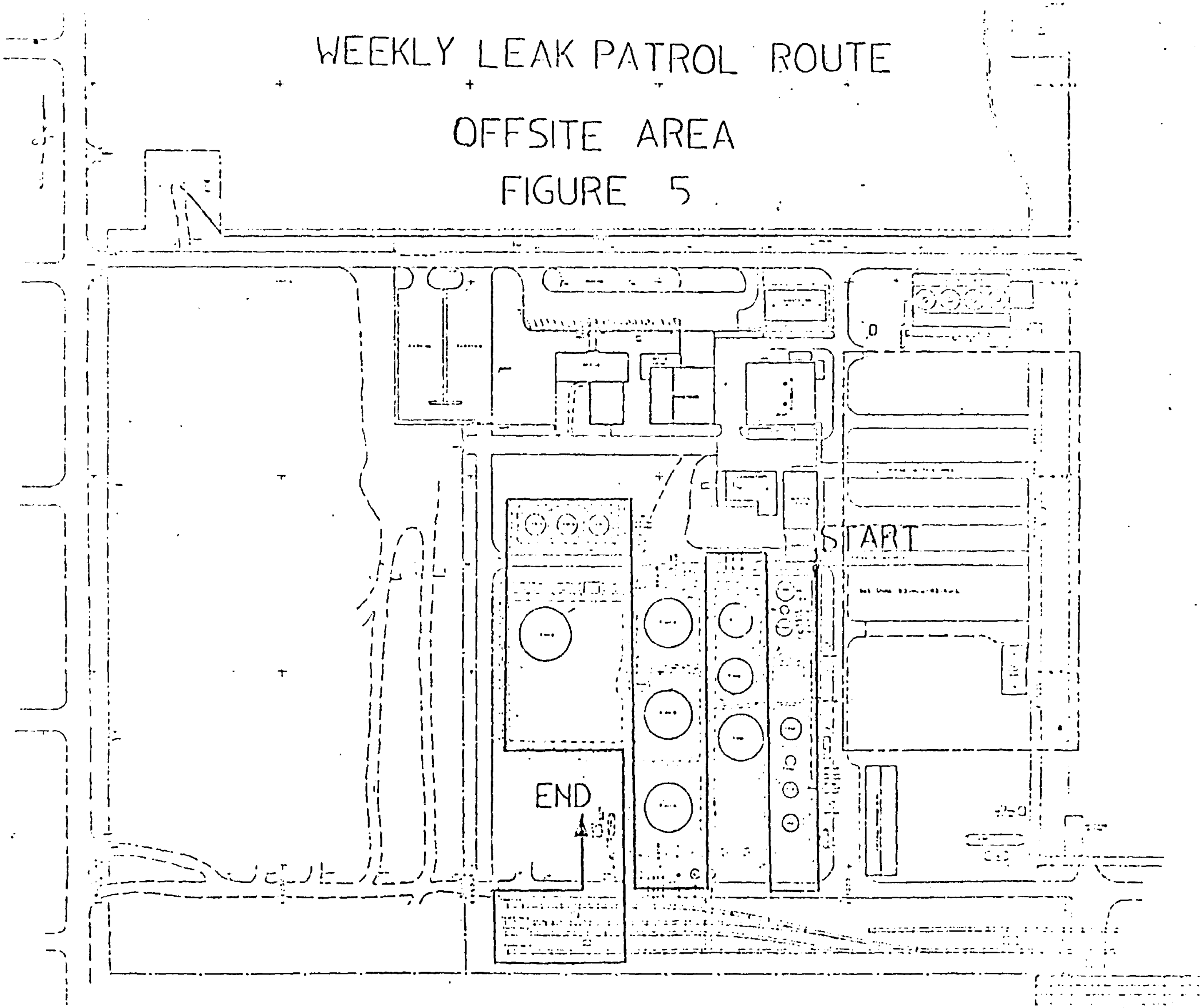

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FIGURE 6
CONOCO VCM PLANT
LEAK DETECTION FORM

Name of person finding the leak:

Date:

Time:

I. To be completed by person finding the leak.

1) Location of Leak:

2) Cause of Leak:

3) Action Taken to Eliminate Leak:

1) Action Taken?

2) Leak Controlled?
3) Leak Not Controlled?
4) Other

II. To be completed by Shift Supervisor if leak has not been controlled.

1) Action taken to control leak.

a) Maintenance Department notified to correct leak?

b) Other?

Name of Shift Supervisor:

What time was the leak reported to the Shift Supervisor?

NOTE: Give this form to J. W. Ware, who in turn, will give it to Engineering for inclusion in our environmental file.

SECTION II

VCM NON-COMPLIANCE REPORTING PROCEDURES

EPA VCM COMPLIANCE RECORDS

The EPA Standards for vinyl chloride emissions require that all vents from equipment in vinyl chloride service, except oxychlorination, contain less than 10 ppm VCM. The vent from the oxychlorination unit must contain less than 0.2 grams of VCM per kilogram of EDC produced. In addition to reducing the VCM emissions to these levels, the EPA Standards also require that the plant continuously monitor the vents and maintain records providing proof of compliance. In the case of the incinerator and oxychlorination vents, the standards require the plant to keep records of the average emissions for each hour. In order to help reduce the labor required to maintain these records, the Interdata computer in the main control room has been programmed to collect the data and calculate and print out the hourly average emissions. The procedures listed below have been formulated to assure that the emissions data compiled by the computer are properly forwarded to the EPA file maintained by the Process Engineering Department. Included also are procedures to assure that the necessary data are collected when the computer is down or when there is a non-compliance.

During normal operation, collection of the computer summary table and used chromatograph charts is all that is required. If there is a non-compliance (i.e., the oxy vent hourly average exceeds 0.2 grams VCM/kilogram EDC produced, the hourly average for the incinerator's stack gas exceeds 10 ppm VCM, or the incinerator or steam stripper are by-passed), a report of EPA VCM vent non-compliance must be completed and forwarded to the Process Superintendent who will forward it to the front office Secretary for filing.

A. Normal Computer Operation

The computer has been programmed to collect and calculate the hourly average VCM emissions from the incinerators and the oxychlorination unit. The computer also compiles and averages the fixed point monitor data for each hour. These averages are printed out at the end of each hour. At midnight the computer prints out a summary table of all the hourly average emissions for that day.

When the computer is operating normally, the Operators need only perform the tasks listed below.

1. Detach the summary table of the hourly average emissions from the computer printout at the end of each day. The summary table should be forwarded to the Process Superintendent who will in turn forward to the front office Secretary for filing.

2. Collect the used charts from CAR-171, CAR-401, CAR-305, and AR-904 and forward them to the Process Superintendent who will in turn forward to the Chief Chemist for filing. Be sure that the beginning and ending date and time are marked on the charts.

B. Computer Failure

In the event of a computer problem or failure, the first action step is to consult the computer guide book and attempt to bring the computer back on line. If the first few attempts to bring it on line are unsuccessful and it appears that the computer will be down for an hour or longer, then procede as follows:

1. Complete a "Report of Computer Failure" sheet (see attachment) and complete the compliance checklist which includes:

   a) Mark the date and time of the computer shutdown/startup on the fixed point monitors CAR-171 and CAR-401.

   b) Mark the date and time of the computer shutdown/startup on the oxy vent analyzer CAR-305.

   c) Call the incinerator control room and inform the Operator to mark the date and time of the computer shutdown/startup on the incinerator analyzer AR-904

   d) Attach the computer printout of any hourly averages of the day recorded prior to the shutdown to the computer failure report.

   e) Manually record the fixed point monitor data during the computer shutdown and attach the log sheet to the computer failure report (see attachment).

2. At the end of the day, attach the summary table of any of the hourly average emissions which might have been recorded to the computer failure report and forward the materials to the Process Superintendent who will in turn forward to the front office Secretary for filing.

3. In the event that the computer remains down for longer than a day or through midnight, then complete a computer failure report for each day and continue manually recording the fixed point monitor data until the computer is back on line. Either a total summary table or a completed computer failure report with appropriate attachments must be forwarded to the front office for filing each day. During prolonged computer shutdowns, the later computer failure reports may simply state that the computer is still down and the fixed point monitor log is attached.

Note: If a total summary table is not printed out at the end of the day, even though no computer problems were indicated during the day, complete a computer failure report making note of the fact and attach the entire computer printout for the day to the report. Also, mark the date and time on any analyzer charts affected.

C. Relief Valve Discharge

A "Report of Relief Valve Discharge in VCM Service" (see attachment) must be completed anytime that a relief valve or rupture disk in vinyl service discharges to the atmosphere. According to the EPA VCM Emission Standards, "In Vinyl Service" means any vent that comes into contact with a vapor stream containing 10 mole % VCM or a liquid stream contaning 10 wt. % VCM. If you are not sure whether a certain relief valve is in vinyl service or not, fill out the report anyway. Any reports of relief valve discharges in VCM service should be forwarded to the Process Superintendent. The EPA Standard requires that all relief valve discharges to the atmosphere be reported within 10 days. Therefore, the VCM Plant Shift Supervisor should be notified by phone immediately.

D. Steam Stripper By-Pass/Shutdown

A "Report of Steam Stripper By-pass/Shutdown" (see attachment) must be completed anytime the wash water by-passes the steam stripper or the stripper is taken out of service. The water by-passing the stripper must be sampled every two hours using the following procedure.

a) Fill a four ounce sample bottle completely full.

b) Indicate on the tag the following information:

Steam Stripper Non-Compliance Sample
Date: Time: VCM:

The Laboratory should refrigerate the samples and analyze for VCM.

Any reports of steam stripper by-pass/shutdown should be forwarded to the Process Superintendent who will forward to Process Engineering for filing.

E. VCM Loading Dock

Proper recordkeeping at the VCM loading dock under normal conditions requires only that the used charts from the dock analyzer and the log sheets be forwarded to the appropriate Refinery personnel. Dock personnel should also be supplied with the forms and instructions to report a relief valve discharge in vinyl service.

Date: ________________ S/S Signature: ____________________

REPORT OF COMPUTER FAILURE (See Note 1)

1. Time of Failure: ____________________

2. Time of Startup: ____________________

3. Reason for Computer Failure: ____________________

____

4. Compliance Checklist:

   a) Mark the date and time of the computer shutdown/startup on the fixed point monitors CAR-171 and CAR-401.

   b) Mark the date and time of the computer shutdown/startup on the oxy vent analyzer CAR-305.

   c) Call the incinerator control room and inform the Operator to mark the date and time of the computer shutdown/startup on the incinerator analyzer AR-904.

   d) Attach to this report the computer printout of any hourly averages of the day recorded prior to the shutdown.

   e) Manually record the fixed point monitor data during the computer shutdown and attach the log sheet to this report.

Notes:

1) This report must be completed anytime that the Interdata computer shuts down for longer than an hour.

2) Describe any circumstances that may be relevant to the computer failure.

Date: ______________ S/S Signature: ______________

REPORT OF VCM RELIEF VALVE DISCHARGE

1. Date of Relief: ______________________________

2. Time of Relief: ______________________________

3. Source of Relief (i.e.; Equipment No. & RV No.): ______________________________

4. Duration of Relief (Estimate as Accurately as possible): ______________________________

5. Reason for Relief Valve Discharge: ______________________________

6. Corrective Action Taken: ______________________________

7. Direction of Wind: ______________________________

8. Was Anyone Exposed? If so, who? ______________________________

9. Witnesses: ______________ ______________

Notes:

1) This report must be completed anytime that a relief valve or rupture disk in vinyl service discharges to the atmosphere. Also, the report must be completed if a valve in vinyl service is manually vented for any reason.

2) Record and describe any conditions or circumstances related to the discharge including such items as temperature and pressure readings before or after.

DATE: ____________ S/S SIGNATURE: ____________

REPORT OF STEAM STRIPPER BY-PASS/SHUTDOWN (See Note 1)

1. Reason for By-Pass or Shutdown: ____________

2. Time of By-pass/Shutdown: ____________

3. Time of End of By-pass/Startup: ____________

4. Analytical Results of Samples Taken (See Note 2)

Date:							
	ppm VCM	ppm VCM	ppm VCM	ppm VCM	ppm VCM	ppm VCM	ppm VCM
0600							
0700							
0800							
0900							
1000							
1100							
1200							
1300							
1400							
1500							
1600							
1700							
1800							
1900							
2000							
2100							
2200							
2300							
2400							
0100							
0200							
0300							
0400							
0500							

Notes:

1. This report must be completed anytime the wash water by-passes the steam stripper (i.e.; by-pass T-110, overflow of T-110, etc.) or the stripper is taken out of service while the wash system is in service.

2. The water by-passing the stripper must be sampled every two hours using the following procedure:

   a) Fill a four ounce sample bottle completely full.
   Note: When the cap is put on, there must not be any vapor space in the bottle.

   b) Indicate on the tag the following info:
   Steam Stripper Non-Compliance Sample
   Date: Time: VCM:

DTH 000120239

The Laboratory should refrigerate the samples and analyze for VCM.

CONOCO

Continental Oil Company
VCM Plant

Fixed Point Monitoring System

Date ____________

	Processing Area – Car 171										Offsites – Car 401										Unit Status
Time	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	
0100																					
0200																					
0300																					
0400																					
0500																					
0600																					
0700																					
0800																					
0900																					
1000																					
1100																					
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1500																					
1600																					
1700																					
1800																					
1900																					
2000																					
2100																					
2200																					
2300																					
2400																					

1st Shift ____________ 2nd Shift ____________ 3rd Shift ____________

EPA VCM NON-COMPLIANCE FORMS

The following form and instructions have been included in this write-up as a means to report the times that the vents are in non-compliance. These non-compliance reports are extremely important since the plant will have to account for any non-compliance in our semi-annual reports to the EPA. More importantly, the information included in the reports may provide insight into problem areas which can be improved to reduce the incidence of non-compliance in the future.

The VCM Plant is technically in non-compliance and violates the emission standards anytime an hourly average emission from either the incinerator or carbon beds exceeds 10 ppm VCM, or an hourly average emission from the oxy unit exceeds 0.2 grams of VCM per kilogram of EDC produced. A "Report of EPA VCM Non-Compliance" (see attachment) must be completed anytime that the computer or GC charts indicate that the plant is exceeding the emission limits. Special care should be taken to relate and describe the reasons for the violation and corrective action taken since these facts must be included in the semi-annual report. Any completed reports of EPA VCM non-compliance should be forwarded to Process Engineering for filing.

DATE: ____________________ S/S SIGNATURE: ____________________

REPORT OF EPA VCM VENT NON-COMPLIANCE (See Note 1)

1) Area of Violation: ______________________________

____

2) Time of Violation: ______________________________

3) Duration of Non-Compliance: ______________________________

4) Reason for Violation (See Note 2): ______________________________

____

____

____

5) Corrective Action Taken: ______________________________

____

____

____

Notes:

1) This report must be completed anytime that an hourly average emission from the incinerator or carbon beds exceeds 10 ppm VCM or the emission from the oxy unit exceeds 0.2 grams VCM per kilogram of EDC produced or a vent by-passes the incinerator.

2) Explain any circumstances which relate to the incident of non-compliance (i.e.; the incinerator was down so many hours because....)

SECTION II

STANDARD OPERATING PROCEDURES

FOR OPENING EQUIPMENT

IN VINYL SERVICE TO

THE ATMOSPHERE

TABLE OF CONTENTS

APPENDIX

SECTION XI

Standard Operating Procedures for Opening Equipment to Atmosphere

The attached operating procedures have been developed in compliance with Section 61.65 (c) of the National Standard for Vinyl Chloride Emissions. These procedures have been established and are used by the Conoco VCM Plant to assure that the vinyl content is reduced to less than 2% before opening any equipment to the atmosphere. In almost all cases however, the attached procedures actually provide for a reduction in vinyl content to less than 25 ppm before opening equipment.

Procedure A presents the details for shutting down the entire vinyl train in preparation for an extensive plant turnaround. The shutdown for turnaround involves an EDC purge of the system to flush out the vinyl chloride. The procedures which follow present details for shutting down and opening individual items during a non-turnaround situation. All items in vinyl service which can be opened individually without a major shutdown have been included.

These procedures will be extended to include the expanded Plant.

PREPARATION FOR OPENING EQUIPMENT IN VINYL SERVICE

A. EDC Purge Procedure for Vinyl Unit (Refer to Figure I)

1. Switch VCM rundown tank and reduce furnaces to 4.0 units of vapor feed.

2. Block in HCL valve to MeCl unit.

3. Kill all furnace fires.

4. Hold vapor feed to furnaces at 3.0 units and cool down until the outlet temperature reaches 190-200°C.

5. Block in all quench; natural and emergency.

6. Keep Oxy on line as long as possible by lowering C-202 pressure. Shut down Oxy when HCl production required. Do not vent from PRC-216-A.

7. Block in the two drain valves at the bottom of the HCL K.O. pot as EDC will accumulate while EDC flushing. Close 1" equalizing valve at K. O. pot. Block in HCL to Oxy at PRC-216-B. (After H-309)

8. Switch VC Tar Still make to T-102.

9. Isolate C-202 from T-204 by blocking in the isolation valves next to column to prevent EDC entering the HCL lines. See attached drawing.

10. Put C-203 bottoms to dry crude.

11. Block in the vapor feed valve to C-202, but continue liquid feed for VCM flushing, lower front end pressure to 10 to 20 PSIG via 2" vent at H-211. (Caution: DEPRESSURING IS LIMITED BY WHAT INCINERATOR CAN TAKE)

12. It may become necessary at this point to add three to four fires on each side of each furnace to maintain 190°C on the furnace outlets.

13. Start N_2 purge to the top of the quench accumulator to sweep out HCL and VCM vapors and to maintain suction head pressure for the P-202 pumps.

14. Start N_2 purge to LRC-201 bleed valve. Block in the upstream block valve to LRC-201 and have board operator open valve wide open. This will flush HCL and VCM out of C-201 as well as S-202 and H-211.

15. While maintaining approximately 3.5 to 4.5 units of steam flow to the HCL column reboiler, take off refrigeration to H-204. Start depressuring C-202 to 5 PSIG slowly via the new depressuring line after H-309 to the dry vent. (CAUTION: DEPRESSURING IS LIMITED TO WHAT INCINERATOR CAN TAKE)

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16. Start hot gassing BL-501.

17. As VCM production falls off, reduce C-203 pressure to 60 psig with tray 5 temp. at 70°C. When EDC shows on local G.C., reduce steam to the reboiler slightly and pump S-205 contents to VCM check tank until reflux pump looses suction.

18. Block in VCM to S-206 and N_2 pressure VCM out of product line to S-206.

19. Start venting H-207 A&B to dry vent header. Watch white elephant level closely to prevent overfilling.

20. Maintain steam flow to C-203 reboiler at approximately 2.5 to 3 units to hold 130 to 140°C on tray 5.

21. Pump accumulated EDC in S-205 to Dry Crude until Reflux Pump loses suction. Put some of this material to the column as reflux to flush that line. Do not try to hold reflux on the column.

22. Start sampling for VCM content at the following points.
    a) C-201 overhead at H-211 (Vapor Sample)
    b) C-202 overhead at PRC-216A (Vapor Sample)
    c) C-203 overhead at sample line to on-stream G.C. (Vapor Sample)
    Sample at one of the three following points each hour for VCM content:
    1) C-201 Reflux
    2) C-202 Bottoms
    3) C-203 Reflux

23. Continue flushing operation for six to eight hours or until VCM content is less than 25 ppm, then empty all equipment and nitrogen purge. Pressure EDC out of all connected lines while emptying.
    NOTES:

    1) Watch levels closely in white elephant and Haveg Drum. Pump to slops.
    2) It will be necessary to have N_2 hoses secured to the following equipment prior to stopping the EDC Flushing Procedure to prevent vent header gases backing into equipment as it cools and to prevent a vacuum being pulled on columns and vessels.
        a) H-201 A&B
        b) R-201 A&B
        c) C-201
        d) S-202
        e) C-202
        f) T-202
        g) C-203
    3) Be sure that overflow line on Haveg Drum is open from side and not bottom.

24. When EDC purge procedure is complete, clear HCL K.O. Pot of EDC using the attached procedure.

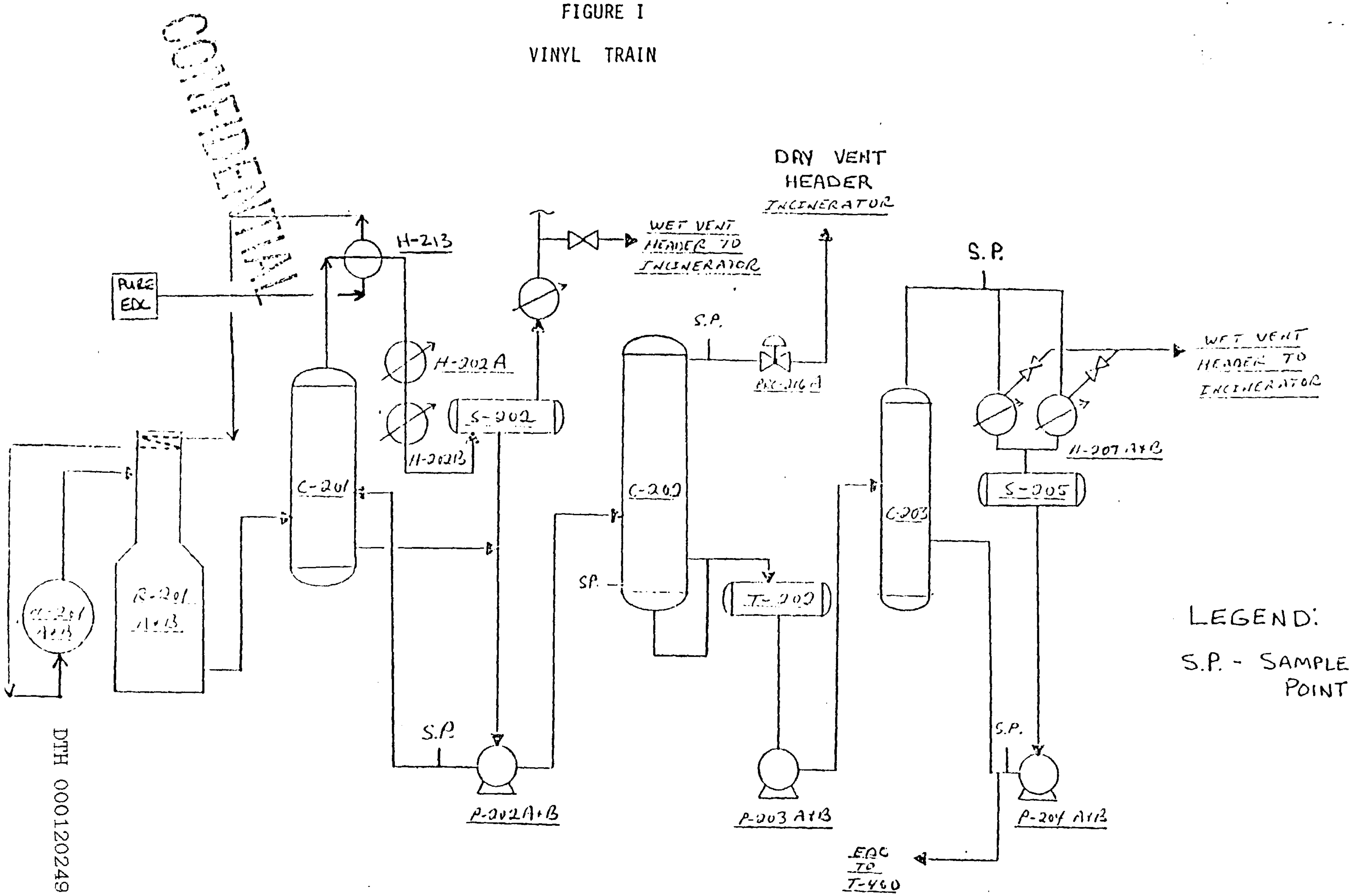
a) H-201 A & B
b) R-201 A & B
c) C-201
d) S-202
e) C-202
f) T-202
g) C-203

4) Be sure that a drain is set up on T-501 during EDC purge.

24. When EDC purge procedure is complete clear HCL K. O. Pot of EDC using the attached procedure.

FIGURE I

VINYL TRAIN



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B. C-201, Quench Column

1) Prior to shutdown get a minimum level in S-202.

2) When the feed from the furnaces has been shut off, pump the contents of the quench accumulator to the HCl column.

3) Block in the vapor equalizing line between the quench accumulator and the HCl column. Block in furnace vapor lines and vaporizer drawoff lines.

4) Line up the quench accumulator to T-102.

5) Pump any additional EDC from the quench accumulator to T-102. Purge the liquid feed line to HCl column into C-202. Purge the liquid reflux line empty.

6) Operate the tar stills at full rate with the product lined up to T-102 (the pH on T-102 will have to be watched closely to prevent its going acidic).

7) When feed to tar stills stops, drain heel from bottom of the quench column to the quench column blowdown drum. Make sure the vent valve on the quench column blowdown drum is open to the wet vent header.

Note: N_2 purge blowdown drum before using.

8) Begin venting the quench accumulator via H-211.

9) Complete depressuring the quench column to C-500.

10) Nitrogen flush the quench column from the tar still reflux line to C-500 through H-211 vent and P-202 suction line. Close H-211 vent when through N_2 purging.

11) Pump out both tar stills to tars tank.

12) Empty the liquid leg between H-202s and S-202 to grade.

13) Drain and depressure the P-201 and P-202A & B pumps and piping.

14) After it is determined that there are no liquid levels in C-201, S-202, and the transfer line between H-202 and S-202, start nitrogen into the Tar Still make line. Sample at H-211 just above the vent valve for vinyl, EDC, and HCl. Vinyl content must be reduced to less than 25 ppm before opening.

15) Turn over to maintenance for blinding.

C. C-202, HCl Column (Refer to Figure II)

1) After EDC purge is complete.

2) Shut steam to H-205, be sure to hold 5 to 10# on C-202 with N_2,

3) Block in equalizing line between C-202 and T-202 with vent open on T-202, put as much EDC rundown from trays as possible into T-202, then pump T-202 to C-203.

4) Isolate C-202 from T-202 complete with vent on T-202 closed.

5) Dump H-205 to blowdown drain or sewer, when complete depressure C-202.

6) N_2 purge column from sight glass to S/S header and drain line until Maintenance ready to blind.

7) Empty S-214 and other low points of EDC while purging C-202. Use S/D procedures to empty.

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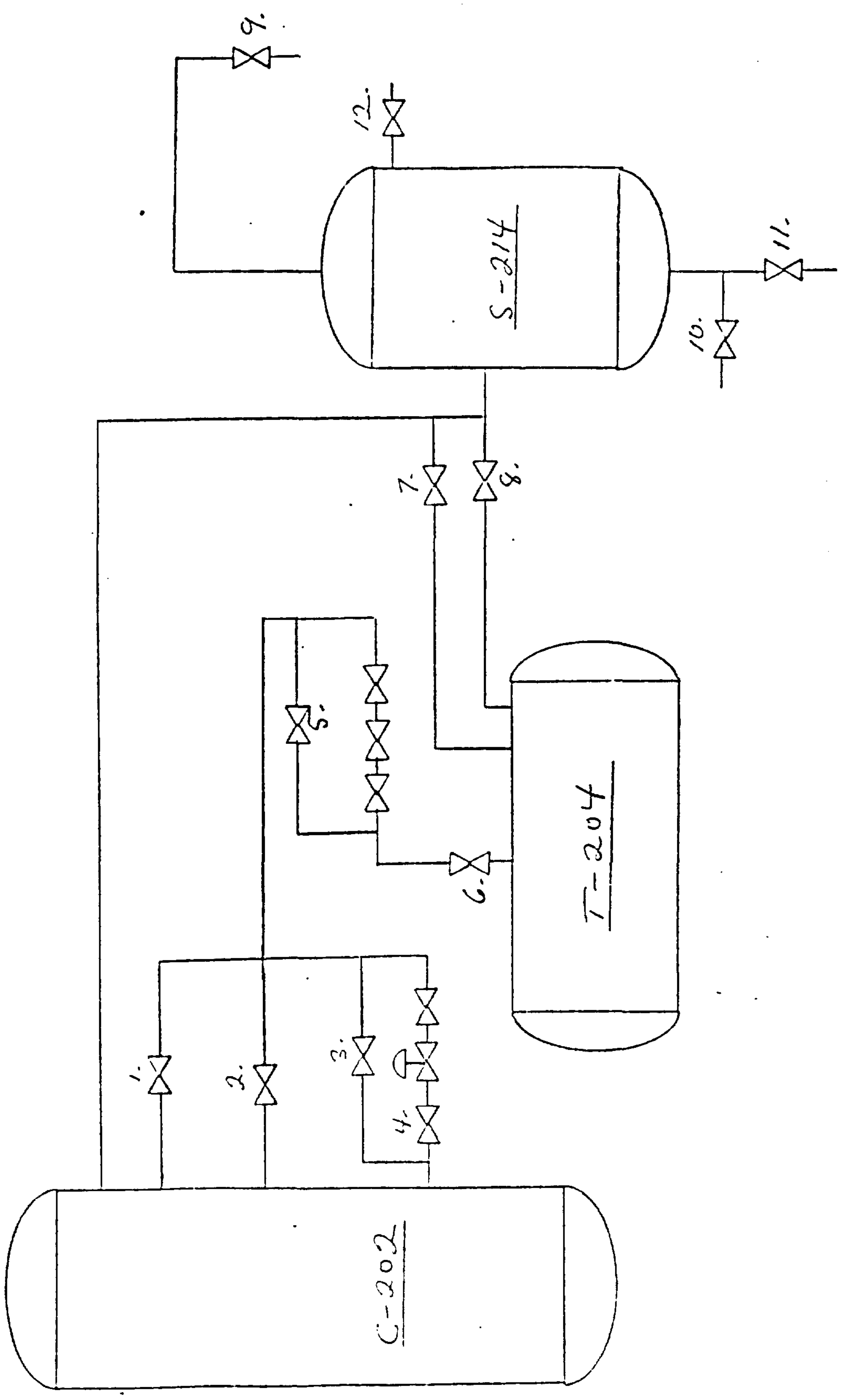
FIGURE II
C-202, HCl Column
(C-202 ISOLATION FROM T-204)



CLOSE VALVES 1, 2, 3, 4, 7, 8, 9, 10, AND 11
OPEN VALVES 5 AND 6 TO PREVENT PRESSURE BUILD-UP IN LINE

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D. <u>C-203, Vinyl Chloride Column (Refer to Figure III)</u>

1) After EDC purge is complete and steam is off H-206;s, start a N_2 flow from the bleed at FRC-205. Flow through interchanger long enough to clear it of most of the liquid. Block in interchanger, (feed side) open bypass and continue purge.

2) Start a N_2 purge from the bleed on FRC-206 (reflux) and clear reflux line of liquid back to column. Build 50-60 psig in column.

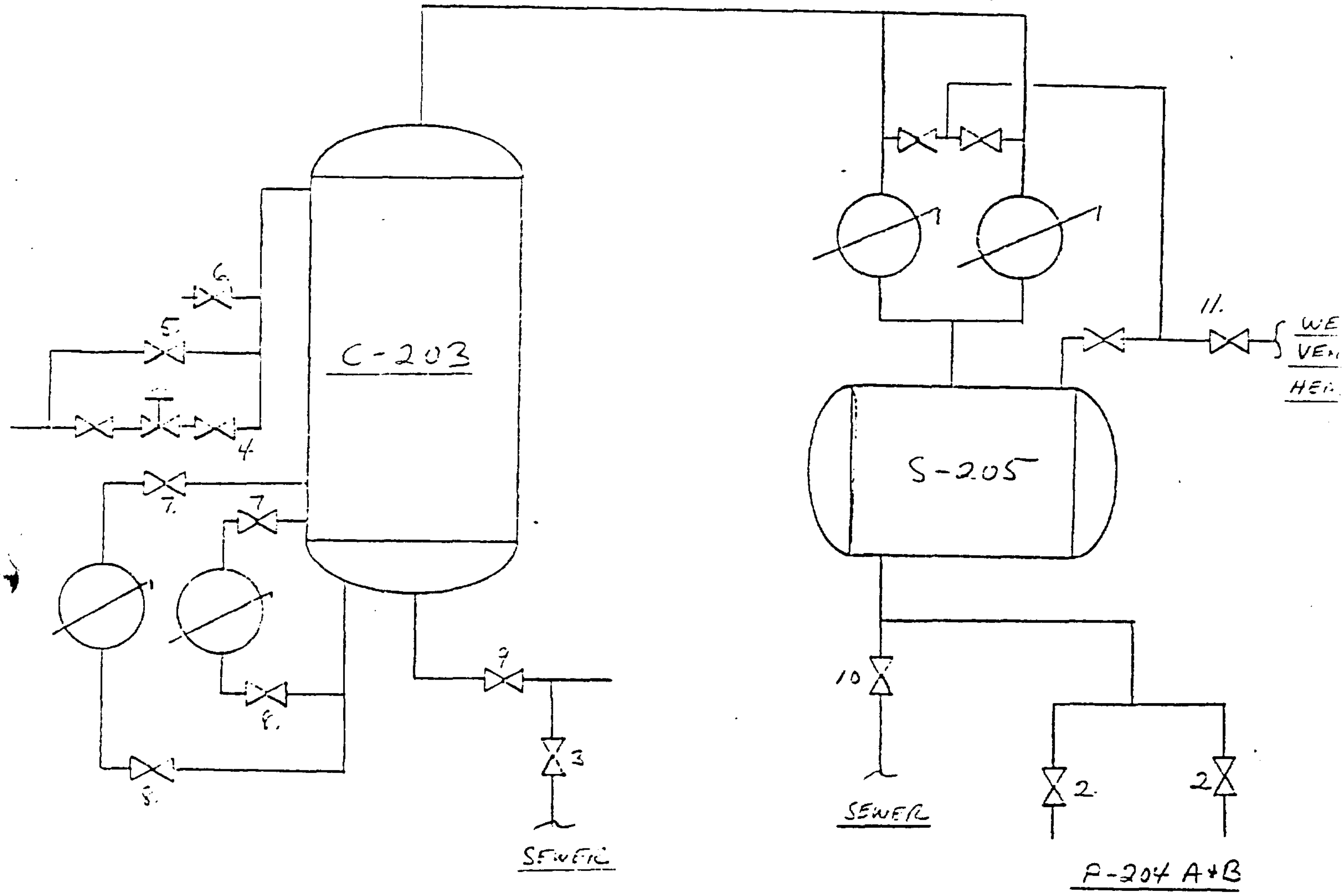
3) Clear the column of all EDC. Blow through the interchanger and H-209 and out the loop at P-112, until all the liquid is clear at P-112. Block in interchanger.

4) Open drains on H-206's and drain EDC to vinyl column blowdown drum. Drain P-204 cases. Purge (press and depress) through H-207's, S-205 and out at P-204 cases to vent.

5) Sample at P-204 case bleeds for vinyl concentration.

FIGURE III

C-203, VINYL CHLORIDE COLUMN



1. FEED TO COLUMN
2. P-204 SUCTIONS
3. FEED TO H-207
4. FRC-206 BLOCK VALVE, COLUMN SIDE
5. FRC-206 BYPASS
6. HOOK UP WASH HOSE
7. H-206 VAPOR
8. H-206 LIQUID
9. LIQUID OUT
10. S-205 TO SEWER
11. VENT LINE

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E. F-401 and F-402, Vinyl Product Filters

This procedure involves clearing the VCM filter vessels by repeating a nitrogen pressurization/ejector evacuation cycle. The new lines facilitate circulating the nitrogen through the filter. The procedure is as follows:

The letters in parentheses refer to specified valves on Figures IV and V.

1) Close all valves (A) through (S).

2) Connect two flexible hoses to connections on nitrogen lines and close bleed valves. These hoses eliminate the possibility of VCM back flowing into the nitrogen header when the filter is on stream.

3) Open (A), (B), (C), and (D) to pressure vessel.

4) Alternating, crack open/close (H) to pressure liquid vinyl out of the filter vessel.

5) Close (H); open (K), (M), (N), and (P) to ready E-1/2 for purging.

6) Open (J), close (I), and pressure vessel until the pressure gauge registers a constant pressure.

   Note: Opening either pressure gauge valve (I) or (J) allows recording the filter pressure on the inlet or discharge side, respectively.

7) Open (E) to start steam flow to H-401/402. Valve (E) is a glove valve and should be used to control the steam rate to H-401/402. TG-1/2 registers the exiting nitrogen temperature which should be maintained between 45 to 50^{o}C.

8) Close (D), open (L) to begin evacuation.

9) Close (J), open (I), and evacuate the vessel until the pressure gauge registers a constant pressure.

10) Close (L), open (D) to repressure the vessel.

11) Repeat steps 6, 8, 9, and 10 four or five times to properly purge the vessel.

12) Close (E) and (D); open (L) and depressure the filter to near atmospheric pressure.

13) Close (L) - The filter is now ready for opening and changing elements.

14) Close vessel and repeat steps 6 and 8 through 12.

15) Close all purging valves, open two bleed valves on nitrogen lines and remove two flexible hoses.

16) Open (G), (H), and (I) to bring filter on stream.

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FIGURE IV

F-401, VINYL PRODUCT FILTER

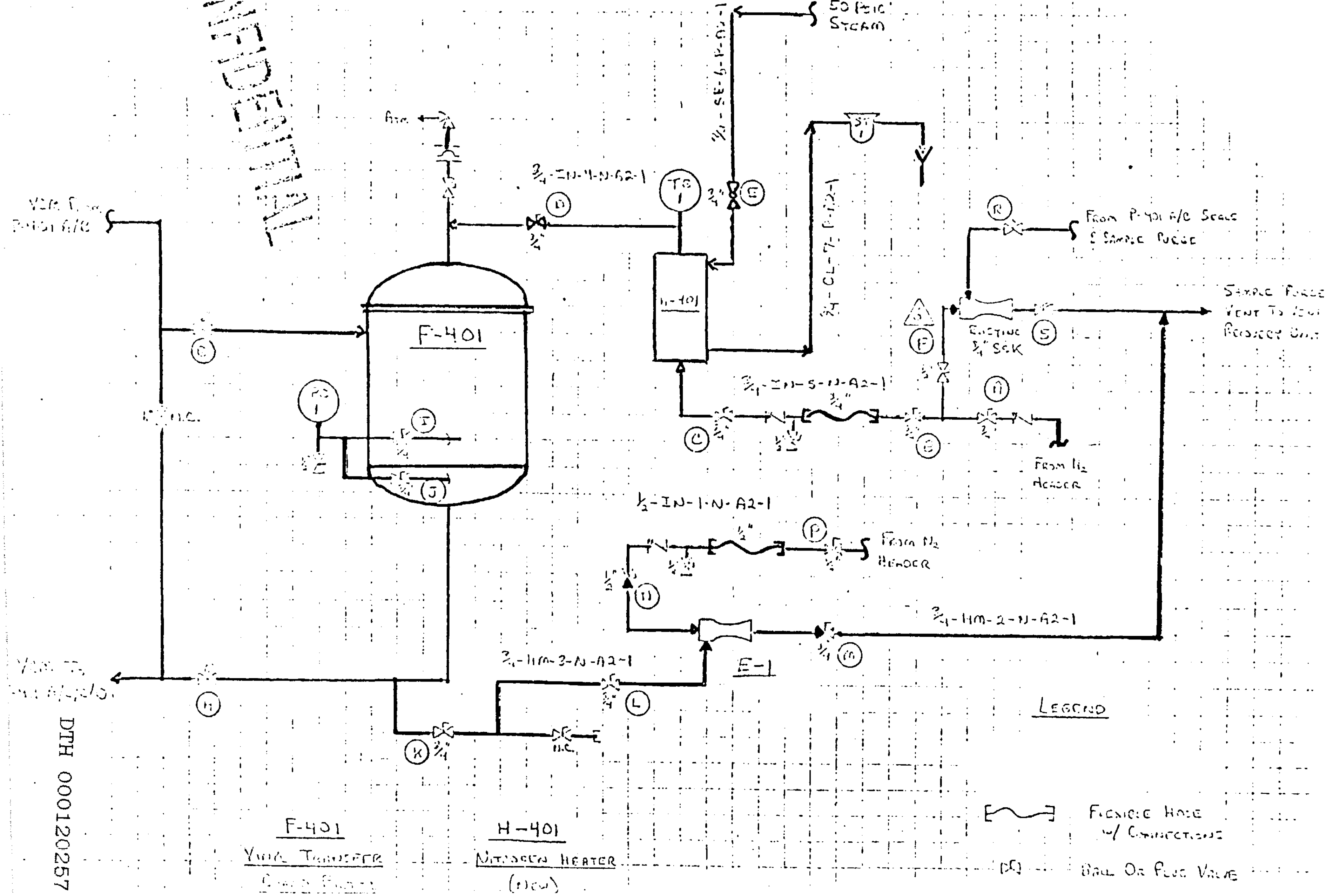

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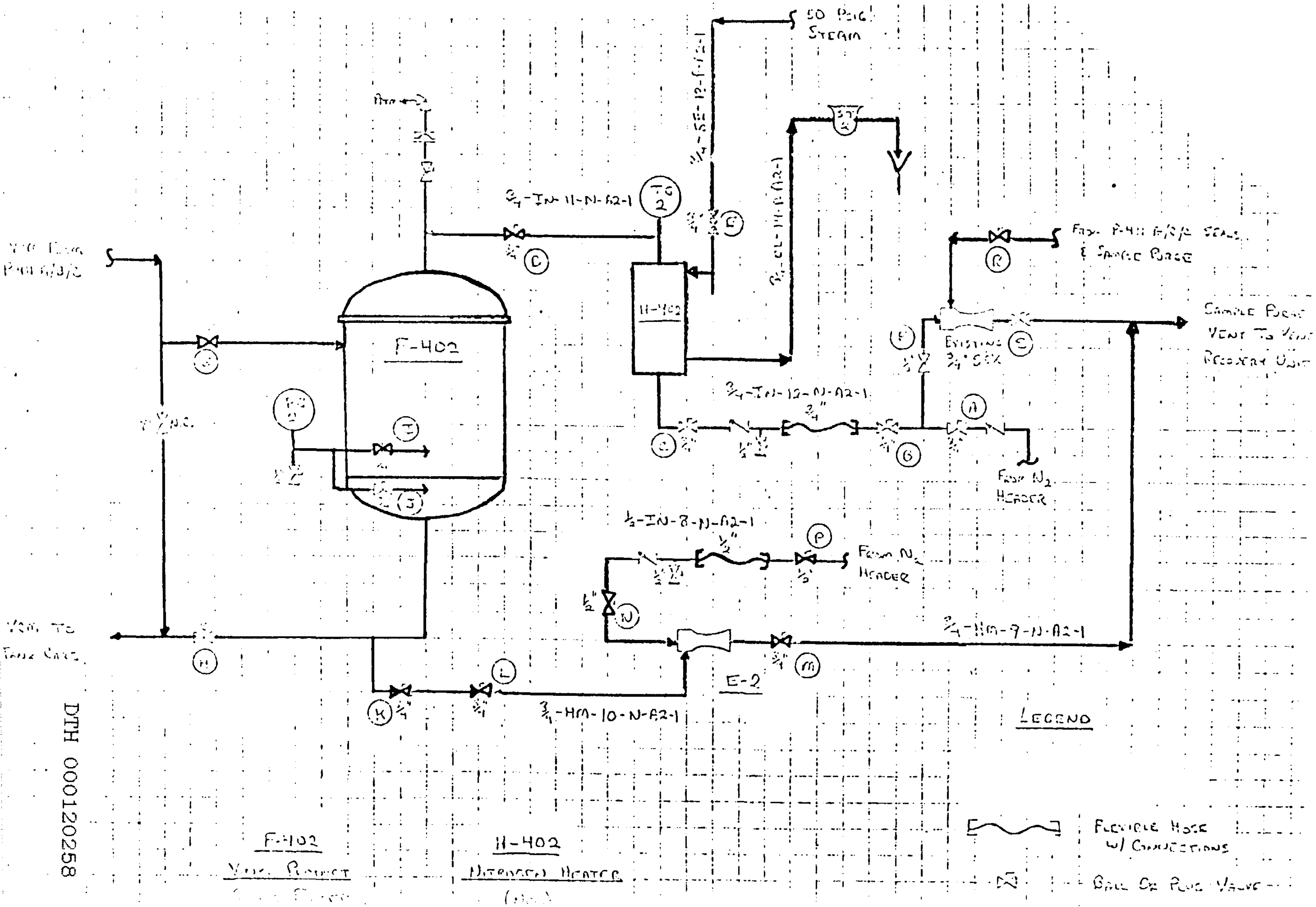
FIGURE V

F-402, VINYL PRODUCT FILTER



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F. F-625, Vinyl Loading Filter

1) Pressure any liquid vinyl in the loading filter to the 10" loading line from the VCM Plant. Be sure that all the lines downstream of F-625 are purged to the loading line, also.

2) Block in F-625 at the upstream side.

3) Line up the Filter to the dock vent stack.

4) Start nitrogen into F-625 and purge through the carbon bed adsorption system to the dock vent stack.

5) Continue the nitrogen purge until the vinyl content in a sample taken upstream of the carbon beds contains less than 25 ppm vinyl.

6) Turn over to maintenance for filter changing.

G. H-202 A & B, Quench Column Condenser (Refer to Figure VI)

1) After C-201 has been drained and blinded (see Part A for proper procedure), block in the cooling water and drain the exchangers of water.

2) Blind the 20" inlet nozzle.

3) Hook up a steam hose at the 3" inlet nozzle.

4) Blind H-202 from the S-202 transfer line at the inlet to S-202.

5) Start steam to H-202 with the drain open to the closed process sewer.

6) After the condensers are hot, steam for at least 2 hours more.

7) Shut the steam off and block in the sewer line. Pull the plug on the inlet nozzle and sample for vinyl content. If vinyl concentration is greater than 25 ppm, steam purge again until the concentration drops below 25 ppm.

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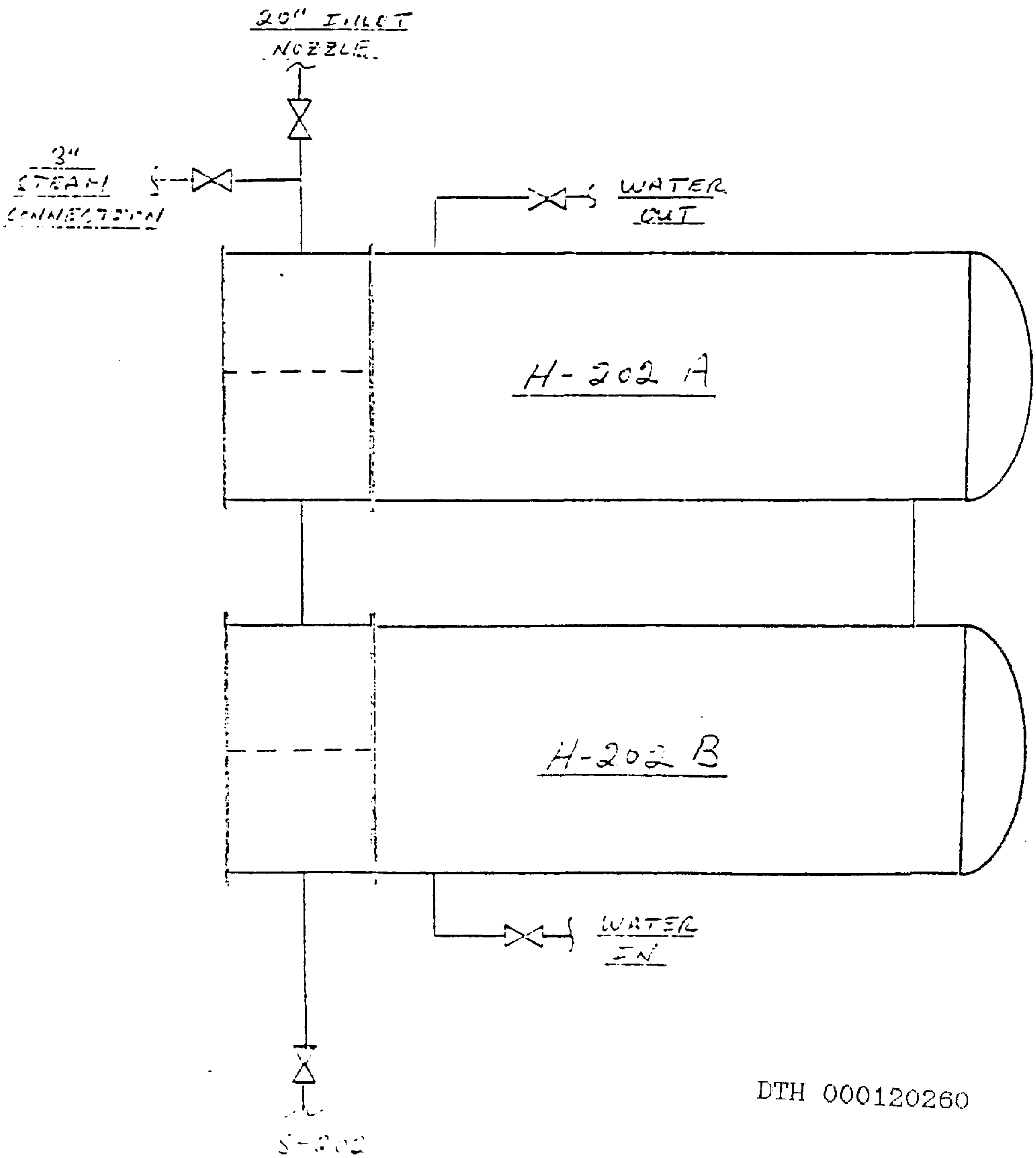
FIGURE VI

H-202 A & B, QUENCH COLUMN CONDENSER



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H. H-203, Quench Reflux Cooler

1) Bypass the cooler by blocking in the inlet and outlet valves.

2) Open the drain to the closed process sewer.

3) Start a nitrogen purge at the top of the cooler pushing liquid to the sewer

4) Continue nitrogen purging for at least 4 hours, and then pull a sample for vinyl content.

5) When the vinyl concentration is less than 25 ppm, discontinue the nitrogen purge, block in the drain, and turn over to maintenance.

I. H-206 A & B, Vinyl Column Reboiler (Refer to Figure VII)

1) After the steam is out of H-206, close the 14" outlet valve.

2) Hook up a nitrogen hose by the pressure indicator (PI) and pressure the liquid contents back into C-203 until the level instrument indicates empty.

3) Block in the inlet valve, and open the drain to the closed process sewer.

4) If the drain valve is plugged, block in the nitrogen by the PI and hook up nitrogen hose to S-220. Then depressure H-206 to about 20 psig.

5) With the process sewer line and line to S-220 closed, open the nitrogen line at the bottom of H-206 and blow the plugged drain line back into H-206.

6) When the drain valve is unplugged, open it to the closed process sewer and drain the liquid.

7) When H-206 is empty of liquid, open the valve to S-220 which vents to the wet vent header.

8) Hook up a nitrogen hose to the PI and purge H-206 through S-220 to the wet vent header.

9) Continue purging until the sample at the S-220 inlet has a vinyl content of less than 25 ppm.

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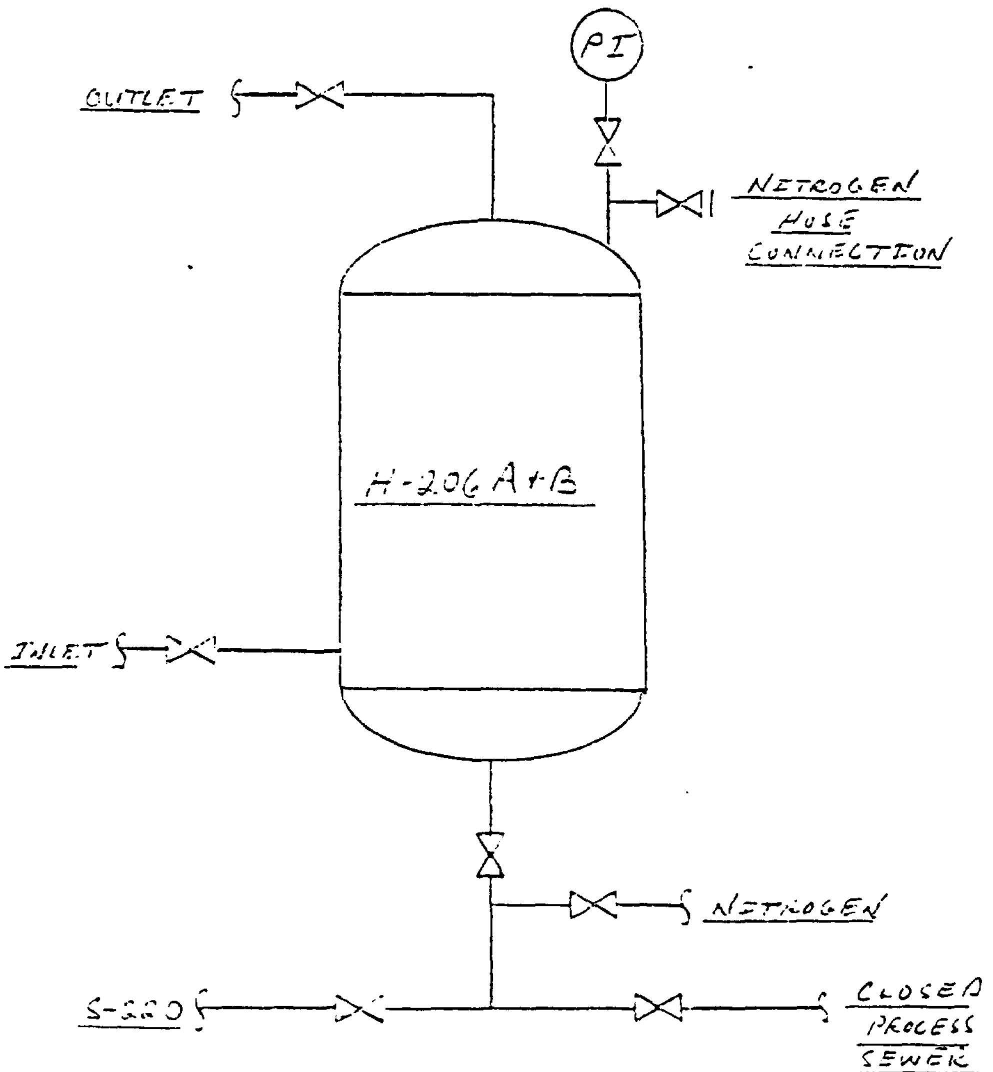
FIGURE VII

H-206 A & B, VINYL COLUMN REBOILER



J. H-207 A & B, Vinyl Column Condenser (Refer to Figure VIII)

1) Block in the inlet valve to the exchangers.

2) Hook up a nitrogen hose to the inlet nozzle and pressure the liquid vinyl to S-205.

3) When the sight glass shows empty, purge at least 5 minutes more and then block in the outlet valve to S-205.

4) Open the valve to the wet vent header to depressure.

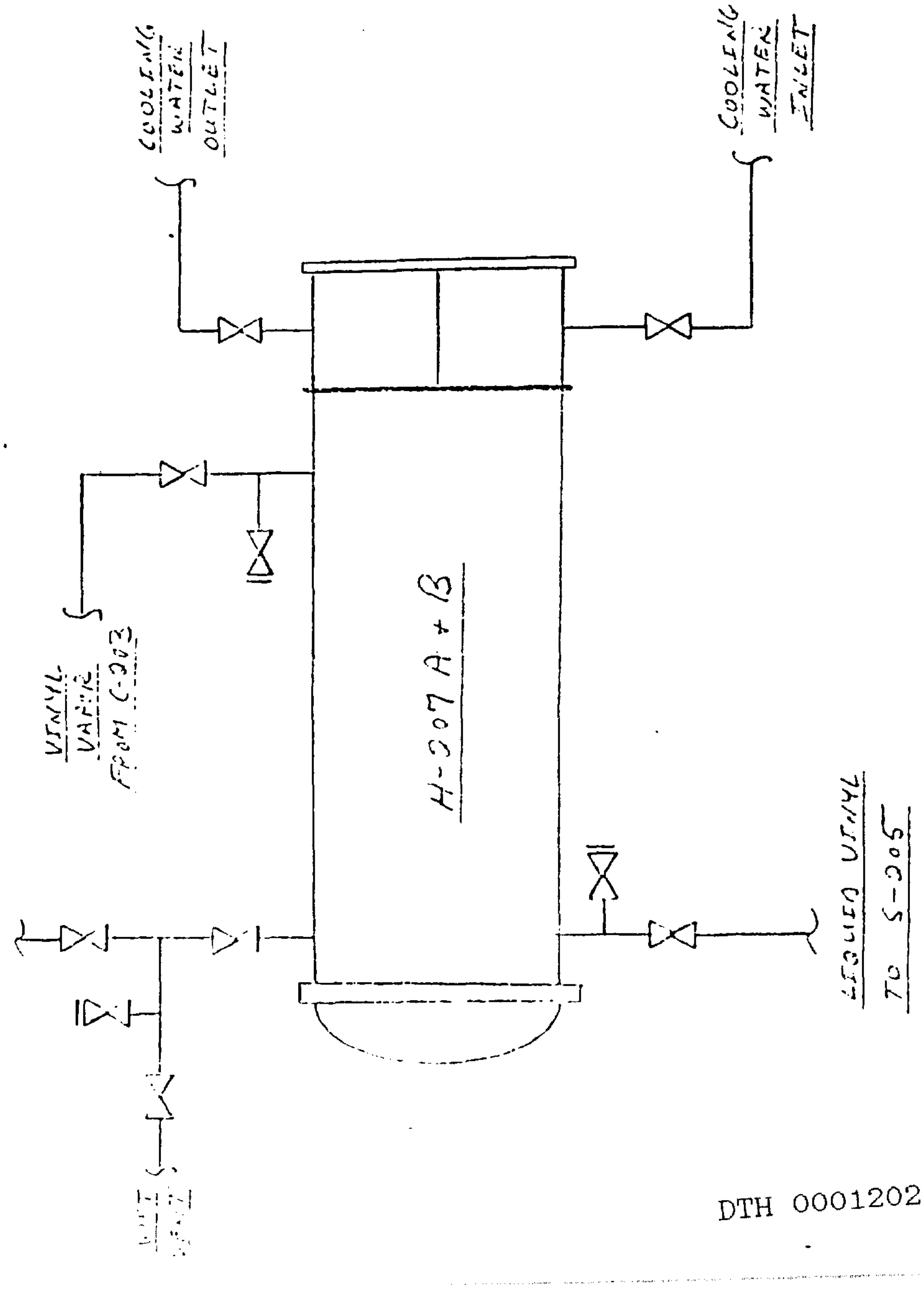
5) Hook a chemical hose from the outlet nozzle to the wet vent header.

6) Nitrogen purge from the inlet nozzle through the wet vent header.

7) Continue nitrogen purging until the vinyl content at the sample point on the vent line is less than 25 ppm.

FIGURE VIII

H-207 A & B, VINYL COLUMN CONDENSER



K. H-211, HCl Interchanger

1) After C-201 and C-202 have been drained and blinded (See Part A for the proper procedure), start a nitrogen purge from S-214 to the bottom of H-211. H-211 is purged through H-309 into the oxychlorination reactors for at least 4 hours.

2) Sample for vinyl content at PRC-216B. When the vinyl concentration is less than 25 ppm, block in the valves at the inlet of H-211 and H-309.

3) Depressure H-211 through the HCl-to-MeCl valve, and then turnover the system to maintenance for blinding.

L. H-213, Quench Column Interchanger (Refer to Figure IX)

1) After R-201 A&B are shutdown and MC-205 A&B are blocked in hook N2 hose upstream of MC-205BV.

2) AT P-451 A&B block in suction valves.

3) Open valve to dry rerun header.

4) At P-453 line up header to T-453 through circulation line. Make sure line to T-415 is blocked in.

5) Start N2 at Mc-205B pushing EDC backwards through H-213 to P-451's and then to T-453.

6) When N2 will come out on bleed on top of Dischg line at P-451B, H-213 is empty.

7) Block in lines at P-451's and P-452's and N2 at MC-205BV.

8) Block in inlet and outlet line to H-213.

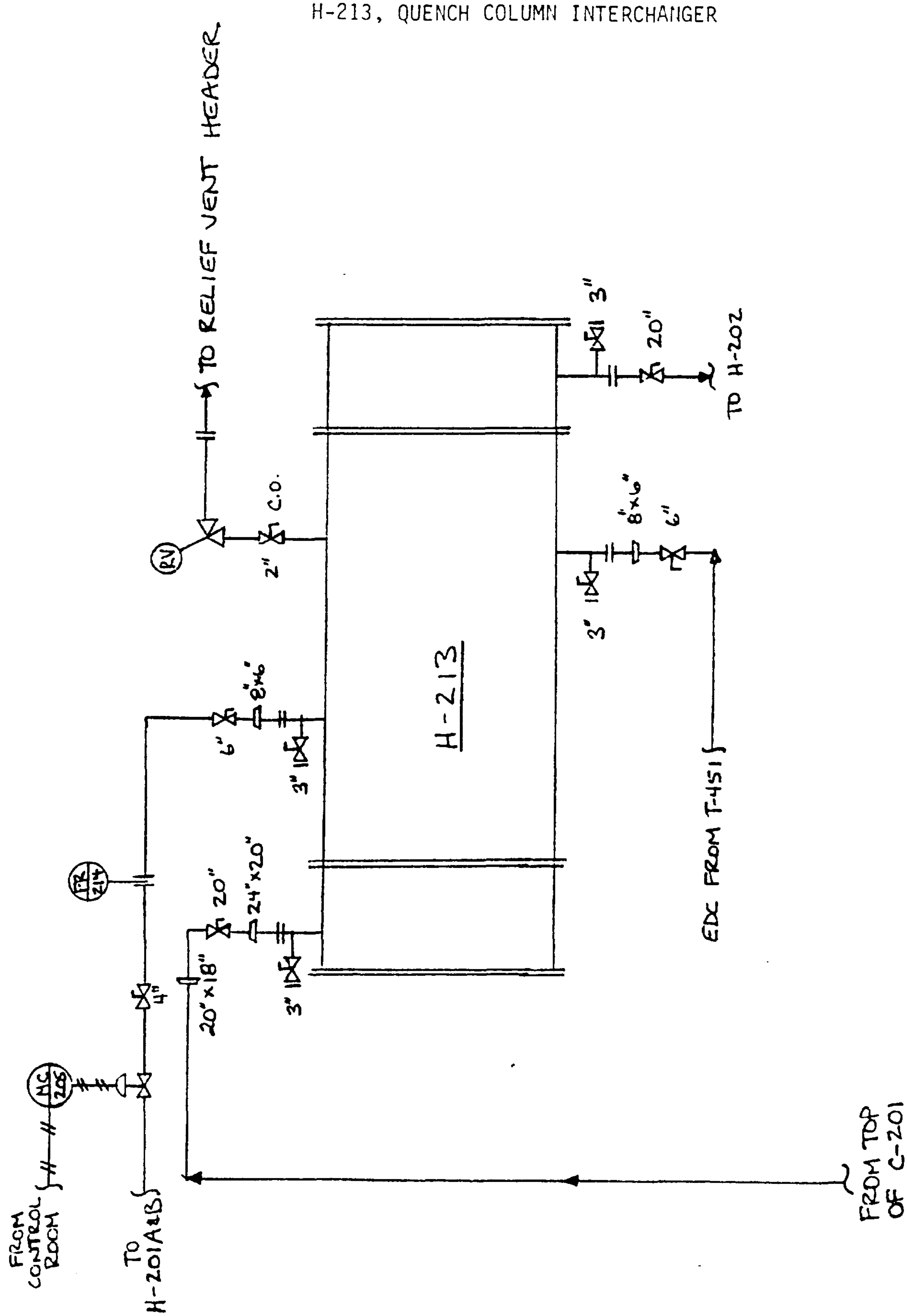
9) Hook N2 hose at upper bleed valve and chemical hose at lower bleed valve going into vent header.

10) N2 purge H-213 until sweet.

The reason for starting N2 at MC-205 is so H-213 outlet line will not be liq. full EDC during T/A.

FIGURE IX

H-213, QUENCH COLUMN INTERCHANGER



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M. Refrigerated Vent Recovery System, (H-490, H-495, T-491, and H-494)

1) Pump all the vinyl out of T-491 to T-490.

2) Leave the suction of P-491 open and the discharge closed.

3) Block in the process inlet to H-495.

4) Start nitrogen into the inlet of H-495 and depressure through the back pressure control valve.

5) Hook up a chemical hose to the outlet spool of H-494 and to the vent at the sight gage of T-491. Depressure system to the vent header.

6) Pressure purge this system to 40-50 psig at least 4 times.

7) Continue pressure purging until the sample at the back pressure control valve contains less than 25 ppm vinyl.

N. H-485, Vinyl Vent Recovery Condenser, H-486, Brown Fintube Rail Car Vent Condenser, and H-491, Refrigerated Vent Condenser.

1) After clearing T-491 to T-490, make sure that any remaining liquid vinyl in H-485, H-486, and H-491 is drained into T-490.

2) Start nitrogen into the inlet of H-485 and purge through H-491, T-491, and H-486. Vent the nitrogen to the incinerator line.

3) Continue purging the system until a sample of the vent stream going to the incinerator line contains less than 25 ppm vinyl.

4) Turn over to maintenance for blinding.

O. R-201 A & B, EDC Reactor Heater Cracker

1) Gradually lower the feed to the furnaces and the outlet temperature until four units feed and 450°C outlet temperature is established.

2) When the conditions set out in Step 2 are established, kill all fires in the furnaces.

3) Continue feeding the furnace at 3-4 units feed until a furnace outlet temperature of 300°C is reached.

4) At an outlet temperature of 300°C, shut down the feed to the furnace and block in the quench flow when the outlet temperature reaches 175°C. Close the chain valve at H-211.

5) Block in the feed to the vaporizers; blow out the preheat coils and block in steam to the vaporizers and blow the condensate to grade. Isolate vaporizers from furnaces so liquid level in furnaces can be cleared faster. Block in vaporizer drawoff.

6) Flush nitrogen through the furnace at a low rate.

7) Empty furnaces to slops storage. When liquid is out switch to vent header.

8) Block in the quench return line at the column and open the quench valves at the furnace so that the quench line can be drained down. Block in the emergency quench. Do not block in both ends of the furnace feed line.

Block in both vapor valves to C-201 so purging of HCl from furnaces can be speeded up.

P. S-108, Caustic Blowdown Drum

1) Block in the NaOH Blowdown line from S-207 A & B at S-108.

2) Put steam to the jacketed vessel to drive any residual vinyl to the wet vent header. Continue the steam purge until a sample taken at the vent line contains less than 25 ppm vinyl.

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3) Drain all the NaOH to T-251 or T-423.

4) Hook a steam hose to the nozzle by the sight glass and steam for at least 3 hours, draining condensate to T-251 or T-423 intermittently.

5) Discontinue steaming, block in the valve to the vent, and open the bleed valve.

6) Have Maintenance blind the system and open the bottom nozzle.

7) Unhead and wash out the NaOH completely before entering.

Q. S-206, Decanter, (Refer to Figure X)

1) After C-203 has been shutdown, raise the caustic level in S-206 to float the vinyl out. This must be done slowly and carefully. Sample for caustic in the overflow. Watch caustic level in btm of S-207. When it starts up fast. discontinue caustic feed to the vessel.

2) Block in S-206.

3) Connect a nitrogen hose and force the caustic out of S-206. Maintain pressure in the vessel so as it is vented it will contain primarily nitrogen. Watch effluent pit for excessive venting.

4) When the vessel is empty of liquid, depressure via the wet vent line #1.

5) Connect steam hose from fifty psi supply to point #4.

6) Line up to sewer via drain valve #2.

7) Start steam purging.

8) Continue steam purging until sample at top of S-206 is <25 ppm VCM.

9) Shut off steam at point #4.

10) Close valves at point #2.

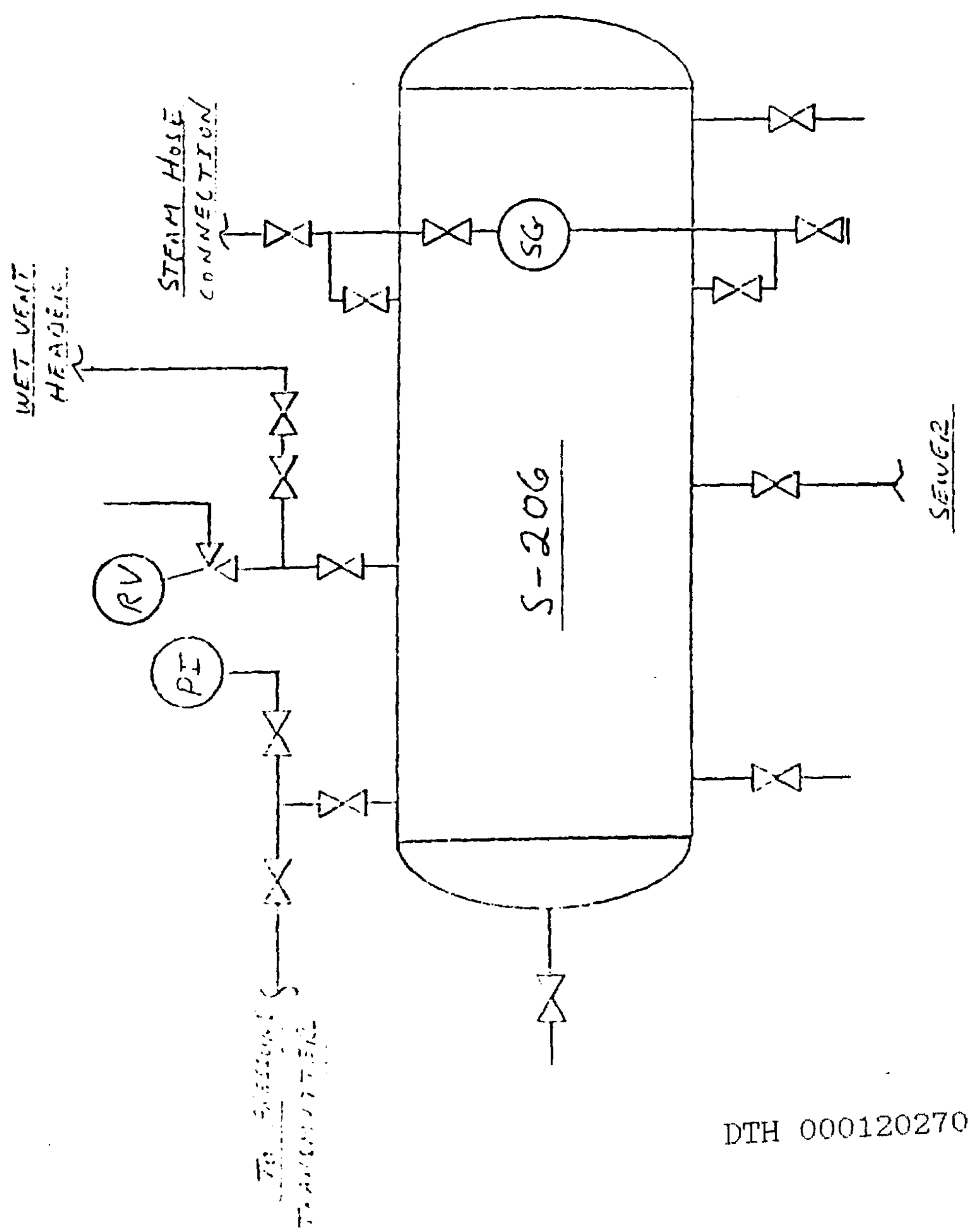
11) Disconnect hose at point #4 and leave valve open to prevent pulling a vacuum as vessel cools down.

12) Turn over to Maintenance for blinding.

13) When blinding is complete start an air purge to sweep out any VCM that coul[d] be left after steaming.

FIGURE X

S-206, DECANTER



R. S-216, RV-210 and 211 K. O. Drum

This vessel serves as a K. O. Pot downstream of the relief valves on S-206 and S-207.

1) Check to be sure that there is no leakage from the relief valves to the vessel.

2) Start nitrogen into S-216 and purge the vessel to the wet vent header.

3) Continue purging until the vinyl content is reduced to less than 25 ppm .

4) Turn over to Maintenance for blinding.

S. S-207 A & B, Caustic Dryer (Refer to Figure XI)

The Vinyl Dryers are operated in series with either one first in line. Either can be bypassed, but not both at the same time.

As a guide we will assume A is first in line and that it will be bypassed and takun out of service for entry.

1) Open Valve A and close Valve B.

2) Drain the NaOH in S-207A to S-108 while watching the sight gage.

3) Close Valve C and Open Valve D.

4) Open the nitrogen at the top of S-207A and push the vinyl out S-207A to the inlet of S-207B.

5) Open the nitrogen line at Valve E slightly to empty the bypass line of viny

6) When the liquid vinyl is out of S-207A according to the sight gage, close Valve D and open the drain valves on S-207A to S-108.

7) Pressure purge S-207A at least 4 times and then sample at the inlet spargers for vinyl content.

8) When the vinyl concentration is less than 2%, start the super sucker. With Valve D closed, open the 4" valves on S-207A to the super sucker.

9) With the nitrogen still going in on the top of S-207A, pinch the butterfly valve until a slight vacuum is noted on the pressure indicator. Leave this set up until Maintenance pulls the manway, then close the butterfly valve and nitrogen to S-207A.

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10) Pull air through S-207A at least 30 minutes.

11) Open the butterfly valve and close the 4" valves to the super sucker. Shut down the super sucker.

12) Shut the drain valves to S-108 and open the drain valves to the sewer.

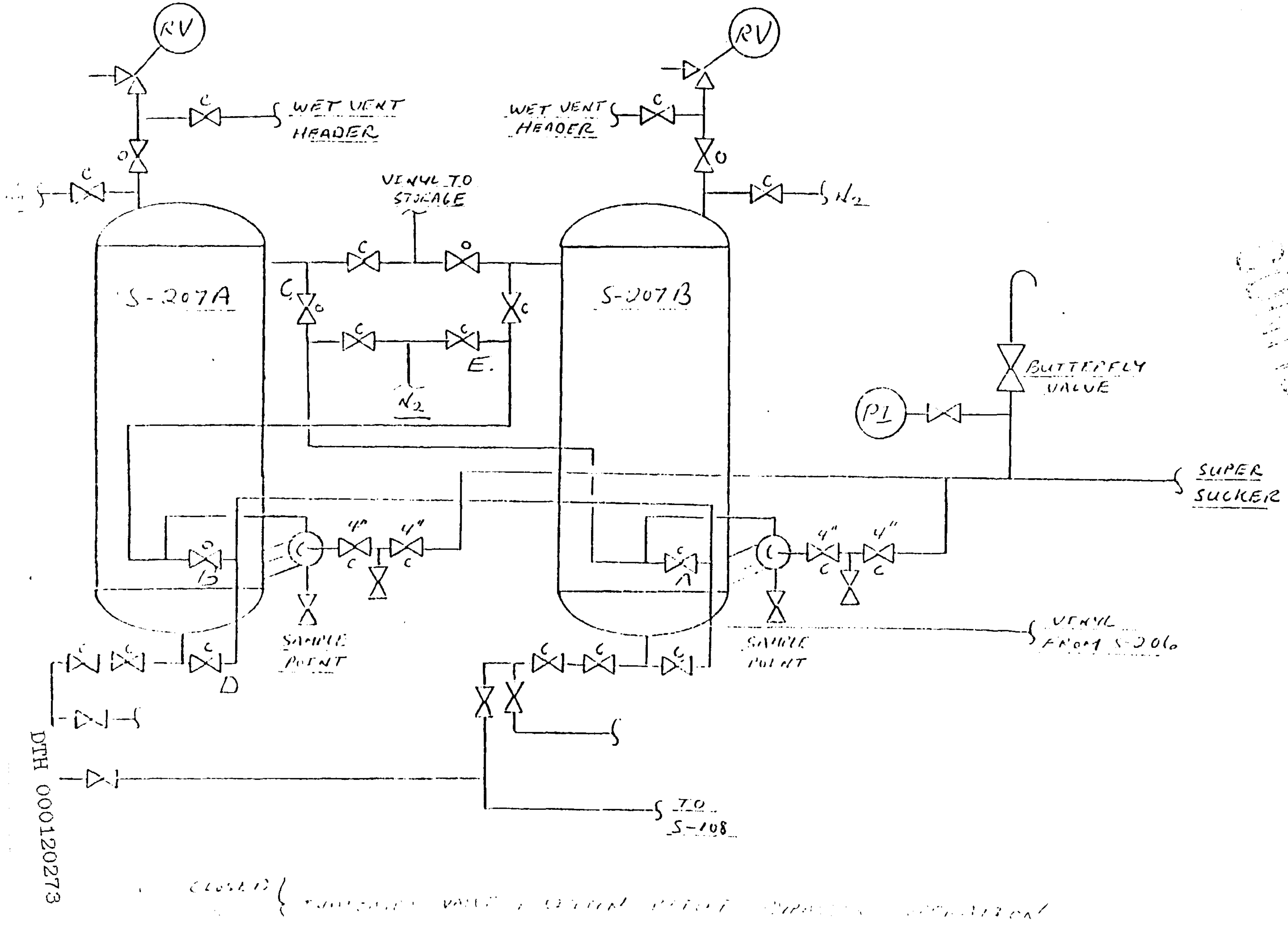
13) Wash out S-207A to the sewer.

14) When washing is complete, close the drain valve and blind vessel.

15) When removing the blinds, starts the super sucker to pull air through the dryer while recharging. This keeps NaOH dust off the rechargers.

FIGURE XI

S-207 A & B, CAUSTIC DRYERS



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T. <u>VCM Caustic Dryer S-401 Cleanout Procedure</u>

Prior to starting a dryer cleanout, the slop caustic tank must contain 16 to 25 feet of 30 percent caustic. If less level is available a greater temperature rise will result.

Evacuate the vinyl (vapor and liquid) from the caustic bed using the Corken compressor system. Then purge with nitrogen and vent to the incinerator. Purge to less than 2% VCM.

Blind the 10" bed inlet and outlet and the 2" vapor and liquid purge lines.

Install the 4" spoolpieces on the inlet and overhead lines to the bed.

Line up from the pump, upflow through the caustic bed, back through the strainers and into the slops caustic tank.

Pump through the bed for at least six hours or until the temperature of the return caustic starts falling.

If the pressure drop across the strainer reaches 20 psi, switch strainers and follow the strainer cleanout procedure.

At the conclusion of pumping block in the pump and the line to the bed. Blow the return line back to the slop caustic tank with nitrogen.

Then block in the return line inlet line and the circulation line. Blow teh caustic in the bed and inlet line back to the slop caustic tank.

Drain the rest of the caustic to the sewer.

Remove the top manway, flush out the caustic, and recharge the bed with flake caustic as usual.

T-423 Slops Caustic Dilution Procedure

The tank contents should be less than 100°F (38°C) at the start.

Block in the 4" caustic lines to and from the VCM Plake Caustic Bed and the 2" caustic line from the unit.

Circulate the tank through the strainers.

After one hour of circulation sample the caustic. Have the lab determine the percent caustic.

Using the percent caustic and the tank level go to the dilution table and determine the amount of water to be added. If there is no number in the square corresponding to the proper percent caustic and level the tank will overflow if diluted to 30 percent. Use the dilution amount for the same level and a lower percent caustic.

Set the proper amount of water on the water meter.

While still circulating, open the valve on the water meter. The proper amount of water will be added and the valve will shut off automatically.

Circulate for one hour after the water meter shuts off and then analyze the caustic again. The caustic should be 30 percent.

WATER ADDED (GALLONS)

PERCENT CAUSTIC

TANK LEVEL ↓	31	32	33	34	35	36	37	38	39
1	154	307	460	625	775	943	1097	1271	1427
2	307	614	919	1250	1549	1885	2194	2543	2853
3	460	921	1379	1874	2324	2882	3291	3814	4280
4	614	1228	1839	2499	3099	3771	4,388	5086	5706
5	767	1535	2299	3124	3873	4713	5484	6357	7133
6	921	1841	2758	3749	4648	5656	6581	7629	8560
7	1074	2148	3218	4374	5422	6599	7678	8900	9986
8	1228	2455	3678	4998	6197	7541	8775	10172	11413
9	1381	2762	4137	5622	6972	8484	9872	11443	12839
10	1535	3069	4597	6248	7746	9427	10969	12715	14266
11	1688	3376	5057	6873	8521	10369	12066	13986	15693
12	1841	3683	5517	7497	9296	11312	13163	15258	17119
13	1995	3990	5976	8122	10070	12255	14259	16529	18546
14	2148	4297	6436	8747	10845	13197	15356	17801	19972
15	2302	4604	6896	9312	11619	14140	16453	19,072	21399
16	2455	4911	7355	9997	12394	15083	17550	20344	22826
17	2609	5218	7815	10621	13169	16025	18647	21615	24252
18	2762	5524	8275	11246	13943	16968	19744	22887	25679
19	2916	5831	8735	11871	14718	17911	20841	24158	27105
20	3069	6138	9194	12496	15493	18853	21938	25430	28532
21	3223	6445	9654	13121	16267	19796	23025	26701	29959
22	3376	6752	10114	13745	17042	20739	24131	27973	—
23	3530	7059	10573	14370	17816	21681	25228	—	—
24	3683	7366	11033	14995	18591	—	—	—	—
25	3836	7673	11493	15620	—	—	—	—	—
26	3990	7980	11952	—	—	—	—	—	—
27	4143	8287	—	—	—	—	—	—	—
28	4297	—	—	—	—	—	—	—	—
29	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—

R.L.C.

DILUTION TABLE

WATER ADDED (GALLONS)

PERCENT CAUSTIC

TANK LEVEL ↓	40	41	42	43	44	45	46	47	48
1	1611	1764	1951	2108	2302	2460	2653	2819	3003
2	3223	3527	3902	4216	4604	4920	5305	5638	6007
3	4834	5291	5853	6324	6906	7379	7958	8457	9010
4	6445	7055	7804	8432	9207	9839	10611	11276	12013
5	8056	8819	9755	10540	11507	12299	13263	14095	15017
6	9668	10582	11707	12648	13811	14759	15916	16914	18020
7	11279	12346	13658	14756	16113	17219	18568	19733	21024
8	12890	14109	15609	16864	18415	19678	21221	22552	24027
9	14502	15873	17560	18972	20717	22138	23873	25371	27030
10	16113	17637	19511	21081	23019	24598	26526	28190	30034
11	17724	19400	21462	23189	25320	27058	29179	31009	33037
12	19336	21164	23413	25297	27622	29518	31831	33828	36040
13	20947	22927	25364	27405	29924	31977	34484	36647	39044
14	22558	24691	27315	29512	32226	34437	37136	39466	42047
15	24169	26455	29266	31621	34528	36897	39789	42285	45050
16	25781	28218	31217	33729	36830	39357	42442	45104	48054
17	27392	29982	33169	35837	39131	41817	45094	—	—
18	29003	31746	35120	37945	41433	—	—	—	—
19	30615	33509	37071	40053	—	—	—	—	—
20	32226	35273	—	—	—	—	—	—	—
21	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—
23	—	—	—	—	—	—	—	—	—
24	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—
26	—	—	—	—	—	—	—	—	—
27	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—
29	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—

MADE BY Ron C.

CHECKED BY

DATE

CALCULATION SHEET

TITLE Dilution Table

JOB NO.

DTH 000120277

WATER ADDED (GALLONS)

PERCENT CAUSTIC

TANK LEVEL ↓	49	50	51	52	54	56	58	60	62
1	3186	3376	3559	3749	4134	4527	4926	5333	5748
2	6371	6752	7119	7497	8268	9053	9852	10667	11496
3	9557	10128	10678	11246	12402	13580	14779	16000	17243
4	12742	13504	14238	14995	16536	18106	19705	21333	22991
5	15928	16880	17797	18744	20671	22633	24631	26666	28739
6	19113	20256	21357	22492	24805	27159	29557	32000	34487
7	22299	23632	24916	26241	28939	31686	34483	37333	40235
8	25484	27008	28475	29990	33073	36212	39409	42666	45983
9	28670	30384	32035	33738	37207	40739	44336	47999	51730
10	31855	33760	35594	37487	41341	45265	49262	53333	57478
11	35041	37136	39154	41236	45475	49792	54188	58666	63226
12	38226	40512	42713	44985	49609	54318	59114	63999	—
13	41412	43889	46272	48733	53743	58845	—	—	—
14	44597	47265	49832	52482	57878	—	—	—	—
15	47783	50641	53391	—	—	—	—	—	—
16	50969	—	—	—	—	—	—	—	—
17	—	—	—	—	—	—	—	—	—
18	—	—	—	—	—	—	—	—	—
19	—	—	—	—	—	—	—	—	—
20	—	—	—	—	—	—	—	—	—
21	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—
23	—	—	—	—	—	—	—	—	—
24	—	—	—	—	—	—	—	—	—
25	—	—	—	—	—	—	—	—	—
26	—	—	—	—	—	—	—	—	—
27	—	—	—	—	—	—	—	—	—
28	—	—	—	—	—	—	—	—	—
29	—	—	—	—	—	—	—	—	—
30	—	—	—	—	—	—	—	—	—

APPROVED BY: RWC

CHECKED BY:

CONTINENTAL OIL COMPANY

CALCULATION SHEET

JOB NO.

TITLE: DILUTION TABLE

FILE

DTH 000120278

Chas. MARTIN Inspectors of Petroleum, Inc.
ADOLPH W. SLUTER — APPROVED AND LICENSED BY NEW YORK PRODUCE EXCHANGE

CONTINENTAL OIL COMPANY

WESTLAKE, LOUISIANA

TANK NUMBER:

T-423

GAUGE HEIGHT: 31'-5" (GAUGE 1'-6" IN FROM SHELL)

0	SUMP+121	5	18,550	10	36,897	15	55,251	20	73,617	25	91,989	30	110,367
1	497	1	18,856	1	37,203	1	55,557	1	73,923	1	92,295	1	
2	802	2	19,161	2	37,509	2	55,863	2	74,229	2	92,602	2	
3	1,108	3	19,467	3	37,815	3	56,169	3	74,535	3	92,908	3	
4	1,414	4	19,773	4	38,121	4	56,475	4	74,841	4	93,214	4	
5	1,719	5	20,079	5	38,427	5	56,781	5	75,148	5	93,520	5	
6	2,025	6	20,384	6	38,733	6	57,087	6	75,454	6	93,827	6	
7	2,331	7	20,690	7	39,038	7	57,393	7	75,760	7	94,133	7	
8	2,637	8	20,996	8	39,344	8	57,699	8	76,066	8	94,439	8	
9	2,942	9	21,301	9	39,650	9	58,006	9	76,372	9	94,746	9	
10	3,248	10	21,607	10	39,956	10	58,312	10	76,678	10	95,052	10	
11	3,554	11	21,913	11	40,262	11	58,618	11	76,984	11	95,358	11	
1	3,859	6	22,219	11	40,568	16	58,924	21	77,290	26	95,664	31	
1	4,165	1	22,524	1	40,874	1	59,230	1	77,596	1	95,971	1	
2	4,471	2	22,830	2	41,180	2	59,536	2	77,902	2	96,277	2	
3	4,777	3	23,136	3	41,486	3	59,842	3	78,209	3	96,583	3	
4	5,082	4	23,441	4	41,792	4	60,148	4	78,515	4	96,890	4	
5	5,388	5	23,747	5	42,097	5	60,454	5	78,821	5	97,196	5	
6	5,694	6	24,053	6	42,403	6	60,761	6	79,127	6	97,502	6	
7	5,999	7	24,358	7	42,709	7	61,067	7	79,433	7	97,809	7	
8	6,305	8	24,664	8	43,015	8	61,373	8	79,739	8	98,115	8	
9	6,611	9	24,970	9	43,321	9	61,679	9	80,045	9	98,421	9	
10	6,918	10	25,276	10	43,627	10	61,985	10	80,351	10	98,727	10	
11	7,225	11	25,581	11	43,933	11	62,291	11	80,657	11	99,034	11	
2	7,531	7	25,887	12	44,239	17	62,597	22	80,964	27	99,340	32	
1	7,838	1	26,193	1	44,545	1	62,903	1	81,270	1	99,646	1	
2	8,145	2	26,498	2	44,851	2	63,209	2	81,576	2	99,953	2	
3	8,452	3	26,804	3	45,156	3	63,515	3	81,882	3	100,259	3	
4	8,759	4	27,110	4	45,462	4	63,822	4	82,188	4	100,565	4	
5	9,066	5	27,416	5	45,768	5	64,128	5	82,494	5	100,871	5	
6	9,373	6	27,721	6	46,074	6	64,434	6	82,800	6	101,178	6	
7	9,680	7	28,027	7	46,380	7	64,740	7	83,106	7	101,484	7	
8	9,984	8	28,333	8	46,686	8	65,046	8	83,413	8	101,790	8	
9	10,288	9	28,638	9	46,992	9	65,352	9	83,719	9	102,097	9	
10	10,592	10	28,944	10	47,298	10	65,658	10	84,025	10	102,403	10	
11	10,896	11	29,250	11	47,604	11	65,964	11	84,332	11	102,709	11	
3	11,203	8	29,556	13	47,910	18	66,270	23	84,638	28	103,016	33	
1	11,509	1	29,861	1	48,215	1	66,577	1	84,944	1	103,322		
2	11,816	2	30,167	2	48,521	2	66,883	2	85,251	2	103,628		
3	12,123	3	30,473	3	48,827	3	67,189	3	85,557	3	103,934		
4	12,430	4	30,779	4	49,133	4	67,495	4	85,863	4	104,241		
5	12,737	5	31,085	5	49,439	5	67,801	5	86,169	5	104,547		
6	13,044	6	31,391	6	49,745	6	68,107	6	86,476	6	104,853		FRACTIONS
7	13,351	7	31,697	7	50,051	7	68,413	7	86,782	7	105,160	1/16	19
8	13,657	8	32,003	8	50,357	8	68,719	8	87,088	8	105,466	1/8	38
9	13,964	9	32,309	9	50,663	9	69,025	9	87,395	9	105,772	3/16	57
10	14,270	10	32,615	10	50,969	10	69,331	10	87,701	10	106,078	1/4	77
11	14,576	11	32,920	11	51,275	11	69,638	11	88,007	11	106,385	5/16	96
4	14,881	9	33,226	14	51,580	19	69,944	24	88,313	29	106,691	3/8	115
1	15,187	1	33,532	1	51,886	1	70,250	1	88,620	1	106,997	7/16	134
2	15,493	2	33,838	2	52,192	2	70,556	2	88,926	2	107,304	1/2	153
3	15,799	3	34,144	3	52,498	3	70,862	3	89,232	3	107,610	9/16	172
4	16,104	4	34,450	4	52,804	4	71,168	4	89,539	4	107,916	5/8	191
5	16,410	5	34,756	5	53,110	5	71,474	5	89,845	5	108,223	11/16	210
6	16,716	6	35,062	6	53,416	6	71,780	6	90,151	6	108,529	3/4	230
7	17,021	7	35,368	7	53,722	7	72,086	7	90,458	7	108,835	13/16	249
8	17,327	8	35,674	8	54,028	8	72,393	8	90,764	8	109,141	7/8	268
9	17,633	9	35,979	9	54,334	9	72,699	9	91,070	9	109,448	15/16	287
10	17,939	10	36,285	10	54,639	10	73,005	10	91,376	10	109,754	1	306
11	18,244	11	36,591	11	54,945	11	73,311	11	91,683	11	110,060		

CAPACITY IN U. S. GALLONS

STRAPPED SEPTEMBER 23, 1971

NOTE: TANK BOTTOM CONSIDERED FLAT AT TIME OF CALIBRATION.

NOTE: CAPACITIES REFLECT EXPANSION OF TANK SHELL FOR LIQUID HEAD.

BY J. E. [illegible]
DEPUTY INSPECTOR OF PETROLEUM
APPROVED BY NEW YORK PRODUCE EXCHANGE

DTH 000120279

CONFIDENTIAL

U. S-490, Tank Car Vent K. O. Pot

1) Pressure purge any liquid vinyl in S-490 into T-491.

2) Block in S-490 from T-491 at the valve nearest to S-490.

3) Start a nitrogen purge to the inlet of S-490. Open the vent line to the incinerator.

4) Continue nitrogen purging until the sample at the sight gage contains less than 25 ppm vinyl.

5) Turn over to Maintenance for blinding.

V. S-625, Dock Vinyl K. O. Pot

1) Line up S-625 through the carbon beds to the dock vent stack.

2) Put steam to the vessel to drive off any liquid vinyl.

3) Start nitrogen into S-625 and continue purging until a sample upstream of the carbon beds contains less than 25 ppm vinyl.

4) Turn over to Maintenance for blinding.

W. S-626, Suction K. O. Drum

1) Pump any liquid in S-626 to the 10" loading line from the VCM Plant.

2) Line up the vessel to the carbon bed adsorption system.

3) Start nitrogen into S-626 and purge through the carbon beds to the vent stack.

4) Continue purging with nitrogen until a sample taken upstream of the carbon beds contains less than 25 ppm vinyl.

5) Turn over to Maintenance for blinding.

X. <u>T-202, HCl Column Bottom Drum</u> (Refer to Figure XI)

1) After C-202 is shutdown, pump all the vinyl and EDC from T-202 to C-203.

2) Block in T-202.

3) Open the 2" drain to the process sewer and drain any remaining liquid from T-202.

4) After closing the drain valve, open the 1" bleed valve and depressure the vessel to the dry vent header.

5) Close the 1" bleed and the 3" valve under the relief valve.

6) Pull the blind to the wet vent header.

7) Hook a steam hose to the 1" line on the bottom of T-202.

8) Open the vessel to the wet vent header and the closed process sewer.

9) Start steaming the vessel.

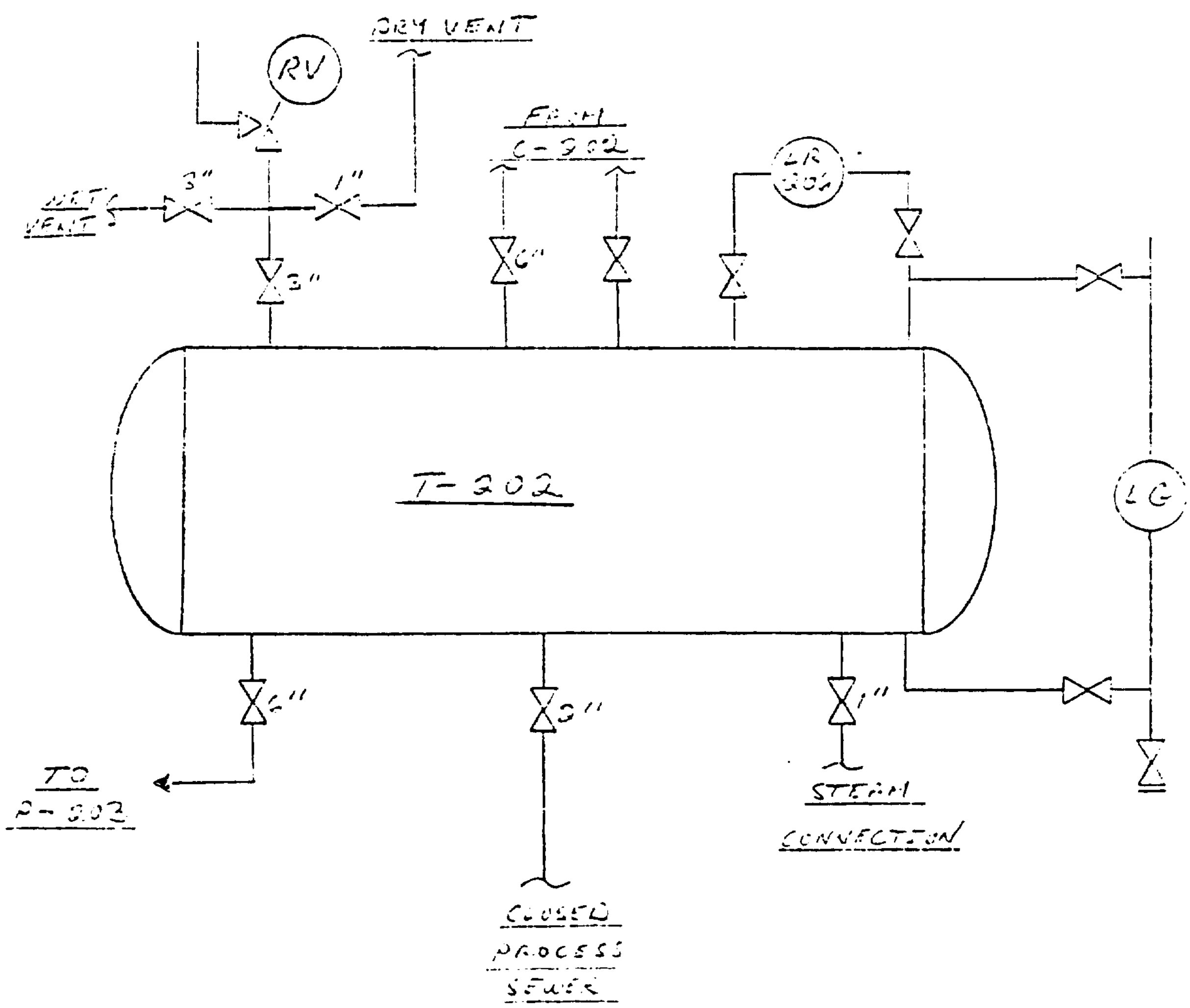
10) After the vessel is hot, pull a sample from the LR-206 top balance line and analyzer for vinyl.

11) When the vinyl concentration in the sample is less than 25 ppm, block in the steam, sewer line, and wet vent header line.

12) Open the bleed line so vessel won't pull a vacuum.

FIGURE XII

T-202, HCl COLUMN BOTTOM DRUM



Y. T-401 A, B & C; Vinyl Check Tanks and T-411 A, B, C, & D; Vinyl Storage Tanks.

1) If vessel is not completely empty of liquid, either pump out or pressure out with nitrogen the liquid to another vinyl tank.

2) When the vessel is empty, block in the bottom gate valve. Also, block in the circulation and transfer valves on the dike.

3) Open up to the Corken Compressor and draw a vacuum on the tank.

4) Start nitrogen into the tank and raise the pressure to about 40-50 psig.

5) Open the block valve allowing the vessel to depressure to the vent header.

6) After pressure purging 4 or 5 times, sample the overhead vapor for vinyl content.

7) Continue pressure purging until the vinyl content of the overhead vapor is less than 25 ppm.

Z. T-490, Vinyl Vent Recovery Storage Tank

1) Pump out all the liquid vinyl to another vinyl tank.

2) Block in all valves.

3) Open the pressure relief valve to the dry vent header.

4) Start nitrogen into the tank and pressure purge until the sample caught by the pressure gage contains less than 25 ppm.

5) Blind the tank

6) Hook up a steam hose and purge before entering.

CONFIDENTIAL

AA. T-626, Dock Vent Receiver Tank and H-625, Dock Vinyl Vent Recovery Condenser

1) Pressure purge any remaining liquid vinyl in H-625 into T-626.

2) Pump the liquid from T-626 to the 10" loading line from the VCM Plant.

3) Line up the outlet of T-626 through the low pressure header to the carbon beds.

4) Start nitrogen into the inlet of H-625, purging through the exchanger and T-626.

5) Continue purging the system until a sample upstream of the carbon beds contains less than 25 ppm vinyl.

6) Turn over to Maintenance for blinding.

SECTION III

STANDARD OPERATING PROCEDURES

LOADING RACK

VCM SERVICE

VCM TANK CAR PURGING PROCEDURE

A. Dedicated VCM Cars with O_2 Content Greater than 1,000 ppm

1. Depressure car directly to the Incinerator line. Do not go through vent recovery unit because high levels of O_2 in this unit could be a safety problem.
2. Pressure car with nitrogen to 40 psig and depressure to Incinerator.
3. Check O_2. If not 1,000 ppm or below, repeat Step #2.

B. Clearing Dedicated VCM Cars for Dome Removal

1. Pull VCM vapor out with the Corken compressor.
2. Pressure car to 40 psig with nitrogen and depressure to Incinerator. Do not go through the vent recovery unit.
3. Do Step 2 until car is below 1 ppm vinyl.
4. When car is 1 ppm vinyl or below, start plant air to the car and depressure to the atmosphere until at least 20% O_2. Air purging is not required if the car is not to be entered.

Clearing Undedicated VCM Cars of O_2 (Cars that contain Air Only)

1. Pressure car to 90 psi with nitrogen and leak check.
2. Check around dome, valves, packing, dipstick, and R/V with snoop or water for leaks.
3. If any leaks found, report to Shift Supervisor for repair.
4. Depressure to atmosphere and keep pressure purging to 40 psig until 1,000 ppm O_2 or less is obtained.

VCM CAR LOADING

I. Respiratory Protection Requirements

1. Cannister Masks

   a. Use this type of mask when opening loading or vent valves at start of loading a tank car.

   b. Use this kind of mask (unless blue light is on) during the loading operation.

2. Fresh Air Mask

   a. When disconnecting or sampling a loaded vinyl car, always use a fresh air mask.

   b. Whenever the circulating blue light is on, it means that a high concentration of vinyl, 5 ppm, is in the area and a Fresh Air Mask must be worn.

II. Spot up of Car and Preloading

A. Loading sphere and related equipment

1. Line up sphere and equipment in this order of flow unless otherwise noted:

   a. sphere
   b. P-411's
   c. S-401
   d. S-402
   e. F-402

2. Circulate sphere and sample if not already done.

B. Spot up of cars

1. Apot up all cars that are to be loaded.

2. Put up blue flags and derails.

3. Chock and ground all cars.

C. Pre-Loading Checkout List - Figure I

1. O_2 must be 1000 ppm or below before loading.
2. Check platform guard rails around the dome for defects. Notify Shift Supervisor if defects are found.
3. Make a walkaround inspection of the car. If any noticeable problem is detected with the trucks or underframe, contact Shift Supervisor before loading.
4. Check tanks for dents and leaking valves, packings and flanges.
5. Check VCM lettering on the side of the car. It must be 4" high lettering.
6. Check DOT number on side of the car. If anything other than 112A or 105A, do not load.
7. Check safety valve test date. If more than 5 years since tested, do not load.
8. Check tank test date, if more than 10 years since tested do not load.

III. Car Hookup

1. Install Rail car blower hoses and start up - rail car blower.
2. Install laoding nipples and hook up to loading hoses.

   NOTE: Loading nipple threads must be Teflon taped.
3. If the car has been in vinyl service, it probably will not need to be hooked up to the vent line.
4. Make sure all bleeds and pressure-vacuum clearing system are blocked in on loading and vent arms.
5. If car has old dip tube, hook up to level pot and set dip tube about 6" to 8" below required outage (i.e. add 6" to 8" to outage figure and set dipstick at that level). (See Figure II)
6. If car has magnetic dipstick, check stick to be sure it slides freely and works properly.

IV. Loading

1. When all cars are inspected, put on a cannister type mask and proceed to hook up loading hose.
2. If old dip tube is used,open all valves from dip tube to stack line.
3. Pressure each hose and camlock connection to full N_2 pressure.
4. Leak check connections and hoses.
5. If no leaks, shut off N_2 and educt hose.
6. Open loading valves to cars.
7. Check for leaks on loading arms, nipples, and dip tubes. If any are found, shut valves off, clear lines and repair leaks before going on to next car.
8. Proceed to next car and start loading the same way.
9. Keep cannister type gas mask on during all loading unless the blue light is on. Then it is necessary to put fresh air masks on.
10. If blue light is on, locate leaks and repair.
11. If a car is loading slow, it may be a pressure build-up in the car from inerts. Hook up vent line checking for leaks and vent to fin fan and refrigerated vent recovery unit.
12. If a car with an old dip stick seems to be taking a long time to fill, check sight glass on level pot to see if level alarm is working. If liquid is entering the sight glass, the level is up to outage.
13. When car with magnetic dip stick reaches outage, shut loading valves.

V. Topping off (old dip tube cars only)

1. When car reaches set outage on dip tube and shuts down, raise dip tube to correct outage. Let level pot, sight glass and tubing clear of liquid vinyl. (See Figure II)

2. When rest of cars have loaded or it is possible to stay with the car, start loading car again with dip tube on correct outage. When needle on the pressure gauge on dip tube line shakes and falls off, stop loading car. It should be on correct outage.

VI. Sampling

1. Put fresh air masks, tyvek coveralls, and impermeable gloves on. These are requirements to sample vinyl cars.
2. Pull samples on cars (do not vent bombs to atmosphere). Vent the bomb via the small dip tube hose to the incinerator. See Figure II.
3. You may sample cars before all loading is done. Be sure proper protective respiratory equipment and clothing are worn.

VII. Disconnect and Sealing

1. With loading valve on the rack closed, start N_2 to loading arm pushing vinyl into car. Open and close eduction valve on the car to push liquid VCM into the car. See Figure III. Valve A
2. Close eduction valve on car block in N_2 to loading arm, and start eductor to pull vacuum on loading arm; also educt vapor in vent arm if used. Pressure purge and evacuate 4 or 5 times. See Figure III.
3. With fresh air respirator, tyvek coveralls, and impermeable gloves on, disconnect piping from car.
4. Finish making our loading report. Figure I.
5. Make sure all valves and valve packings are leak-free and that safety valve is not leaking.
6. Install pulgs with chains on all valves. Install dip tube covers and thermowell covers.
7. Notify Shift Supervisor or Chief Operator for leak check.

8. When everything in dome is complete, shut dome cover and seal with a dome placard and car seal.
9. Disconnect rail car blower hoses and shutdown blower.
10. Make sure all loading arms, dip tube lines, and thermocouples are free and out of way from the car with loading ramp in the raised position.
11. Change all 4 placards on the car.
12. Unhook grounds, unchock, and remove blue flags for switching.
13. If there is any problems with equipment on car, report to Shift Supervisor so he can arrange to have it repaired.

Figure 1

VCM PLANT TANK
CAR LOADING REPORT

Car No. UT/ [illegible] 37202 Product VCM

		Initials	Date
Pre-Loading Checkout List		[illegible]	
Incoming Weight		1/25/77	
Incoming Temp..	35		
Incoming Pressure	6		
Incoming O_2	300		
Huck Bolts Missing (1)	Yes ☐ No ☐		
Safety Railing & Ladders OK	Yes ☐ No ☐		
Trucks & Underframe OK (1)	Yes ☐ No ☐		
Tank Defects	Yes ☐(2) No ☐		
Does Car have Head Shield?	Yes ☐ No ☐		
Magnetic Dipstick	Yes ☐ No ☐		
Stenciled VCM If No-What is Stenciled	Yes ☐ No ☐		
DOT 112A or 105A	Yes ☐ No ☐(1)		
SV Test Less Than 5 Years	Yes ☐ No ☐(1)		
Tank Test Less Than 10 Years	Yes ☐ No ☐(1)		
Post-Loading Checkout List			
Loaded Weight			
Loaded Outage	19		
Loaded Temperature	43		
Loaded From Tank or Sphere	411-A		
O_2 After Loading	375		
All Liquid Valve Plugs Tight & Chained	Yes ☐		
All Vapor Valve Plugs Tight & Chained	Yes ☐		
Thermometer Well Cap Tight & Chained	Yes ☐		
Dip Tube Latch in Place	Yes ☐		
Placards in Place (Both Sides) (Both Ends)	Yes ☐		
Test Tube Sample Valve Plug Tight & Chained	Yes ☐		
Seal No. 334571			

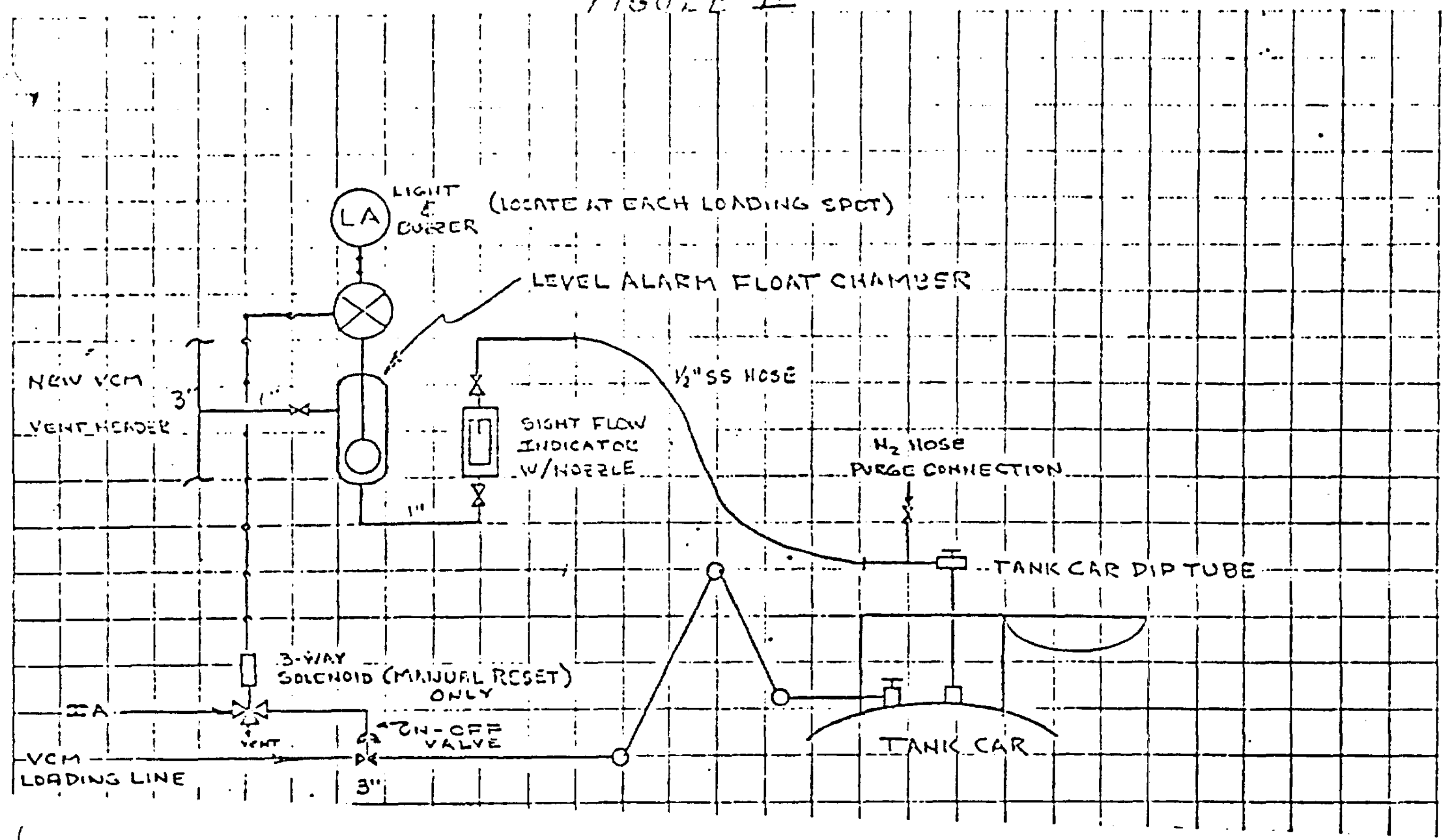
Person Sealing Car should initial here

(1) DO NOT LOAD
(2) CONTACT SUPERVISOR

COMMENTS: [illegible]

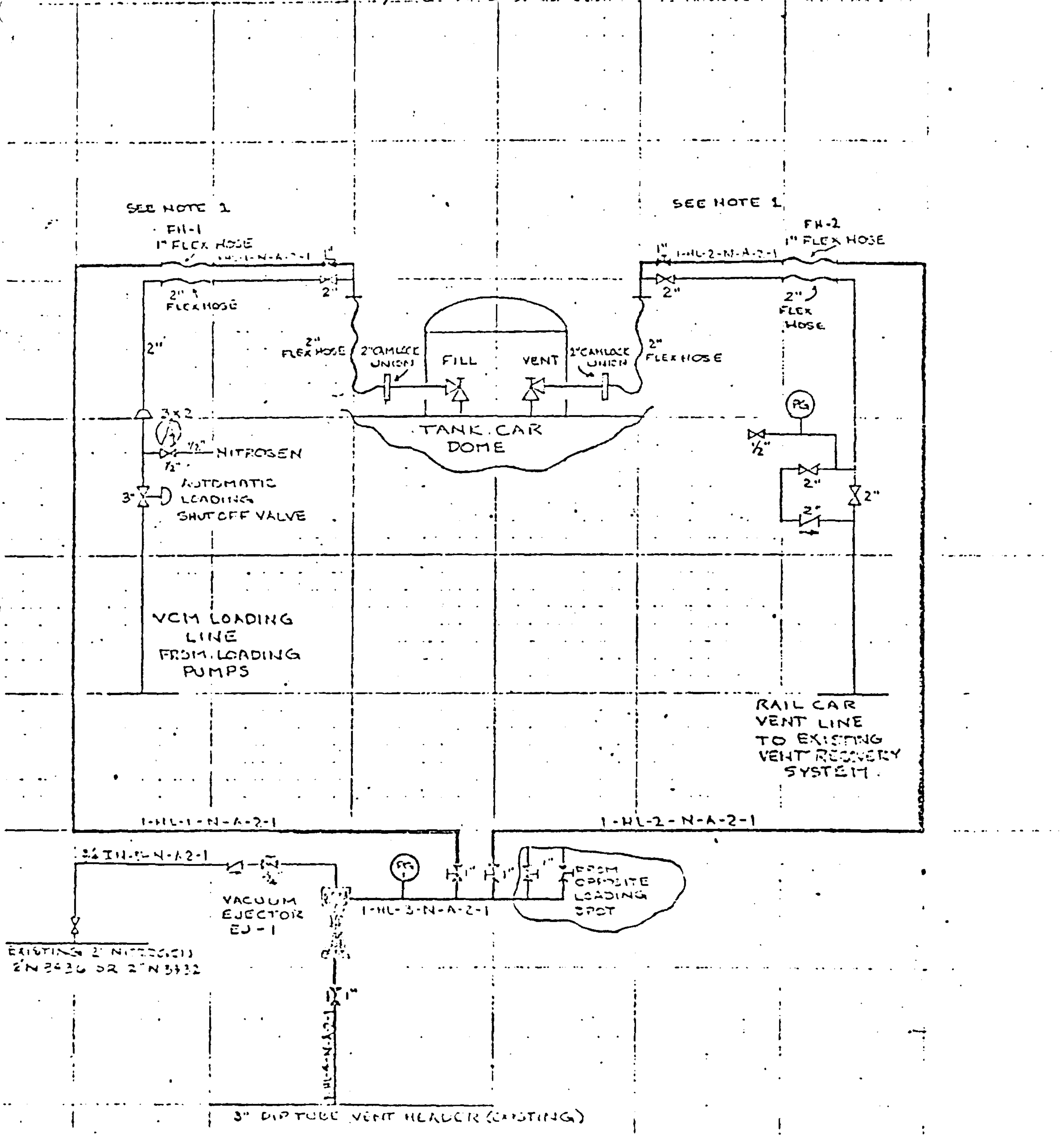
DTH 000120292

FIGURE II



DTH 000120293

FIGURE III



FH FLEXIBLE HOSE

——— EXISTING

——— NEW

BALL VALVE

DTH 000120294

FIGURE 1
TYPICAL DESIGN
DURING DISCONNECTION OF RAIL CAR LOADING

DESIGN NO.

CONOCO Continental Oil Company
VCM Plant
Tank Car Loading Report

Car No. ______________ Product ______________

Pre-Loading Checkout List

		Initials	Date
Incoming Weight			
Incoming Temp.			
Incoming Pressure			
Incoming O2			
Huck Bolts Missing (1)	☐ Yes ☐ No		
Safety Railing & Ladders OK	☐ Yes ☐ No		
Trucks & Underframe OK (1)	☐ Yes ☐ No		
Tank Defects	☐ Yes (2) ☐ No		
Does Car Have Head Shield?	☐ Yes ☐ No		
Magnetic Dipstick	☐ Yes ☐ No		
Stenciled VCM If No—What is Stenciled	☐ Yes ☐ No		
DOT 112A or 105A	☐ Yes ☐ No (1)		
SV Test Less Than 5 Years	☐ Yes ☐ No (1)		
Tank Test Less Than 10 Years	☐ Yes ☐ No (1)		

Post-Loading Checkout List

Loaded Weight			
Loaded Outage			
Loaded Temperature			
Loaded From Tank or Sphere			
O2 After Loading			
All Liquid Valve Plugs Tight & Chained	☐ Yes		
All Vapor Valve Plugs Tight & Chained	☐ Yes		
Thermometer Well Cap Tight & Chained	☐ Yes		
Dip Tube Latch in Place	☐ Yes		
Placards in Place (Both Ends) (Both Sides)	☐ Yes		
Test Tube Sample Valve Plug Tight & Chained	☐ Yes		
Seal No	☐ Yes		

(1) Do Not Load (2) Contact Supervisor

Comments ____

DTH 000120295

8 545 ?? 11 77

KANSAS CITY SOUTHERN LINES

INDUSTRY SWITCH LIST

INDUSTRY__________ DATE__________ LOCATION__________

	CAR INIT	CAR NUMBER	L or E	KIND OF CAR	CONTENTS	PRESENT LOCATION ZN	TRK	SP	TIME	MOVE TO ZN	TRK	SP	TIME	DESTINATION AND REMARKS	WHY CODE	WEIGH S	A	CUSTOMER	LD EM	TABLE	GROSS LOAD LIMIT	[illegible]
1																						
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						
16																						
17																						
18																						
19																						
20																						
21																						
22																						
23																						
24																						
25																						

CAR CONTAINING VCM ARE AS FOLLOWS: VCM VINYL CHLORIDE FLAMMABLE GAS CANCER SUSPECT AGENT PLACARDED FLAMMABLE GAS. CARS CONTAINING LT. ENDS FLAMMABLE LIQUID NOS PLACARDED FLAMMABLE * "DOT 112A AND MUST BE HANDLED IN ACCORDANCE WITH FRA E. O. NO. 5"

This is to certify that the above named materials are prop-

DTH 000120296

Continental Oil Company
VCM Plant

Pumper/Loader Track Situation

Location		Car			Loading	Oxygen		Washed						
Track	Spot	Letters	No.	Contents	Status	Before	After	Empty	Full	Sealed	Sampled Loaded	Car Sealed	Placards	Spec Ck.
1	3													
1	2													
1	1													
1	Off Spot													
1	Off Spot													
2	3													
2	2													
2	1													
2	Off Spot													
2	Off Spot													
3	2													
3	1													
3	Off Spot													
3	Off Spot													
4	2													
4	1													
4	Off Spot													
4	Off Spot													
4	Off Spot													
West 5														
5														
5														
5														
5														
5														

Please Be Accurate

Tank Levels	Gals.	Date:	Time:	Operator:
T 401A		Status of 50% Caustic Car:		
T-401 B		Cars Needing Resampling		
T 401 C				
T-411 A				
T-411 B		F-401 d.p:	F-402 d.p:	
T-411 C		Caustic Bed d.p	Bauxite Bed d.p:	
T 411 D				
T 452				
		Cars Partially or Fully		
		Loaded Prior to 0600		

Make 3 copies on No. 1 Shift,
2 copies on No. 2 and No. 3 shift.

Car No.	Material	Out	To	Start	Finish

8-543 PB. 9 73

DTH 000120297

CONOCO

Interoffice Communication

To J. W. Ware

From M. G. Jakel

Date March 23, 1981

Subject Startup and Operation of the Rail Car Blower System

The Rail Car Blower, BL-420, will be used to reduce employee exposure to vinyl chloride emissions from leaking rail car domes during rail car loading operations. The blower system will pull air into the dome and out the side port hole through a 6" hose into a common header. Air collected in the common header will be exhausted through a stack at an elevation of 60 feet above grade.

Prior to opening the domes of the vinyl rail cars after they arrive in the plant the 6" black and orange hose will need to be fitted snuggly to a port hole by hooking both of the attached straps to two other side port holes in the dome (see attached drawing). After the hoses have been attached to the domes, the blower, BL-420, can be started from either guard shack. All domes must have hoses hooked up before they can be opened; however not all hoses need to be hooked up before the blower is started. Once the blower has started, the domes can be opened up. The blower will be shut off and the 6" hoses disconnected only after the loading operation is complete and the domes closed.

A low amperage alarm is provided for the blower to alert operators when there is low air flow through the system. A vacuum bleed valve is included to admit air to the blower suction when low amps (low flow) occurs, to protect the compressor from surging.

Bleeders in the common header should be opened on a weekly basis to drain any liquid which may have entered the system.

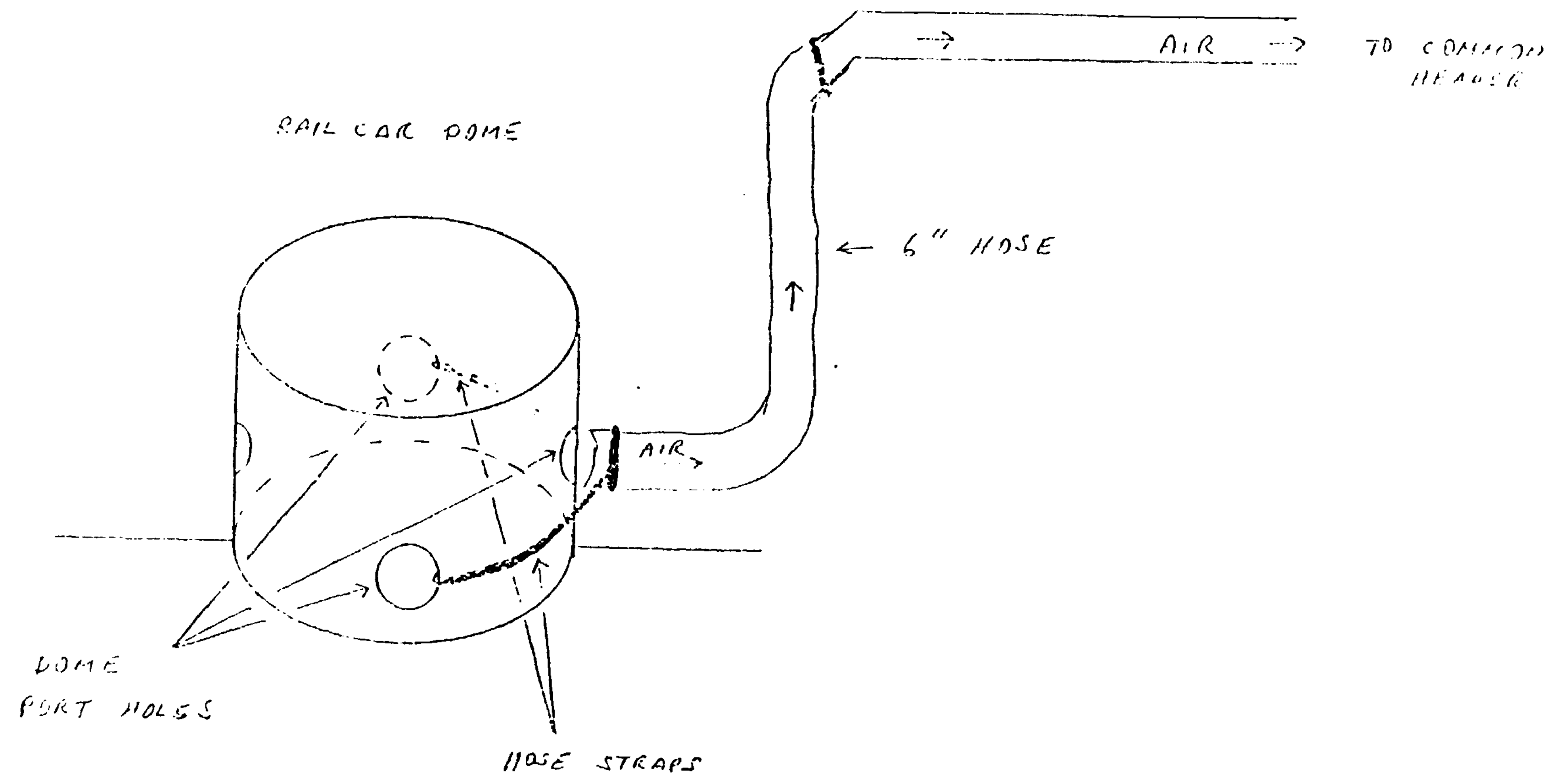
If there are any questions please call me at extension 5049.

Mark G. Jakel

Mark G. Jakel
Process Engineer

kf

CC:
JAD-GLF-JWW(15)-CWT-JRH(4)-DLD-PLF-PE



DRAWING-1
RAIL CAR BLOWER SYSTEM
HOSE HOOKUP

DTH 000120299

CONOCO

Interoffice Communication

To Distribution

From J. W. Ware

Date August 22, 1980

Subject Railcar Loading/BL-410 Meetings

The subject meetings have been completed with the appropriate personnel from all shifts. The attachments reflect information collected during the meetings which will hopefully clear up some misunderstanding with respect to breathing air use on the rack and lead to the improved operation of BL-410.

Please let me know of any further problems or questions which come up.

J W Ware

J. W. Ware

is

CC:

C. Landon	M. Powers
C. Kroske	R. Young
K. Cash	P. Ceasar
C. Buller	B. Wilburn
C. Brown	M. Fontenot
E. Gould	F. Broxton
J. Vickers	L. Barron
D. Ross	B. Bauer
R. Fox	A. C. Hughes
C. Turner	

VINYL LOADING BREATHING AIR REQUIREMENTS		
Task	Breathing Air not Req'd	Breathing Air Req'd
Remove plugs		X
Break thermowell cover		X
Remove sample tap plug		X
Remove dipstick cover		X
Put nipples in (install new teflon tape if needed)		X
Hook up loading hoses (good O-rings)		X
Pressure up w/ N_2 for leak check		X
Check O_2 at sample tap		X
Start loading	X	
Car nears correct outage-sample it		X
Car reaches correct outage	X	
S/D loading	X	
Take final O_2 on vent arm		X
Push liquid into car w/ N_2	X	
Purge liquid line into car	X	
Vacuum/pressure purge lines	X	
Block off loading hoses	X	
Depressure loading lines		X
Disconnect hoses		X
Remove nipples		X
Install plugs w/ new teflon tape		X
Shut off breathing air	X	

DTH 000120301

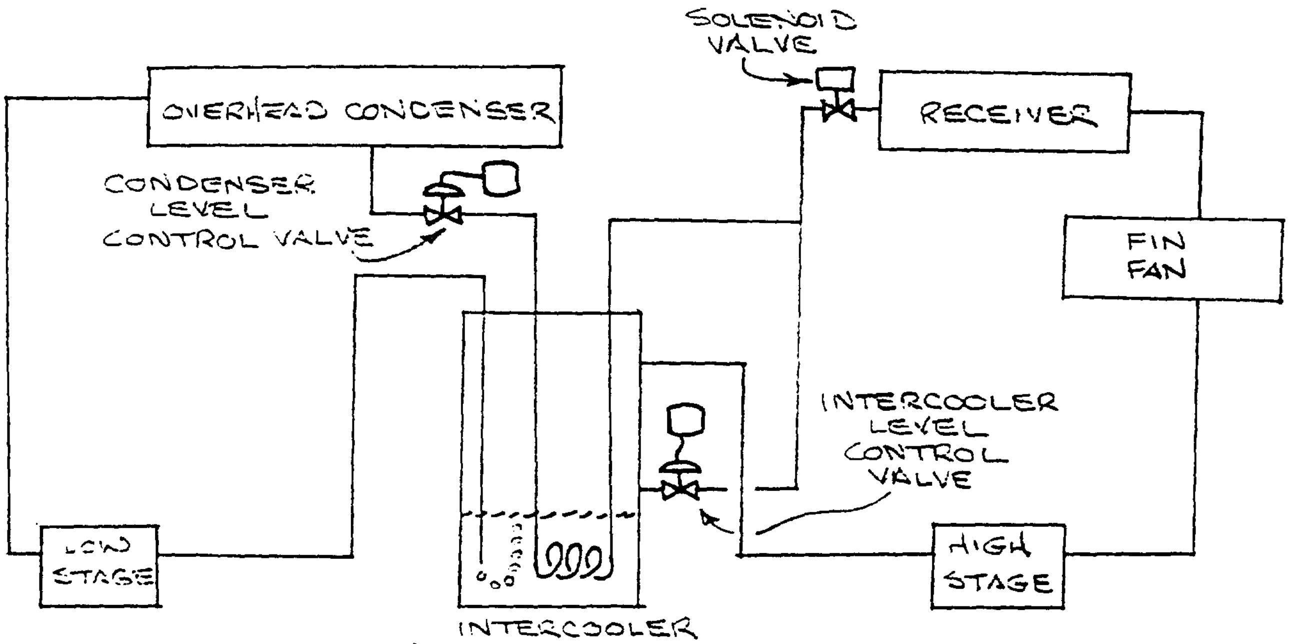
CONOCO STANDARD

BREATHING AIR REQUIREMENTS

VINYL CHLORIDE

Whenever equipment is opened which does contain vinyl chloride, has ever contained vinyl chloride or could possibly contain vinyl chloride, breathing air use is required.

Process Flow Diagram



Operating Notes

(1) Turn the start switch off before pressing reset buttons.

(2) An appropriate level in the intercooler is important because:
- (A) It cools the gas feed to the second stage
- (B) It cools the liquid going to the overhead condenser
- (C) It prevents liquid from entering the suction of the second stage
- (D) It provides a feed to the oil recovery pot

A level controller attached to the side of the intercooler controls the intercooler level. Monitor this level on a routine basis. The appropriate level should be stable in the intercooler even when the unit is shut down.

(3) The oil level in the crankcases of the low and the high stage compressors is important. You should be able to see a level in the sightglasses at all times, even when the unit is shut down.

(4) The oil recovery pot located on the skid immediately southwest of the intercooler has a level indicator on it. It normally runs $^1/_4$ to $^1/_2$ full. If an oil problem develops it may be traced to a low or high level in this pot.

Operating Notes (continued)

(5) The fin-fan cooler is critical. Be sure it comes on when you start the unit. If it doesn't you will blow a relief valve on the receiver. It only takes a few minutes to loose a lot of Freon through a relief valve.

(6) The relief valves (2) on the receiver, once blown, sometimes will not re-seat on their own. Stroke the valve under the relief valves all the way in or all the way out to switch relief valves to stop one from blowing.

(7) The level of Freon in the overhead condenser is critical to stable unit operation (rule-of-thumb setpoint on the controller is 1.5). Too high a level with a heavy vent rate will overload the low stage compressor and increase the high stage discharge pressure. Too low a level will give you no cooling in the condenser.

SECTION II

STANDARD OPERATING PROCEDURES

LOADING DOCK

VINYL SERVICE

TABLE OF CONTENTS

CONFIDENTIAL

I. GENERAL REQUIREMENTS

The EPA's National Emission Standard for Vinyl Chloride sets guidelines for the regulation of vinyl chloride emissions to the atmosphere. The regulations that apply to operations activities at the No. 3 Loading dock and the procedures used by CONOCO to comply with the regulations are summarized below.

A. Vents to the Atmosphere

The EPA standard specifies that all vents to the atmosphere must contain less than 10 ppm VCM. Compliance with this regulation is achieved by routing all vents to either the vent recovery system or the carbon adsorption system.

B. Vents from Relief Valves

The EPA standard specifies that preventable relief valve discharges will not be permitted. Rupture discs have been installed under all relief valves and, where possible, the discharge piping has been routed to either the vent recovery system or the carbon beds.

C. Clearing of Equipment and Lines

Several guidelines are presented in the EPA Standard for the clearing of equipment and lines. By following the operating procedures presented in this manual and by controlling all vents to less than 10 ppm vinyl, it is possible to comply with the EPA Standard.

D. Seals on Pumps and Compressors

The EPA Standard specifies that emissions from seals on all rotating equipment are to be minimized by installing double mechanical seals or by an approved method. The vent from the nitrogen purge on the vent recovery system compressor is routed to the carbon adsorption system.

E. Leak Detection and Elimination Plan

The EPA standard specifies that emissions due to leaks are to be minimized by implementing and following a leak detection and elimination plan. Such a plan for the No. 3 Loading Dock is included in this manual.

II. CARBON ADSORPTION SYSTEM

The EPA Standard mandates that all emissions to the atmosphere must have a VCM concentration of less than 10 ppm. The majority of the vapors generated during the loading operations pass through a vapor recovery unit at the dock for recovery of VCM and are returned to the main plant area by a pipeline. Additional vinyl is recovered in the main plant and residual vapors are piped to the thermal incineration system. Several loading operations vents, however, cannot be processed through the vent recovery unit because of their low pressure or because of oxygen content. Therefore, a carbon adsorption system was installed to control the VCM content in these emissions. When the streams are routed through the beds of activated carbon, the VCM is trapped in the carbon granules by physical adsorption.

The carbon adsorption system currently consists of two 220 gallon drums arranged in series. Each drum contains 725 lbs. of Calgon BPL type 4 x 10 mesh activated carbon.

The drums are protected by a relief valve which discharges directly to the vent stack. If the valve relieves, then the discharge must be reported. See Section II of this manual for an explanation of the reporting procedure.

The adsorption capacity of the system is extremely sensitive to inlet conditions. The adsorption capacity decreases with stream humidity and the beds cannot reduce the VCM concentration in the vents to less than 10 ppm if streams having high VCM concentrations are routed to the beds. Therefore, the only vents that are routed through the beds are those that are generated during the hose connection, ship hold sampling, hydroquinone injection, and hose disconnection operations. The procedures for these operations were revised in early 1979 and copies of the revised procedures are included in this manual.

The concentration of the VCM in the vents being routed through the beds is continuously monitored at two points by the fixed point monitor system. The first point is located between the two drums and must be connected prior to each loading operation. The second point is located downstream of the carbon beds and is permanently attached on the line that routes the vents to the vent stack. If a vinyl concentration of greater than 10 ppm is indicated between the two drums, then the loading operation must be stopped and the VCM Plant Shift Supervisor must be contacted so that arrangements can be made to regenerate the first drum. If a vinyl concentration of greater than 5 ppm is indicated downstream of the carbon beds then the loading operation must be stopped and evaluated. It is imperative that the VCM concentration in the vents never be allowed to exceed 10 ppm.

II. CARBON ADSORPTION SYSTEM (CONTINUED)

Upon saturation (which is indicated by VCM in the vent downstream of the beds) or upon completion of the loading operation, whichever occurs first, the carbon beds must be returned to the VCM Plant for regeneration. The VCM Plant Supervisor will write a work order for maintenance to bring the beds back to the plant. The urgency of the work order depends on when the next ship loading is scheduled.

The beds are regenerated by stripping the VCM from the carbon with hot nitrogen. A general discussion of the procedure for regenerating the beds is attached. A schematic showing how the beds should be arranged at the loading dock is also attached.

REGENERATION OF CARBON BEDS

The following are general instructions for the regeneration of the carbon beds using hot nitrogen.

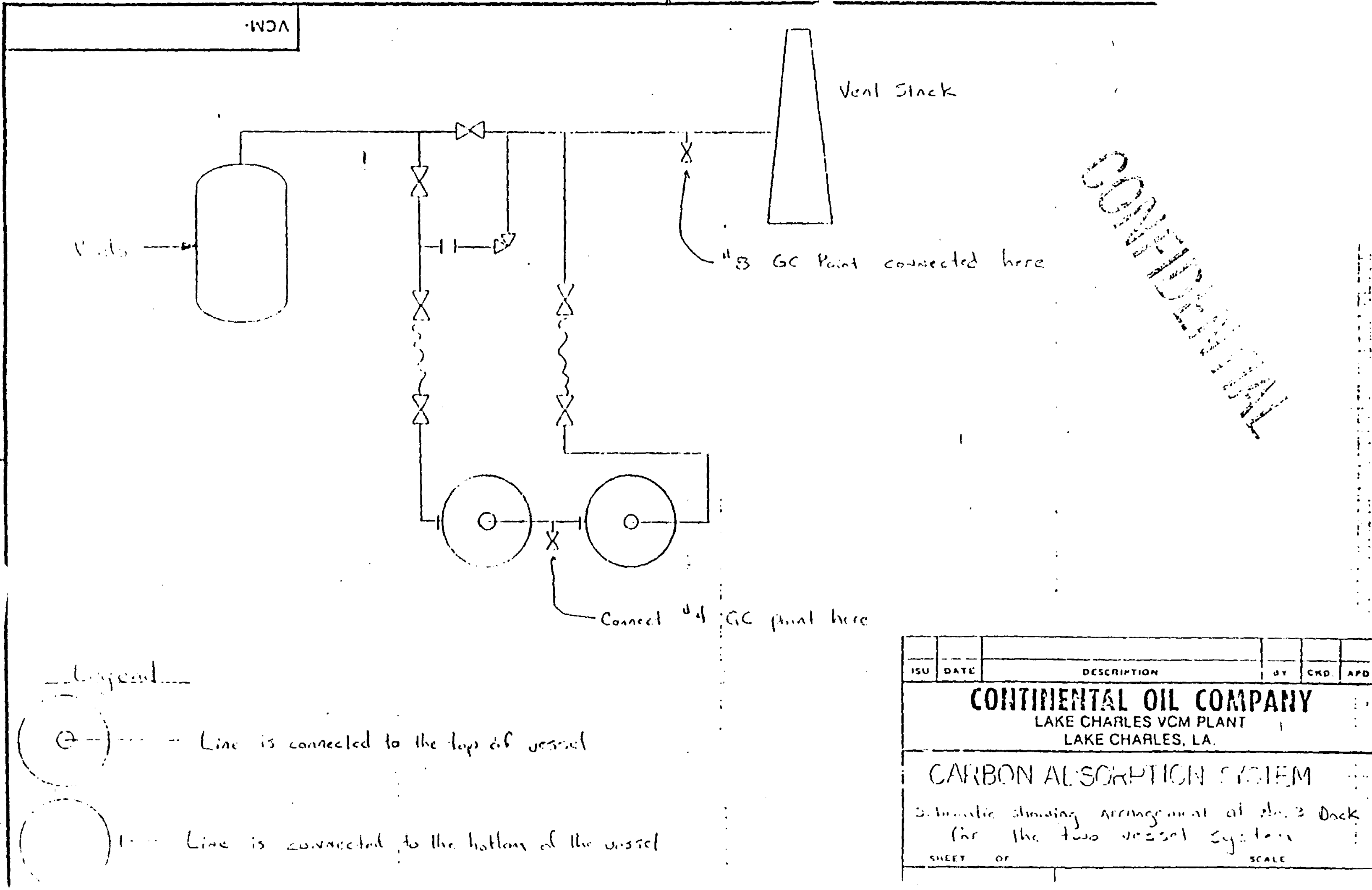
I. Purging the Two Pressure Vessels on the Trailer

1) Purge the two vessels in series. The hot nitrogen must enter the top of the two vessels and exit out of the bottom.

2) Notify and coordinate all purging operations with the incinerator.

3) Keep the inlet pressure low enough that the high nitrogen flowrate does not cause a by-pass at the incinerator. The inlet temperature must be limited to $275^{o}F$.

4) Purge the vessels until the hot nitrogen exiting them contains less than 10 ppm VCM.



ISU	DATE	DESCRIPTION	BY	CKD.	APD

CONTINENTAL OIL COMPANY
LAKE CHARLES VCM PLANT
LAKE CHARLES, LA.

CARBON ABSORPTION SYSTEM

Schematic showing arrangement at No. 3 Dock for the two vessel system

SHEET OF SCALE

DTH 000120311

III. OPERATING AND CLEARING PROCEDURES:

A. Connection of vent and loading hoses
B. Blind removal from vent hose spool piece on Dock
C. Blind removal from loading hose spool piece on Dock
D. Hydroquinone addition procedure
E. Disconnection of vent hose from ship
F. Disconnection of loading hose from ship
G. Blind installation in vent hose spool pieces on Dock
H. Blind installation in loading hose spool pieces on Dock
I. Sampling Procedures
   1. Collection of samples at the discharge of ship's pump
   2. Collection of samples at a sample tap.

CONFIDENTIAL

OPERATING PROCEDURES

CONNECTION OF VENT AND LOADING HOSES

Discussion

The new clearing procedure given below can be broken down into three basic steps.

1) The first step is to flush the VCM out of the spool pieces with N_2 to the vent recovery system. All of the liquid should be flushed out during this step.

2) The second step is to "pressure purge" the spool piece. This is accomplished by blocking in the spool piece, building the pressure with N_2, and then bleeding the pressure off to the vent recovery system. The VCM vapors are diluted by the N_2 each time the pressure is allowed to build. This step is performed ten times so that the vapors are diluted to a low concentration and the dock personnel will not be exposed when they break the flanges.

3) The third step is to activate the eductor while breaking the flanges. In the past, the eductor was used to clear the spool piece of VCM but it is now used only to prevent any VCM that may remain in the spool piece from escaping into the atmosphere.

The new procedure was developed to reduce employee exposure to VCM while also reducing the adsorption load on the carbon adsorption system. More time is required to clear the hoses and spool pieces but the procedures should not be rushed for any reason. If the procedures are not followed, then the dock personnel carrying out the procedures could be exposed to VCM.

Procedure (Refer to Drawing 119-3 of this design)

1) Lift hose onto ship with valves F and G in the vertical plane. The spool piece should be connected onto the vessel so that valve F is on the bottom. This is important for liquid drainage during hose disconnection.

2) Connect the chemical hose that is on the reel to valve G. Connect chemical hose from valve F to valve H.

3) If the vent recovery system is not already on, notify [illegible] plant control room (so that they can start their vent recovery system and preparations can be made at the incinerator) and then start the dock vent recovery system.

4) Purge the spool piece with nitrogen to the vent recovery system as follows:

   a) Open valves I, H, G, F and C. Then purge spool piece with nitrogen for five minutes by opening valve A. All of the liquid should be flushed out during this step. If, after five minutes, there is still evidence of liquid (such as frost on the line) then continue to purge the line until the line is empty.

   b) Close valves F and G.

DTH 000120313

CONFIDENTIAL

CONNECTION OF VENT AND LOADING HOSES

5) Pressure purge the spool piece as follows:

   a) Open valve F, allow spool piece to depressure to vent recovery system and then close valve F.

   b) Open valve G, allow pressure to build in spool piece and then close valve G.

   c) Repeat steps (a) and (b) 10 times. Pressure purging in this manner will dilute any VCM that remains in the spool piece.

6) Open valves G and F and purge through spool piece for one minute. This is done to flush out any VCM that may remain in the chemical hoses so that the dock personnel will not be exposed to VCM when they disconnect the chemical hoses.

7) Close valves H and A in that order. Then open valve B. This is done to depressure the chemical hoses. After the hoses have been depressured, close valve F and disconnect the chemical hose that is connected to valve F.

8) Connect hose to ship as follows:

   a) Pull a vacuum on spool piece by opening valve A (valves B, C and G should already be open).

   b) Remove the blind flange from the end of the spool piece and connect the spool piece to ship flange. Continue to pull a vacuum until the flange bolts have all been tightened. This will reduce exposure of dock personnel to VCM because the eductor sucks air into the spool piece and entrains the residual vinyl in the spool piece.

   c) Close valve A and after the pressure on the chemical hose returns to atmospheric pressure, close valves B, C and G.

   d) Disconnect chemical hose from valve G.

DTH 000120314

CONFIDENTIAL

OPERATING PROCEDURES

BLIND REMOVAL FROM VENT HOSE SPOOL PIECE ON DOCK

Discussion

The new clearing procedure given below can be broken down into three basic steps.

1) The first step is to flush the VCM out of the spool pieces with N_2 to the vent recovery system. All of the liquid should be flushed out during this step.

2) The second step is to "pressure purge" the spool piece. This is accomplished by blocking in the spool piece, building the pressure with N_2, and then bleeding the pressure off to the vent recovery system. The VCM vapors are diluted by the N_2 each time the pressure is allowed to build. This step is performed ten times so that the vapors are diluted to a low concentration and the dock personnel will not be exposed when they break the flanges.

3) The third step is to activate the eductor while breaking the flanges. In the past, the eductor was used to clear the spool piece of VCM but it is now used only to prevent any VCM that may remain in the spool piece from escaping into the atmosphere.

The new procedure was developed to reduce employee exposure to VCM while also reducing the adsorption load on the carbon adsorption system. More time is required to clear the hoses and spool pieces but the procedures should not be rushed for any reason. If the procedures are not followed, then the dock personnel carrying out the procedures could be exposed to VCM.

Procedure (Refer to Drawing 119-3 of this design)

1) This line should not have any liquid VCM in it but it is cleared in the same manner as the other spool pieces in order to limit exposure to VCM.

2) If the vent recovery system is not already on, notify the VCM plant control room (so that they can start their vent recovery system and preparations can be made at the incinerator) and then start the dock vent recovery system.

3) Purge the line between the blind and valve M as follows:

   a) Open valves T, L, J and I. (Valve T is a 2 inch valve and should be ¼ open. If it is opened all of the way then too much nitrogen will be used and two things may happen:

      1) The suction pressure on the vent recovery system will go up because it cannot handle the additional N_2.

      2) The increased flow could upset the VCM Incineration Unit and all clearing operations on the dock will have to cease and cannot be resumed until the unit has stabilized.

   b) After five minutes close valves T and L.

DTH 000120315

CONFIDENTIAL

BLIND REMOVAL FROM VENT HOSE SPOOL PIECE ON DOCK

4) Pressure purge the spool piece as follows:

   a) Open valve T, allow pressure to build in spool piece and then close valve T.

   b) Open valve L, allow spool piece to depressure to vent recovery system and then close valve F.

   c) Repeat steps (a) and (b) ten times. Pressure purging in this manner will dilute any VCM that remains in the spool piece.

   d) Close valves T, L, J and I.

5) Remove blind as follows:

   a) Pull a vacuum on spool·piece by opening valves S, R, B and A.

   b) Break the flange and remove the blind. Continue to pull a vacuum until the flanges are secured back together.

   c) After securing the flanges close valves S, R, A and B.

CONFIDENTIAL

OPERATING PROCEDURES

BLIND REMOVAL FROM LOADING HOSE SPOOL PIECES ON DOCK

Discussion

The new clearing procedure given below can be broken down into three basic steps.

1) The first step is to flush the VCM out of the spool pieces with N_2 to the vent recovery system. All of the liquid should be flushed out during this step.

2) The second step is to "pressure purge" the spool piece. This is accomplished by blocking in the spool piece, building the pressure with N_2, and then bleeding the pressure off to the vent recovery system. The VCM vapors are diluted by the N_2 each time the pressure is allowed to build. This step is performed ten times so that the vapors are diluted to a low concentration and the dock personnel will not be exposed when they break the flanges.

3) The third step is to activate the eductor while breaking the flanges. In the past, the eductor was used to clear the spool piece of VCM but it is now used only to prevent any VCM that may remain in the spool piece from escaping into the atmosphere.

The new procedure was developed to reduce employee exposure to VCM while also reducing the adsorption load on the carbon adsorption system. More time is required to clear the hoses and spool pieces but the procedures should not be rushed for any reason. If the procedures are not followed, then the dock personnel carrying out the procedures could be exposed to VCM.

Procedure

1) If the vent recovery system is not already on, notify the VCM Plant control room (so that they can start their vent recovery system and preparations can be made at the incinerator) and then start the dock vent recovery system.

2) Purge the line between the blind and control valve as follows:

   a) Open valves P, D, K, J, I and purge the spool piece with N_2 for five minutes. Valve P is a 2 inch valve and should be only ¼ open. If it is opened all of the way, then too much nitrogen will be used and two things may happen:

      1) The suction pressure on the vent recovery system will go up because it cannot handle the additional nitrogen.

      2) The increased flow could upset the VCM Incinerator Unit and all clearing operations on the dock will have to cease and cannot be resumed until the unit has stabilized.

   If, after five minutes, there is still evidence of liquid (such as frost on the line) then continue to purge the line until the line is empty.

   b) Close valves P and D.

DTH 000120317

CONFIDENTIAL

BLIND REMOVAL FROM LOADING HOSE SPOOL PIECES ON DOCK

3) Pressure purge the line (on both sides of the blind) as follows:

   a) Close valve K and open valves D and E. Valves J and I should be open.

   b) Open valve P and allow pressure to build, then close valve P.

   c) Open valve K and allow pressure in spool piece to bleed off to vent recovery system then close valve K.

   d) Repeat steps (b) and (c) ten times. Pressure purging as described above will dilute any VCM that is in the spool piece.

4) Close valves E, D, K, J and I.

5) Remove blind as follows:

   a) Pull vacuum on spool piece by opening valves N, O, B and A.

   b) Break the flange and remove the blind. Continue to pull a vacuum until the flanges are secured back together.

   c) After securing the flanges, close valves N, O, B and A.

Revised 3/16/79
VCM Design No.: 119-700-379-CMT

CONFIDENTIAL

HYDROQUINONE ADDITION PROCEDURE

Safety

This procedure must be followed exactly. Any shortcuts or changes could result in exposure to high concentrations of VCM vapor.

Hydroquinone is very irritating to the skin and should be washed off immediately. Always stand up-wind when adding hydroquinone to the injection pot.

If you should get hydroquinone in your eyes, go to an eye wash immediately and flush your eyes for at least fifteen minutes. Then get medical attention promptly.

Hydroquinone Addition (Refer to Drawing 119-2 of this Design)

1) Establish flow to the injection tank as follows:

   a) Open valves (5), (14), (13)
   b) Close valves (3), (1)

2) Purge vinyl out of injection tank as follows:

   a) Open valve (15, (16), (17)
   b) Open valve (2). This is the nitrogen line. It is possible to tell when the tank is clear of liquid VCM by listening to the flow in the drain line.
   c) When the tank is clear of liquid VCM, close valves (2), (15), (16), (17)

3) Purge the injection pot as follows:

   a) Open valves (8) and (9) and allow the pressure to build up in the injection pot.

   b) Pull suction on injection pot by opening valve (10).

   c) After 1½ minutes, close valve (10) and allow the pressure to build back up in the injection pot and then pull suction on injection pot by opening valve (10).

   d) Repeat the procedure of allowing the pressure to build in the injection pot and then pulling suction five times.

   e) When valve (10) is opened for the last time, also crack (7) momentarily to eliminate any pressure trapped in the ball valve. Close valves (10), (9), (8) in that order.

4) Add hydroquinone to the injection pot by opening valve (7) and pouring the powder into the pot. Be sure all of the powder drops into the pot, then close valve (7).

CONFIDENTIAL

HYDROQUINONE ADDITION PROCEDURE

5) Put nitrogen pressure on the injection pot by opening valves (8) and (9). Be sure that valve (10) remains closed. If it is opened the hydroquinone will be sucked into the line to the vent stack.

6) Drop the hydroquinone into the injection tank by opening valve (6). After 30 seconds, close valves (6), (8), (9) in that order

7) Open valves (11) and (12) and allow VCM to flush through the injection tank for at least 10 minutes.

8) Steps 2-7 must be repeated for each ship hold. When hydroquinone has been added to all holds, line up VCM flow back through filters by closing valves (5), (14), (13) and opening valves (3), (1).

Revised: 3-16-79
VCM Design No.: 119-7C0-379-CWT

CONFIDENTIAL

OPERATING PROCEDURE

DISCONNECTION OF VENT HOSE FROM SHIP

Discussion

The new clearing procedure given below can be broken down into three basic steps.

1) The first step is to flush the VCM out of the spool pieces with N_2 to the vent recovery system. All of the liquid should be flushed out during this step.

2) The second step is to "pressure purge" the spool piece. This is accomplished by blocking in the spool piece, building the pressure with N_2, and then bleeding the pressure off to the vent recovery system. The VCM vapors are diluted by the N_2 each time the pressure is allowed to build. This step is performed ten times so that the vapors are diluted to a low concentration and the dock personnel will not be exposed when they break the flanges.

3) The third step is to activate the eductor while breaking the flanges. In the past, the eductor was used to clear the spool piece of VCM but it is now used only to prevent any VCM that may remain in the spool piece from escaping into the atmosphere.

The new procedure was developed to reduce employee exposure to VCM while also reducing the adsorption load on the carbon adsorption system. More time is required to clear the hoses and spool pieces but the procedures should not be rushed for any reason. If it is, then the dock personnel carrying out the procedure could be exposed to VCM.

Procedure (Refer to Dwg. 119-3 of this Design)

Note: Breathing air must be worn during the hose disconnection procedures. This action is necessary to protect personnel from leaking valves on the ships and barges.

1) Close the ship's valves on the end of the hose.

2) If the vent recovery system is not already on, notify the VCM Plant control room (so that they can start their vent recovery system and preparations can be made at the incinerator) and then start the dock vent recovery system.

DTH 000120321

3) Purge the vent hose with N_2 as follows:

a) Connect the chemical hose that is on the reel to valve G.

b) Open valves A, C, and G. Valves Y, W, and M should already be open.

c) Continue to purge the hose for 10 minutes and then close valves

CONFIDENTIAL

DISCONNECTION OF VENT HOSE FROM SHIP

4) Pressure purge the spool piece as follows:

   a) Connect a chemical hose from valve F to valve H. Open valves H, A, and I.

   b) Open valve G, (valve C should already be open) allow pressure to build in spool piece and then close valve G.

   c) Open valve F, allow spool piece to depressure to vent recovery system and then close valve F.

   d) Repeat steps (b) and (c) ten times. Pressure purging in this manner will dilute any VCM that remains in the spool piece.

5) Open valves G and F and purge through spool piece for one minute. This is done to flush out any VCM that may remain in the chemical hoses so that dock personnel will not be exposed to VCM when they disconnect the chemical hoses.

6) Close valve H and A in that order. Then open valve B. This is done to depressure the chemical hoses. After the hoses have been depressured, close valve F and disconnect the chemical hose that is connected to valve F.

7) Disconnect the hose as follows:

   a) Pull a vacuum on the spool piece by opening valve A.

   b) Disconnect the vent hose from the ship and install the blind flange on the end of the spool piece. Continue to pull a vacuum until the blind flange is secured.

   c) Close valve A and then close valves B, C, and G.

   d) Disconnect chemical hose from valve G.

Revised: 3-16-79
VCM Design No.: 119-700-379-CWT

CONFIDENTIAL

OPERATING PROCEDURE

DISCONNECTION OF LOADING HOSE FROM SHIP

Discussion

The new clearing procedure given below can be broken down into three basic steps.

1) The first step is to flush the VCM out of the spool pieces with N_2 to the vent recovery system. All of the liquid should be flushed out during this step.

2) The second step is to "pressure purge" the spool piece. This is accomplished by blocking in the spool piece, building the pressure with N_2, and then bleeding the pressure off to the vent recovery system. The VCM vapors are diluted by the N_2 each time the pressure is allowed to build. This step is performed ten times so that the vapors are diluted to a low concentration and the dock personnel will not be exposed when they break the flanges.

3) The third step is to activate the eductor while breaking the flanges. In the past, the eductor was used to clear the spool piece of VCM but it is now used only to prevent any VCM that may remain in the spool piece from escaping into the atmosphere.

The new procedure was developed to reduce employee exposure to VCM while also reducing the adsorption load on the carbon adsorption system. More time is required to clear the hoses and spool pieces but the procedures should not be rushed for any reason. If it is, then the dock personnel carrying out the procedure could be exposed to VCM.

Procedure (Refer to Dwg. 119-3 of this Design)

Note: Breathing air must be worn during the hose disconnection procedures. This action is necessary to protect personnel from leaking valves on the ship.

1) Close the control valve on the loading line. Using N_2 from dock, blow liquid VCM in line to ship. Then close the ship's valve and valve Z.

2) If the vent recovery system is not already on, notify the VCM Plant control room (so that they can start their vent recovery system and preparations can be made at the incinerator) and then start the dock vent recovery system.

3) Connect the chemical hose that is on the reel to valve G. Connect a chemical hose from valve F to valve H.

4) Purge the spool piece as follows:

DTH 000120323

   a) Open valves I, H, G, F, and C. Then start nitrogen flow by opening valve A. The spool piece should be purged for five minutes.

CONFIDENTIAL

DISCONNECTION OF LOADING HOSE FROM SHIP

b) After five minutes, close valves F and G.

5) Pressure purge the spool piece as follows:

a) Open valve G and allow pressure to build, then close valve G.

b) Open valve F and allow spool piece to depressure to vent recovery system, then close valve F.

c) Repeat steps (a) and (b) ten times. Pressure purging in this manner will dilute any VCM that remains in the spool piece.

6) Open valves G and F and purge through the spool piece for one minute. This is done to flush out any VCM that may remain in the chemical hoses.

7) Close valves H and A in that order. Then open valve B. This is done to depressure the chemical hoses. After this has been done, close valve F and disconnect the chemical hose attached to valve F.

8) Disconnect the hose from the ship as follows:

a) Pull a vacuum on the spool piece by open-ing valves G, C, B, and A. Pull a vacuum on the spool piece for five minutes before proceeding to the next step. This will ensure that all of the VCM in the spool piece and ship valve has been vaporized.

b) Disconnect the spool piece from the ship flange and install the blind flange. Continue to pull a vacuum on the spool piece until the blind is secured.

c) After securing the blind close valves A and B.

9) Purge the loading hose of liquid as follows:

a) Open valves A, Z, D, K, and L. Valves X and M should already be open. This will start-nitrogen flowing through the hose to the vent recovery system.

b) The liquid will try to settle in the loading hose so it will be necessary to lift the loading hose with the boom to allow the liquid to gravity flow into the spool piece on the dock end of the loading hose. Lift the hose in increments of five feet, pausing each time long enough to purge the liquid to the vent recovery system. Continue to lift the hose until all of the hose has been lifted above the level of the dock and the hose is empty. Then lower the hose onto the dock and close valves Z, X, and D.

DISCONNECTION OF LOADING HOSE FROM SHIP

10) Disconnect the chemical hose from the spool piece as follows:

   a) Depressure the spool piece on the ship end of the loading hose by closing valve A and then opening valve B.

   b) Close valve G and disconnect the chemical hose.

11) Depressure the loading hose to the carbon beds by partially opening valve N. (Valve B should be open and valve A should be closed.) The line must be depressured slowly to ensure that the carbon beds are not overloaded.

OPERATING PROCEDURE

BLIND INSTALLATION IN VENT HOSE SPOOL PIECES ON DOCK

Discussion

The new clearing procedure given below can be broken down into three basic steps.

1) The first step is to flush the VCM out of the spool pieces with N_2 to the vent recovery system. All of the liquid should be flushed out during this step.

2) The second step is to "pressure purge" the spool piece. This is accomplished by blocking in the spool piece, building the pressure with N_2, and then bleeding the pressure off to the vent recovery system. The VCM vapors are diluted by the N_2 each time the pressure is allowed to build. This step is performed ten times so that the vapors are diluted to a low concentration and the dock personnel will not be exposed when they break the flanges.

3) The third step is to activate the eductor while breaking the flanges. In the past, the eductor was used to clear the spool piece of VCM but it is now used only to prevent any VCM that may remain in the spool piece from escaping into the atmosphere.

The new procedure was developed to reduce employee exposure to VCM while also reducing the adsorption load on the carbon adsorption system. More time is required to clear the hoses and spool pieces but the procedures should not be rushed for any reason. If it is, then the dock personnel carrying out the procedure could be exposed to VCM.

Procedure (Refer to Dwg. 119-3 of this Design)

1) The line between valve W and M has already been purged with nitrogen during the hose disconnection procedure. Therefore, it is only necessary to pressure purge the line before pulling a vacuum and installing the blind.

2) If the vent recovery system is not already on, notify the VCM Plant control room (so that they can start their vent recovery system and preparations can be made at the incinerator) and then start the dock vent recovery system.

3) Pressure purge the line as follows:

   a) Open valves L, J, and I.

   b) Open valve T and allow pressure to build then close valve T.

   c) Open valve L and all pressure in line to bleed to vent recovery system, then close valve L.

BLIND INSTALLATION IN VENT HOSE SPOOL PIECES ON DOCK

d) Repeat steps (b) and (c) ten times. Pressure purging as described above will dilute any VCM that is in the spool piece.

e) Close valves L, J, I, and T.

4) Install blind as follows:

a) Pull vacuum on spool piece by opening valves S, R, B, and A.

b) Break the flange and install the blind. Continue to pull a vacuum until the flanges are secured back together.

c) After securing the flanges close valves S, R, B, and A.

CONFIDENTIAL

OPERATING PROCEDURE

BLIND INSTALLATION IN LOADING HOSE SPOOL PIECES ON DOCK

Discussion

The new clearing procedure given below can be broken down into three basic steps.

1) The first step is to flush the VCM out of the spool pieces with N_2 to the vent recovery system. All of the liquid should be flushed out during this step.

2) The second step is to "pressure purge" the spool piece. This is accomplished by blocking in the spool piece, building the pressure with N_2, and then bleeding the pressure off to the vent recovery system. The VCM vapors are diluted by the N_2 each time the pressure is allowed to build. This step is performed ten times so that the vapors are diluted to a low concentration and the dock personnel will not be exposed when they break the flanges.

3) The third step is to activate the eductor while breaking the flanges. In the past, the eductor was used to clear the spool piece of VCM but it is now used only to prevent any VCM that may remain in the spool piece from escaping into the atmosphere.

The new procedure was developed to reduce employee exposure to VCM while also reducing the adsorption load on the carbon adsorption system. More time is required to clear the hoses and spool pieces but the procedures should not be rushed for any reason. If it is, then the dock personnel carrying out the procedure could be exposed to VCM.

Procedure (Refer to Dwg. 119-3 of this Design)

1) If the vent recovery system is not already on, notify the VCM Plant control room (so that they can start their vent recovery system and preparations can be made at the incinerator) and then start the dock vent recovery system.

2) Purge the line between the control valve and valve X as follows:

   a) Open valves P, E, K, J, and I. Valve P is a 2-inch valve and should be only 1/4 open. If it is opened all of the way then too much nitrogen will be used and two things may happen:

      1) The suction pressure on the vent recovery system will go up because it cannot handle the additional nitrogen.

      2) The increased flow could upset the VCM Incineration Unit and all clearing operations on the dock will have to cease and cannot be resumed until the unit has stabilized.

DTH 000120328

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BLIND INSTALLATION IN LOADING HOSE SPOOL PIECES ON DOCK

If, after five minutes, there is still evidence of liquid (such as frost on the line) then continue to purge the line until the line is empty.

b) Close valves P and E.

3) Pressure purge the line as follows:

a) Open valve P and allow pressure to build in the line and then close valve P.

b) Open valve E and allow pressure to bleed to the vent recovery system, then close valve E.

c) Repeat steps (a) and (b) ten times. Pressure purging in this manner will dilute any VCM that is in the spool piece.

4) Install blind as follows:

a) Pull a vacuum on the line by opening valves N, O, B, and A.

b) Break the flange and install the blind. Continue to pull a vacuum until the flanges are secured back together.

c) After securing the flanges close valves N, O, B, and A.

5) After installing the blind, the pressure on the loading hose can be weathered to the carbon beds by opening valves X, N, and B. If the pressure is not weathered off and liquid does remain in the hose, then pressure could build in the loading hose due to thermal expansion.

CONFIDENTIAL

SAMPLING PROCEDURE

COLLECTION OF SAMPLES AT THE DISCHARGE OF SHIP'S PUMP

Discussion

The new sampling procedure can be broken down into three basic steps.

1) The first step is to circulate the VCM, using the ship's pump, through the sample apparatus and back into the tank through one of the sample taps. When the vinyl in the rotameter is clear, line up the flow through the sample bomb and collect the sample.

2) The second step is to clear the sample apparatus of liquid VCM by blowing it back into the tank using nitrogen. The man on the dock must operate the valves to supply the nitrogen.

3) The third step is to remove the remaining VCM by activating the eductor. Again, the man on the dock will have to operate the valves. After the sample apparatus is clear of vinyl, remove the bomb.

From the standpoint of minimizing the load on the carbon beds, this is the preferred sampling procedure because the eductor is used only to clear the sample apparatus after the sample has been collected.

Procedure (Refer to Dwg. 140-1 of this Design)

1) Make connections between valves A and B, valves F and H, and connect the sample bomb to the sample apparatus. Connect the eductor hose at valve G.

2) Line up the flow through the rotameter by opening valves A, B, C, F, H, and J.

3) Start the ship's pump.

4) After sufficient time has been allowed for the sample line to be flushed and the vinyl in the rotameter is clear, line up the flow through the sample bomb by opening valves D and E and closing valve C.

5) After filling the bomb, stop the ship's pump, close valves D and E and open valve C.

6) Open valve G and blow vinyl out of sampling system and into the ship tank using nitrogen. (Man on dock will have to operate the valves to supply nitrogen.)

7) After all of the liquid VCM has been blown back into the hold, close valves A and H. Then tell the man on the dock to start the eductor.

8) Disconnect the bomb at valves D and E.

DTH 000120330

CONFIDENTIAL

SAMPLING PROCEDURE

COLLECTION OF SAMPLES AT A SAMPLE TAP

Discussion

The new sampling procedure can be broken down into four basic steps.

1) The first step is to prime the gear pump with the eductor. After the pump has been primed and started, isolate the sample apparatus from the eductor.

2) The second step is to circulate the VCM, using the gear pump, through the sample apparatus and back into the tank through one of the other sample taps on the tank being sampled. When the vinyl in the rotameter is clear, line up the flow through the sample bomb and collect the sample.

3) The third step is to clear the sample apparatus of liquid VCM by blowing it back into the tank using nitrogen. The man on the dock must operate the valves to supply the nitrogen.

4) The fourth step is to remove the remaining VCM by activating the eductor. Again, the man on the dock will have to operate the valves. After the sample apparatus is clear of vinyl, remove the bomb.

The load on the carbon beds will be greater when collecting the samples in this manner because the eductor must be used to prime the gear pump.. A portable pump could not be found that could pull enough suction to sample the tanks without being primed. Once wet, the gear pump will lift up to 26" Hg; however, it will not dry lift over 6" H_2O. Dry running is harmful to the gear pump, although it can pump mixed phase (air/liquid) with no ill effects.

Procedure (Refer to Drawing 140-1 of this Design)

1) Make connections between valves A and B, valves H and F, and connect the bomb to the sampling apparatus.

2) Line up the flow through the rotometer by opening valves A, B, C, J, and G.

3) Prime the gear pump by pulling a vacuum with the eductor. The man on the dock will have to activate the eductor.

4) When vinyl appears in the rotameter, close the pump by-pass (valve J) and start the gear pump by opening valve I. Then close valve G, open valves F and H, and tell the man on the dock to shut off the eductor.

5) After sufficient time has been allowed for the sample line to be flushed and the vinyl in the rotameter is clear, line up the flow through the sample bomb by opening valves D and E and closing valve C.

6) After filling the bomb, close valves D and E and open valve C. Stop the gear pump by closing valve I.

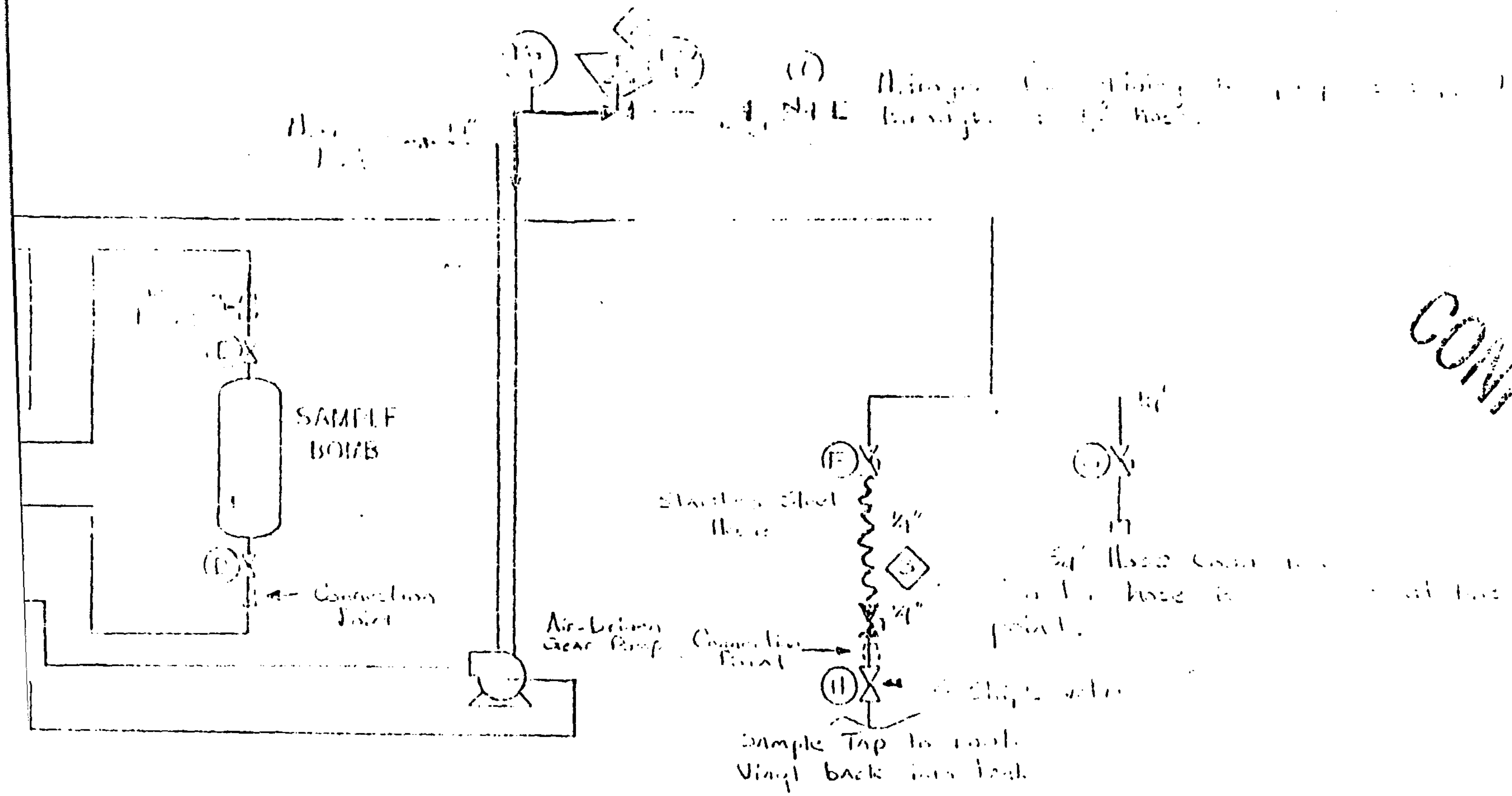
CONFIDENTIAL

7) Open valve C and the pump by-pass (valve J). Then blow the vinyl out of the sampling apparatus and into the ship's tank using nitrogen. The man on the dock will have to operate the valves to supply the nitrogen.

8) After all of the liquid VCM has been blown back into the hold, close valves A and H. Then tell the man on the dock to activate the eductor.

9) Disconnect the bomb at valves D and E.

VCM Design No. 140-700-479-CMT



← Connection Point

Ship's Valve

All new tubing shown is to be ¼" stainless steel

ISU	DATE	DESCRIPTION	BY	CKD.	APD
		Drawing No. [illegible]	[illegible]		

CONTINENTAL OIL COMPANY
LAKE CHARLES VCM PLANT
LAKE CHARLES, LA.

Pump-Around System for Sampling

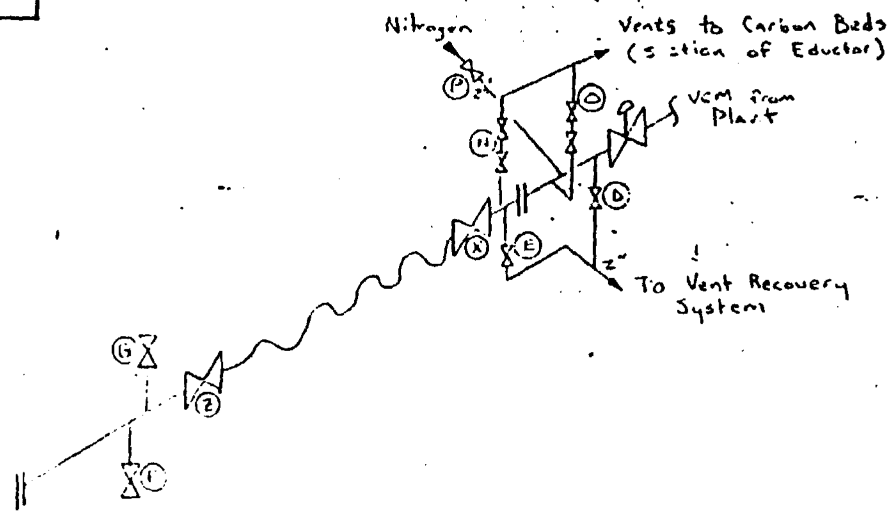
SHEET OF SCALE:

APPROVED DATE.

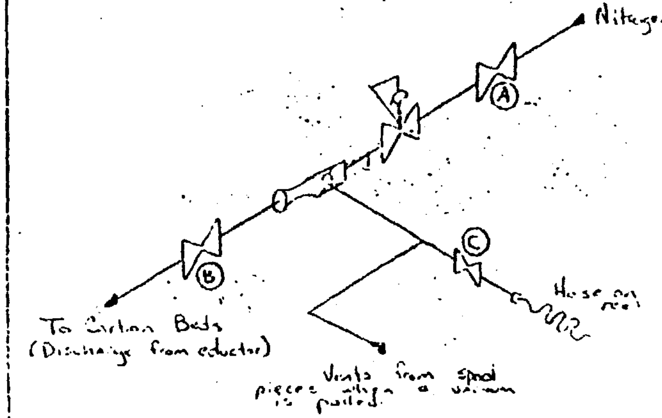
VCM - [illegible] REV

DTH 000120333

VCM-119-700-371-C

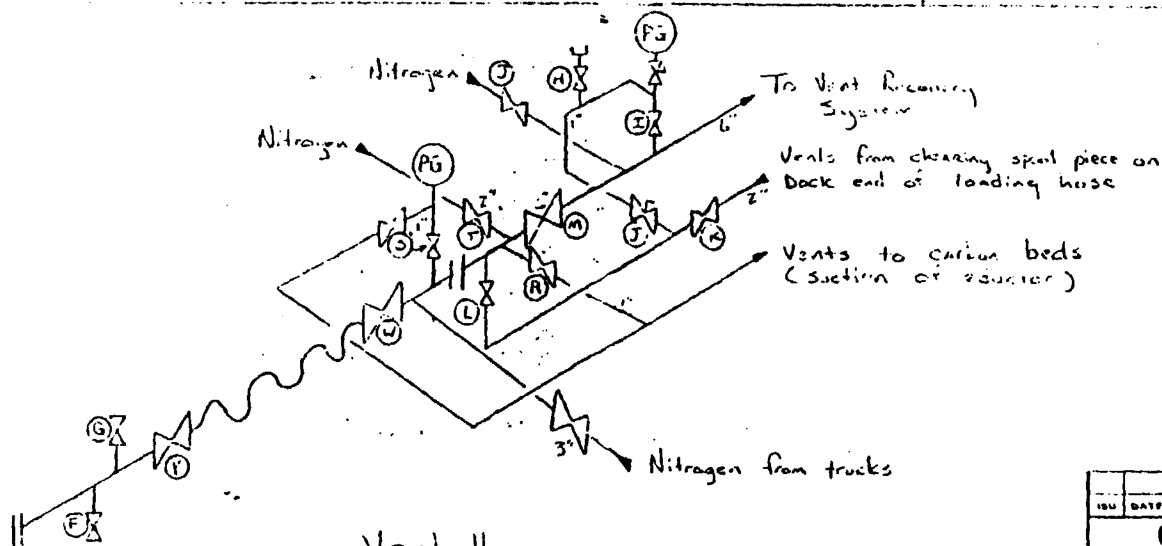


Loading Hose



Eductor

Note: These details show the same piping as Dwg. 119-1

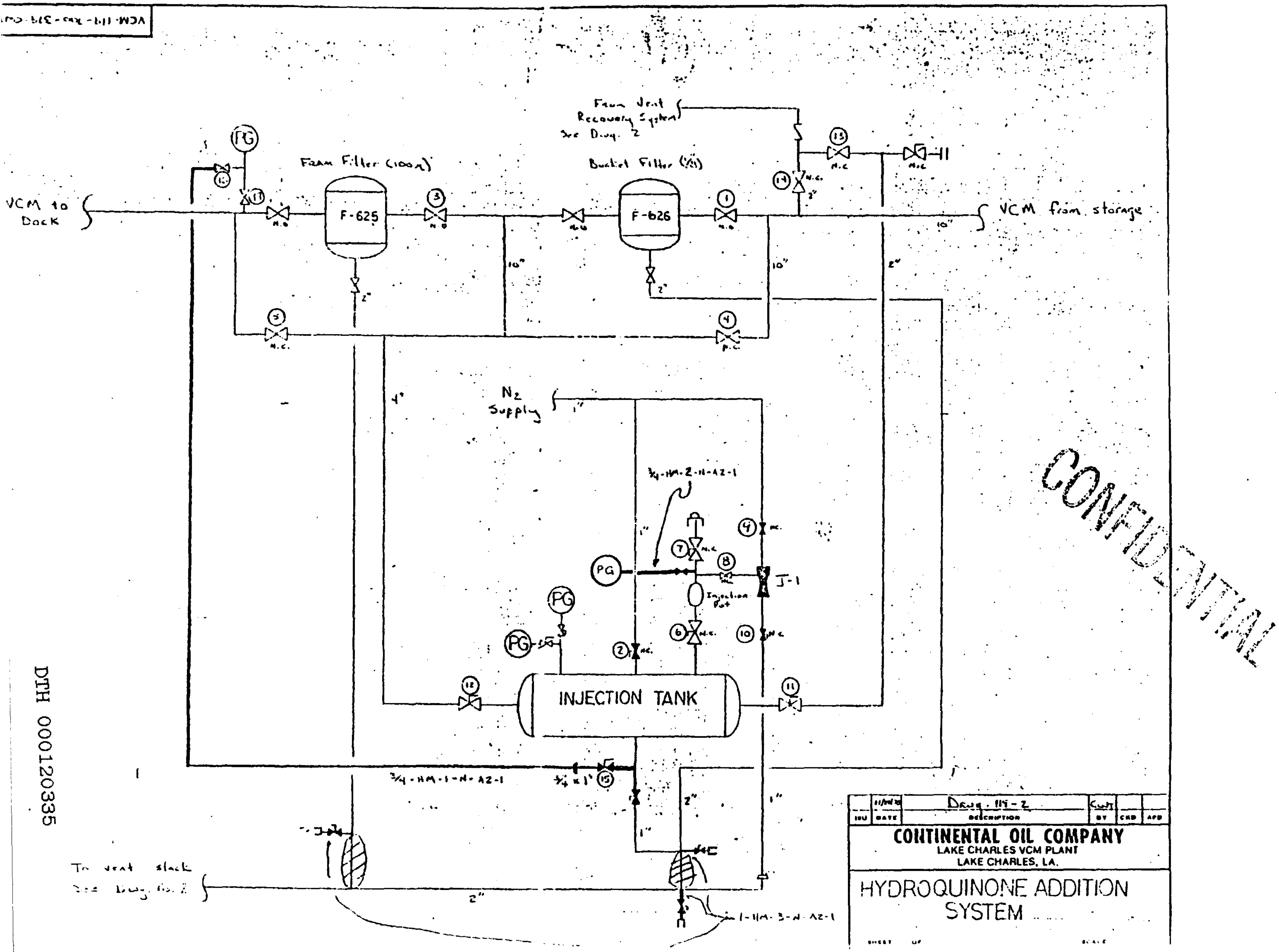


Vent Hose

ISU	DATE	DESCRIPTION	BY	CHD	APD
		Drawing 119-3			

CONTINENTAL OIL COMPANY
LAKE CHARLES VCM PLANT
LAKE CHARLES, LA.

Procedures for loading VCM at Dock #3 – Details


VCM to Dock
VCM from storage
Foam Filter (100μ)
Bucket Filter
F-625
F-626
From Vent Recovery System See Dwg. 2
N.O.
N.C.
10"
2"
4"
1"
N2 Supply
3/4-HM-2-N-A2-1
Injection Pot
J-1
PG
INJECTION TANK
3/4-HM-1-N-A2-1
3/4 x 1"
1-HM-3-N-A2-1
To vent stack See Dwg. No. 2
Dwg. 114-2
CONTINENTAL OIL COMPANY
LAKE CHARLES VCM PLANT
LAKE CHARLES, LA.
HYDROQUINONE ADDITION SYSTEM
CONFIDENTIAL

SECTION II

STANDARD OPERATING PROCEDURE

LOADING DOCK

EDC SERVICE

STANDARD OPERATING PROCEDURE - LOADING DOCK - EDC SERVICE

This section will be added at a later date when the equipment pieces have been installed and operating procedures revised.

SECTION II

VCM PLANT

CURRENT EIQ

OLD

State of Louisiana

FRANK A. ASHBY, JR.
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF ENVIRONMENTAL AFFAIRS
AIR QUALITY DIVISION

B. JIM PORTER
ASSISTANT SECRETARY

August 6, 1981

Mr. J.A. DeBernardi
Conoco Chemicals Company
P. O. Box 605
Westlake, Louisiana 70669

ATTN: Mr. Gary Foshee

Re: Conoco Chemicals Company
Westlake, Calcasieu
VCM Plant Modifications
1. Heat duty for VCM Furnace from 51.3 mm BTUH to 62.5 mm BTUH.
2. Change in heater and incinerator emissions as follows in T/Y, Part (-) 3.56, SO_2 (+) 1.9, NO_2 (-) 24.5, HC (+) 0.04, CO (+) 0.29

Dear Mr. DeBernardi:

This is to confirm that the permit request for the above referenced project in Calcasieu Parish, has been approved by the Assistant Secretary, Office of Environmental Affairs, Department of Natural Resources, under Air Quality Regulation 6.1.1. The submittal was approved on the basis of the emissions reported and the approval in no way guarantees the design scheme presented will be capable of controlling the emissions to the types and quantities stated. A new application must be submitted if the reported emissions are exceeded after operation begins.

The permit number cited below should be referenced in future correspondence regarding this subject:

Date: August 6, 1981

Permit No. 1603 T

Approved by: /for
B. Jim Porter
Assistant Secretary

FMR/lbc

DTH 000120339

ULD

Lake Charles VCM Plant

Conoco Chemicals Company
A Division of Conoco Inc.
P O Box 605
Westlake, Louisiana 70669
(318) 491-5211

CERTIFIED MAIL #8094935
RETURN RECEIPT REQUESTED

June 1, 1981

Mr. Gus VonBodungen
Technical Secretary
Department of Natural Resources
Air Compliance Division
P O Box 60630
New Orleans, LA 70160

Dear Mr. VonBodungen:

Conoco Chemicals Co., VCM Plant in Westlake, Louisiana is proposing to modify the Emissions Inventory Questionnaire (EIQ) for the proposed VCM Plant Expansion (Permit No. 1424T, approved October 15, 1980, originally submitted Feb. 5, 1980). This revision will update the New Cracking Furnace (Point Source IIC) and the Vent Gas Incinerator (Point Source V-A) for the latest more definitive design data for the expansion. The previous submittals (2/5/80 and 8/21/80) were based on preliminary design data. The revised submittal reflects an increased heat duty for the New Cracking Furnace, from 51.3 MM BTU/Hr. to 62.5 MM BTU/Hr, and a decrease in the particulate matter and nitrogen dioxide emissions from the Vent Gas Incinerator. The net changes in total emissions for Furnace and Incinerator combined are minimal as shown in Table I.

Also included with this EIQ submittal are updated emissions for existing Cracking Furnaces IIA and IIB. The revisions are merely a correction in the heat duty from 51.3 to 59.4 MM BTU/Hr. to reflect actual maximum firing rates and the use of the corrected AP-42 emission factors (revised 4/77) in the computation of emissions. The emissions to be reported now show a decrease for all pollutants with the exception of SO_2 which increases as shown in Table I. It should be noted that no revisions have been made to these point sources, but the increased duty is only a more accurate reflection of maximum historical operating capabilities.

Please find enclosed a check for $270.00 permitting fees. Also if there are any questions concerning these revisions please contact Gary Foshee at (318) 491-5062.

Sincerely,

J. A. DeBernardi
Plant Manager

br
Enc
BCC: CRH-MGH-BIR-GLF-PLF-DLD-JWW-JCL-JGC-VMF

DTH 000120340

TABL
SUMMARY OF EMISSIONS CHANGES
CONOCO CHEMICALS CO.
VCM PLANT EXPANSION
ANNUAL EMISSIONS, TONS/YR.

POLLUTANT	CURRENT TOTAL PERMITTED FOR THE NEW CRACKING FURNACE AND VENT INCINERATOR COMBINED	REVISED TOTAL FOR THE NEW CRACKING FURNACE AND VENT GAS INCINERATOR COMBINED	EXPANSION EMISSIONS NET INCREASE	NET CHANGE FOR EXISTING CRACKING FURNACES	TOTAL NET CHANGE FOR EIQ
PARTICULATE MATTER	79.208	79.208	0	-3.56	-3.56
SULFUR DIOXIDE	59.49	59.49	0	+1.90	+1.90
NITROGEN DIOXIDE	147.567	147.567	0	-24.50	-24.50
HYDROCARBONS	3.609	3.711	+0.102	-0.06	+0.04
CARBON MONOXIDE	10.524	11.13	+0.606	-0.32	+0.29
VINYL CHLORIDE	11.08	11.08	0	0	0

DTH 000120341

CONOCO INC.
CONOCO CHEMICALS VCM PLANT
P. O. BOX 683 PH. 491-5051
WESTLAKE, LA. 70669

1550

WESTLAKE BRANCH
Calcasieu Marine CM National Bank
WESTLAKE, LOUISIANA 70669

JUNE 3 1981

84-18
652

PAY TO THE ORDER OF DEPT OF NATURAL RESOURCES $ 270.00

Two hundred seventy dollars + no/100 DOLLARS

FOR

Tyrus R. Cobb

WORKING FUND
CONOCO INC.
CONOCO CHEMICALS VCM PLANT

⑈001550⑈ ⑆065200188⑆ 23011416⑈01

DTH 000120342

LOUISIANA AIR CONTROL COMMISSION
P. O. Box 60630, New Orleans, La. 70160
Telephone: (504) 527-5119

EMISSION INVENTORY QUESTIONNAIRE (Revision of 11/74)

CONOCO CHEMICALS COMPANY
(name of company)

CONOCO INC.
(parent company; if above is a division)

Submitted by company on MAY 28, 1981
(date)

CHECK ONE OF THE BLOCKS BELOW:

☐ This inventory includes only presently existing emissions.

☒ This inventory includes both those old emissions (expected to be still existing) and those proposed additional emissions included in our permit request for VCM PLANT EXPANSION
(type of new facility/modification) which was submitted to the commission on 2/5/80 (date) and which new emissions are to be existing by 11/1/82 (date).

Please file a separate report for each of your plants physically located in Louisiana. This inventory covers the following plant location:

CONOCO VCM PLANT	WESTLAKE	CALCASIEU
(plant's name, if any)	(nearest town)	(parish of plant site)

INSTRUCTIONS: Keep the original of this form; return a photocopy to this agency. Do not write information in the top or left side margins of this form, as file folder bindings may cover the information. We have tried to ask only for the information we need, please do your best to answer each question. Our authority to ask for this information is contained in R.S. 40:2201 et sec. Copies of this law are available upon request. Air pollutant emission data provided on this form shall be available to the general public, without exception. All other data and information provided on this form and attachments shall also be available to the public, except that upon a showing satisfactory to the Technical Secretary that such other data and information, if made public, would divulge methods or processes entitled to protection as trade secrets, the data will be kept from all persons other than employees, or other agents, of the Louisiana and federal air pollution agencies.

☒ Confidentiality of all information, except the air pollutant emission rates, is requested, and our justification for this request is attached to the back of this form. (Check the block if this is the case.)

If certain questions are not applicable, indicate "none" or "not applicable" (N.A.). Terms such as "not significant", "nil", "trace", "negligible", etc. are not acceptable. Please attach additional sheets if more space is needed.

An updated report should be submitted in the future when the annual emission rate of any pollutant from any stack changes more than 10% from reported values.

ITEM 1 . . . ORGANIZATION ACTIVITIES

A. Circle any days of the week normally not operating: M Tu W Th F Sat Sun

B. This facility, as a whole, typically operates 341 days per year.
The peak production season is NA.

C. The facility normally operates ☐ 1 ☐ 2 ☒ 3 eight hour shifts per day, or specify the hours normally worked per day. ______

E. Approximate number of employees at this location is 110.

DTH 000120343

F. If the facility, as a whole, operates intermittently, give details on the lines below: ______

G. Ownership of facility. Please check one of the following:

- [x] corporation, partnership, or sole proprietorship
- [ ] regulated utility
- [ ] city government
- [ ] state government
- [ ] federal government
- [ ] other, specify ______

H. Please check off, or write below, the descriptive name which applies to your operation:

- [x] chemical industry
- [ ] natural gas industry
- [ ] petroleum industry
- [ ] sugar cane industry
- [ ] lumber industry
- [ ] pulp & paper
- [ ] cement industry
- [ ] particleboard
- [ ] plywood
- [ ] asphaltic concrete
- [ ] fertilizer
- [ ] metals industry
- [ ] fish meal
- [ ] brick making
- [ ] other, specify ______

I. Please give a very brief description of your operations, with emphasis on any possible sources of air pollution. Refer to attached process description (Section II and Section III).

ITEM 2 . . . FUEL USE BY FACILITY AS A WHOLE Check one of the blocks below, and supply information as requested:

☐ *If this inventory is for "presently existing" conditions (as checked for page 1), please give the information requested below for the latest 12 month period for which you have data. Data for the 12 months ending Month: ______ Year: ______ (fill in) has been given. If future use is expected to be materially different (other than as outlined in a current permit request) give details on a separate sheet.*

☒ *If this inventory is being submitted in conjunction with a permit request (as checked on page 1), please give the annual consumption rates expected for the total plant for the 12 months following the date the new facility or modification becomes operational. This date is listed on page 1.*

Type of fuel	Annual Consumption (M = thousands)		Sulfur % (by weight)	Heating value
Natural gas	52	million cubic feet	(1 grain/MSCF)	MM BTU/ MM ft^3
Process gas	810	million cubic feet	(100 grain/MSCF)	MM BTU/ MM ft^3
No. 1 to 4 fuel oil	3173	M gallons	0.25	MM BTU/ M gal
No. 5 or 6 fuel oil		M gallons		MM BTU/ M gal
Bark/ wood chips		tons		MM BTU/ ton
Coal (specify ash % & anthracite/bituminous)		tons		MM BTU/ ton
Other ______				MM BTU/
Other				MM BTU/

DTH 000120344

ITEM 3 . . . MATERIALS USED, PRODUCED, STORED, OR TRANSPORTED BY TOTAL PLANT

A. Raw materials or materials being transported Name of material	Quantity used or transported Annual average (give units)	Hourly average lb/hr	Hourly maximum lb/hr	How stored (Be specific - floating roof tank, fixed roof, etc.)	How moved (Pipeline, tanktruck, etc.)
Ethylene	492 MM Lb	59,767	62,682	Not Stored	Pipeline
Chlorine	750 MM Lb	91,108	95,552	Pressure Tank	Pipeline/Railcar
Oxygen	13.125 MM Lb	1,709	1,792	Not Stored	Pipeline
B. Products or byproducts					
Intermediate Products:					
1. Hydrogen Chloride	528 MM Lb	64,140	67,269	Pressure Tank	Pipeline
2. 1,2 Dichloroethane	1,663 MM Lb	202,038	211,894	Nitrogen Padded Fixed Roof Tanks	Ship and Railcar.
Final Product					
1. Vinyl Chloride	1,000 MM Lb	121,477	127,403	Pressure Spheres	Ship, railcar, or pipeline

ITEM 4 . . . EMISSION INFORMATION ON THE ENTIRE PLANT AS A WHOLE *The rates given should correspond, in most cases, to the sum of the individual average rates of the point sources listed in the Item 5 pages for each type of air pollutant.*

A. PARTICULATE SOLIDS OR LIQUIDS	Material name (if must specify)	Emission rate lbs/hr	Emission rate tons/yr
soot from combustion		19.13	83.27
mineral dust			
other, specify:			
other, specify:			
other, specify:			
B. ORGANIC GASES OR VAPORS			
alkanes/ paraffins	Methane and Ethane	1.15	4.93
alkenes/ olefins, specify:			
alkynes/ acetylenes			
aromatics, specify:			
alcohols, specify:			
other, specify: Halogenated	1,2 Dichloroethane	1.61	7.05
other, specify: Halogenated	Vinyl Chloride	2.55	11.18
other, specify: Other Halogenated Materials		0.06	0.28
C. INORGANIC GASES OR VAPORS			
sulfur dioxide	SO_2	17.15	70.35
hydrogen sulfide			
carbon monoxide	CO	4.35	18.02
nitrogen oxides	NO_2	51.83	220.47
ammonia			
halogens, specify:	HCl and Cl_2	99.19	434.69
organic sulfides (except H_2S)			
other, specify:			

DTH 000120345

OTES TO ITEM 5 Please read all notes before attempting to fill out page(s) 6.

1. Use any number you wish, but please be consistent in identifying this point by the same number on calculations, maps, future correspondence, computer printouts, etc.

2. If the emission point is not a vertically discharging stack, or if there is no clear-cut point of emission (e.g., dust from moving equipment, multiple leaking valves, evaporation from storage tanks, etc.), put a zero in this column.

3. Give the inside diameter at the top. For non-round exits, use the equivalent diameter, equal to 1.128 times the square root of the cross-sectional area at the point of discharge. Diameter, volume flow rate, and exit velocity must be consistent!

4. A "boiler", for purposes of this form, is to be understood to be any combustion device which heats a fluid and is separated from such fluid by a partition. *Therefore oil heaters, Dowtherm heaters, etc. are included.* Internal combustion engines and incinerators are not included. Direct fired kilns are not included.

5. Enter the proper code number, taken from the list below:

000 No control equipment
001 Wet scrubber, above 95% efficiency
002 Wet scrubber, 80% - 95% efficient
003 Wet scrubber, below 80% efficiency
004 Gravity collector, above 95% efficiency
005 Gravity collector, 80% - 95% efficient
006 Gravity collector, below 80% efficiency
007 Centrifugal collector above 95% efficiency
008 Centrifugal collector 80% - 95% efficient
009 Centrifugal collector below 80% efficiency
010 Electrostatic Precip. above 95% efficiency
011 Electrostatic Precip. 80% - 95% efficient
012 Electrostatic Precip. below 80% efficient
013 Gas scrubber, general
014 Mist eliminator
017 Fabric filter
019 Catalytic afterburner
020 Catalytic afterburner, with heat exchanger
021 Direct flame afterburner
022 Direct flame afterburner with exchanger
023 Flaring
039 Catalytic oxidation - flue gas desulfurization
040 Alkalized aluminia
041 Dry limestone injection
042 Wet limestone injection
043 Sulfuric acid plant, contact process
044 Sulfuric acid plant, double contact process
045 Sulfur recovery plant use
046 Reduced emissions by changing process
047 Vapor recovery system
048 Activated carbon adsorption
050 Gas absorption column, packed.
052 Spray tower for gases
053 Venturi scrubber for gases
049 Liquid filtration system
051 Gas absorption column, tray-type

6. Give the percent by weight of uncontrolled emission removed. If unknown, leave blank; if there is no effective removal, enter a zero in the column.

7. Enter the number of the method used, as follows:

(1) By actual stack test

(2) By material balance, provided that this method is applicable *(i. e., this method obviously cannot be used where the inaccuracies in measurement are equal to or greater than the absolute magnitude of the losses. An example of proper use would be where solvent emissions are not directly measured, but all solvent purchased is eventually lost to the atmosphere, and therefore material bought divided by operating hours equals loss rate.)*

(3) By the use of E.P.A. emission factors. (See the "Compilation of Air Pollution Emission Factors", E.P.A. publication AP-42)

(4) By making a conservative estimate.

(5) By the use of emission factors other than those supplied by the E.P.A.

NOTES TO ITEM 5, CONTINUED (-continuing with note 7:)

(6) Use this number if and only if you are submitting this form in connection with a permit request, and the emissions referred to have no present existence, but are simply the result of design calculations.

(7) Sources ceasing emissions must be reported on one inventory document after they cease operation (see note 8). Emissions will be zero, and a number 7 should be placed in the "emission estimation method" column.

8. If this particular pollutant, from this particular stack (point source), was not included in the stack or point source information submitted on your last Emissions Inventory Questionnaire, or if this is the first Emissions Inventory Questionnaire you are submitting, write "add" in this column.

If this particular pollutant, from this particular point, was included on the last Emissions Inventory Questionnaire (EIQ) submitted, but the amount has been increased or decreased (to other than zero), write "change" in this column.

If a point source has ceased operation since your last EIQ, the pollutants from that point should be reported as having zero emission rates on next submitted EIQ, and you should write "delete" in this column. *AFTER A DELETION HAS BEEN ONCE REPORTED, DO NOT REPORT THE POINT AT ALL ON ANY FUTURE EIQ'S AND DO NOT USE THAT POINT'S INDENTIFICATION (ID) NUMBER IN THE FUTURE FOR ANY OTHER POINT.*

9. Report the concentration of particulate matter only for incinerator flue gases, in grains per standard cubic foot of dry flue gas. (See Regulation 20.6.1). If this point is not an incinerator flue, write "N.A." in the column. Report SO_2 concentrations for any stack in which it is found, in PPM by volume at standard conditions. Stack exit concentrations need not be reported for other pollutants.

10. If the hydrocarbons being emitted are of unknown type or have been obtained from emission factors which do not indicate the hydrocarbon type, simply report the data requested on the line marked "hydrocarbons". If, however, you know more about the specific hydrocarbons being emitted (for example - that they are non-methane hydrocarbons, or that they are paraffinic hydrocarbons, or that they are, say, 20 weight % alkenes with remainder paraffins, or if you know the specific name of the hydrocarbon being emitted, say, benzene or methanol or methylethylketone or whatever) please leave the line marked hydrocarbons blank, write in the name or partial identification of your specific hydrocarbons in one of the blank lines below, and give the data requested on that line.

11. Report the fuel charging rate, if any, in units of MM ft^3 (million cubic feet) for gases, M gal for fuel oil, and tons for coal, bagasse, sawdust, etc. Report the process materials charging rate, if any, in units such as M Bbl. (thousand barrels), tons (of material processed or produced), tons (air dried unbleached pulp), M gal (storage capacity of tanks; breathing losses), etc. Please telephone us and ask if unsure of what units to use. Do not list air or water as "process materials". In determining rates, do not include any recycle amount unless asked to do so, in general the rates should be determined on a "fresh feed" basis. For storage tanks, list separately under "Name of fuel/ process material" the two catagories of breathing losses and working losses. The "rate" of the breathing loss determinant is M gal (storage capacity) and, of the working loss, is also M gal (throughput).

If any one pollutant type (i.e., SO_2, particulate matter, etc.) is emitted from more than one stack (or other emission point) serving the same piece of equipment, please explain briefly on the reverse side of the page 6 subsheet, and write "See reverse side" prominently at the bottom of the form side.

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
11A	CRACKING FURNACE STACK	119.97 ft	4.50 ft	550 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
			Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
17,607 ft³/min	18.5 ft/sec	Refinery Fuel Gas type(s) of fuel 59.4 x 10⁶ BTU/hr 1st fuel (2) 10⁶ BTU/hr 2nd fuel, if any (2) Natural Gas to be used as back-up fuel	25 %	25 %	25 %	25 %	24	7	49

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter	000	0	0.493	0.493	2.03	(3)		NA gr/std ft³
sulfur dioxide	000	0	1.32	1.32	5.43	(2)		10.8 PPM (VOL)
nitrogen dioxide	000	0	8.86	8.86	36.45	(3)		Fill in this column only as required by note 9.
hydrocarbons[10]	000	0	0.147	0.147	0.607	(3)		
carbon monoxide	000	0	0.836	0.836	3.44	(3)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0.0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
Refinery Fuel Gas	405MMSCF /yr	49.2 MSCF /hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
11B	CRACKING FURNACE STACK	119.97 ft	4.50 ft	550 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
17,607 ft^3/min	18.5 ft/sec	Refinery Fuel Gas type(s) of fuel; 59.4 x 10^6 BTU/hr 1st fuel; (2) 10^6 BTU/hr 2nd fuel, if any; (2) Natural Gas to be used as back-up fuel	25 %	25 %	25 %	25 %	24	7	49

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter	000	0	0.493	0.493	2.03	(3)		NA gr/std ft^3
sulfur dioxide	000	0	1.32	1.32	5.43	(2)		10.8 PPM (VOL)
nitrogen dioxide	000	0	8.86	8.86	36.45	(3)		Fill in this column only as required by note 9.
hydrocarbons[10]	000	0	0.147	0.147	0.607	(3)		
carbon monoxide	000	0	0.836	0.836	3.44	(3)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0.0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
Refinery Fuel Gas	405MMSCF /yr	49.2 MSCF /hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

ITEM 5 EMISSION INVENTORY QUESTIONNAIRE (Revised 11/74)

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-A	C-500 (Main Plant Vent Stack)	148 ft	3.0 ft	____ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
0 ft^3/min	0 ft/sec	N.A type(s) of fuel; ____ 10^6 BTU/hr 1st fuel; ____ 10^6 BTU/hr 2nd fuel, if any	____ %	____ %	____ %	____ %	0	0	0

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter								____ gr/std ft³
sulfur dioxide								____ PPM (VOL.)
nitrogen dioxide								
hydrocarbons[10]			0		0	(7)	Delete	Fill in this column only as required by note 9.
carbon monoxide			0		0	(7)	Delete	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
N.A	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120350

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
IV-C	Propylene Vent (BL-501)	148 ft	0.666 ft	____ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
0 ft^3/min	0 ft/sec	N.A. type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	____ %	____ %	____ %	____ %	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								____ gr/std ft^3
sulfur dioxide								____ PPM (Vol.)
nitrogen dioxide								
hydrocarbons 10			0		0	(7)	Delete	Fill in this column only as required by note 9.
carbon monoxide								

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
N.A.	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-J	Dock EDC Tank (T-415)	35 ft	0.83 ft	84 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
5.28 ft³/min	16 ft/sec	N.A. type(s) of fuel; ___ 10^6 BTU/hr 1st fuel; ___ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	24	7	52

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter								gr/std ft³
sulfur dioxide								PPM (Vol)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons to IOT	000	0	1.67	11.9	7.33	(4)		
carbon monoxide								
1,2 Dichloroethane	000	0	1.61	11.4	7.05	(4)		
Other Chlorinated								
Hydrocarbons	000	0	0.06	0.45	0.28	(4)		
HCl	000	0	0.04	0.31	0.19	(4)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
Breathing Losses	6.66 tons/yr	/hr
Working Losses	0.67 tons/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-K	Dock VCM Vent Recovery	148 ft	1.0 ft	75 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
316 ft^3/min	6.7 ft/sec	N.A. type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	3	1	52

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter								gr/std ft^3
sulfur dioxide								PPM (VOL.)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons[10]	(below)							
carbon monoxide								
Vinyl Chloride	048			<0.01	<0.1	(4)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
N.A.	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120353

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
11-C	Cracking Furnace	119.97 ft	6.0 ft	550 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)
29,270 ft³/min	17.3 ft/sec	No. 2 Fuel Oil type(s) of fuel 62.5 x 10⁶ BTU/hr 1st fuel (1) 10⁶ BTU/hr 2nd fuel, if any

(1) Natural Gas or Refinery off gas may be used as a backup fuel.

% of annual throughput of pollutants through this emission point (totals 100%)			
Dec-Feb	Mar-May	June-Aug	Sept-Nov
25 %	25 %	25 %	25 %

Normal operating time of this point		
hrs/day	days/week	wks/yr
24	7	48.69

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter	000	0	0.886	0.886	3.622	(3)	Add	NA gr/std ft³
sulfur dioxide	000	0	14.05	14.05	57.47	(3)	Add	123 PPM (VOL)
nitrogen dioxide	000	0	6.303	6.303	25.778	(5)	Add	Fill in this column only as required by note 9.
hydrocarbons[10]	000	0	.421	.421	1.721	(3)	Add	
carbon monoxide	000	0	2.127	2.127	8.700	(3)	Add	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
No. 2 Fuel Oil	3.173 MM Gal/yr	492.95 Gal /hr
Refinery Fuel Gas	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120354

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
V-A	VENT INCINERATOR	75 ft	3.0 ft	125 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)
28,817 ft^3/min	67.9 ft/sec	NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any

% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
25 %	25 %	25 %	25 %	24	7	52

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter	022		17.26	17.26	75.586	(4)	Change	0.079 gr/std ft^3
sulfur dioxide	022		0.46	0.46	2.02	(4)	Change	1.78 PPM (VOL)
nitrogen dioxide	022		27.81	27.81	121.789	(4)	Change	Fill in this column only as required by note 9.
hydrocarbons[10] TOT	022		2.98	2.98	13.07	(4)	Change	
carbon monoxide	022		0.55	0.55	2.43	(4)	Change	
			2.54	2.54	11.08	(4)	Change	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

ITEM 6 . . . PLANT LOCATION FOR AIR POLLUTION DISPERSION MODELING

Give below the Universal Transverse Mercator zone number and Universal Transverse Mercator (UTM) coordinates, to the nearest one-tenth kilometer, of your facility. We must have this information since we are required to report it to the U. S. Environmental Protection Agency for wide area dispersion modeling purposes.

The coordinates can be obtained from most U. S. Geological Survey maps, scale 1:24,000 or 1:62,000 for your particular area. These maps, if not already in your possession, may be found in your local library, or can be purchased from the U. S. Geological Survey (USGS) at the address shown below for 75¢ each (1974 price). An index of all the maps available for Louisiana, together with prices and detailed instructions for ordering, may be obtained free by addressing a request to:

U. S. Geological Survey, Distribution ~~Center~~, Denver Federal Center, Bldg. 41
Denver, Colorado 80225

If the map has the Universal Transverse Mercator (UTM) coordinates listed, it will have the UTM zone number mentioned among the writing along the bottom of the map. This zone number will be either 15 or 16 for Louisiana.

Please note that latitude and longitude are not what we need, and that the USGS maps do not show UTM grid lines as they do latitude and longitude; however, tick marks along the edges of the maps do indicate the UTM grid locations. A straight edge must be used to connect tick marks at the opposite sides of USGS maps when interpolating between UTM tick marks because the map grid is drawn on the latitude-longitude system and, therefore, the UTM grid may appear quite skewed. For the scales mentioned, tick marks appear for every 1000 meters (1 kilometer), with every fifth tick mark and the tick marks nearest the southeast and northwest corners of the map giving the value in meters. The 1:24,000 scale is preferred to accurately locate the facility, but the 1:62,000 scale may be used if the 1:24,000 scale map is unavailable for your area.

For example: The state capitol building in Baton Rouge would be:
UTM zone No. 1 5 horizontal coordinate: 6 7 4.1 Km. E
vertical coordinate: 3 3 7 0.6 Km. N

Your facility: UTM zone No. 1 5 horizontal coordinate: 4 7 2.9 Km. E
vertical coordinate: 3 3 4 6.5 Km. N

ITEM 7 . . . COMPLIANCE STATUS

Check one of the blocks below, regarding your facility's "Compliance Schedule":

☒ Such a document has not been requested of us, so far as we know.

☐ Such a document was requested, or submitted, but we haven't yet received notification that it was accepted at a public hearing by the Commission.

☐ We were notified that the document was accepted at a public hearing; no schedule of actions to achieve compliance was necessary.

☐ We were notified that the document was accepted at a public hearing; our schedule of actions to achieve compliance by _ _ (month), 197 _ (year) was approved. The most recent "increment of progress" date in our schedule of actions was achieved on _ _ (month) _ _ (day) 7 _ (year). [YOU MUST FILL IN THE DATE BLANKS IF YOU HAVE CHECKED THIS PARAGRAPH.]

DTH 000120356

ITEM 8 . . . REFUSE COLLECTION AND DISPOSAL

A. Amount of combustible refuse disposed of per year: 5915 Tons
(give the applicable units)

B. Description of refuse; check off applicable categories:
- ☒ Paper scrap
- ☐ Rubber scrap
- ☒ Wood scraps & sawdust
- ☐ Wet garbage or animal wastes
- ☒ Other, specify: Rubbish

C. Method of refuse disposal; check off applicable categories:
- ☐ City pickup
- ☐ On-site dump
- ☐ On-site incineration
- ☒ Contractor pickup
- ☐ On-site outdoor burning
- ☐ On-site landfill
- ☐ Other, specify:

D. If disposal is by contractor pickup, give the name and address of the contractor:
Browning-Ferris Industries of Louisiana Inc. Solid Waste Division-Cities Service Highway - Maplewood, LA 70663

E. The on-site incinerator, if any, has the following design features:
- ☒ No on-site incinerator
- ☐ Afterburners
- ☐ Water scrubber installed
- ☐ Single chamber
- ☐ Primary & secondary
- ☐ Waste material disposed of
- ☐ Multiple chamber
- ☐ burners installed
- ☐ by burning in a boiler

F. Incinerator equipment data (if applicable):
Manufacturer: NA Model:
Capacity: Installation date:
Auxiliary fuel used: (type, how used, rate of use)

ITEM 9 . . . SUPPLEMENTARY INFORMATION

A. *Please supply a unit plot plan or map which shows the locations of stacks (or other sources), together with the source identification numbers from Item 5, the plant boundaries, a distance scale, and the direction North. Please also show, on a separate diagram if necessary, the location of the plant in relation to nearest highways, residential areas, and towns. Attach the maps to the back of this form.*

B. Approximately how much money have you spent on air pollution control equipment and operation in the past 10 years? Equipment $15,500,000 Operation $ 2,935,000

ITEM 10 . . . TOXIC GASES & HAZARDOUS MATERIALS

A. Are there any substances used or produced in your facility which could cause immediate injury to life or property, if they were emitted to the atmosphere, which are not already listed in this form as one which is presently being emitted to the atmosphere? (e.g., chlorine for water treatment, toxic gases, gases used as catalysts, etc., which ordinarily do not escape) Please list such substances below. If none, please so state. No

B. Does your facility use or produce asbestos, mercury (other than laboratory use), beryllium in any amount whatsoever? If answer is yes, give details below or on separate sheet. If answer is no, please write "no" below: NO

DTH 000120357

ITEM 11 . . . PERSONNEL & CERTIFICATION

A. The manager of the facility, on location at the plant site, is as follows:

Name:	James A. DeBernardi, Plant Manager - VCM Plant
Title:	Conoco Chemicals Company, A Division of
Name of Company:	Conoco, Inc.
Business street address/ P. O. Box:	P. O. Box 605
City or town, parish, Zip code:	Westlake, LA 70669
Business area code/ telephone No.:	318/491-5064

B. Person to contact at the site of the facility about air pollution control, if different from the above:

Name:	Gary L. Foshee
Title:	Chief Process Engineer
Business telephone No./ extension:	318/491-5062

C. If the company's air pollution control correspondence and documents are prepared at a headquarters office, at a different site, give the information on the person to be contacted below:

Name:	Mike Hayes
Title:	Director of Environmental Control
Name of company; or parent company:	Conoco Chemicals Company
Business street address/ P. O. Box:	P. O. Box 727
City, state, Zip code:	Westlake, LA 70669
Business area code; telephone No.:	318/491-5436

D. Person who prepared this report: *(If one of the above, just check appropriate block:)*

☐ A. ☐ B. ☐ C.

Name:	Virgil M. Fisher
Title:	Process Engineer
Firm: (if prepared by a consultant)	
Company: (if prepared in-house)	Conoco Chemicals Company
Street address/ P. O. Box:	P. O. Box 605
City, state, Zip code:	Westlake, LA 70669
Area code, telephone #, extension:	318/491-5057

E. CERTIFICATION. *I certify, under the provisions in Louisiana and United States law which provide criminal penalties for false statements, that this Emission Inventory Questionnaire, including all attachments thereto, contains information which is true and correct to the best of my knowledge and belief.*

J A DeBernardi

(signature of manager, or other company agent)

J. A. DeBernardi, Plant Manager - VCM Plant

(printed or typed name & title of person above)

June 2, 1981

(date signed)

DTH 000120358

SECTION II

VCM PLANT

PAST EIQ

LOUISIANA AIR CONTROL COMMISSION
P. O. Box 60630, New Orleans, La. 70160
Telephone: (504) 527-5119

EMISSION INVENTORY QUESTIONNAIRE (Revision of 11/74)

CONOCO CHEMICALS COMPANY
(name of company)

CONOCO INC.
(parent company; if above is a division)

Submitted by company on February 5, 1980
(date)

Please file a separate report for each of your plants physically located in Louisiana. This inventory covers the following plant location:

CHECK ONE OF THE BLOCKS BELOW:

☐ This inventory includes only presently existing emissions.

☒ This inventory includes both those old emissions (expected to be still existing) and those proposed additional emissions included in our permit request for VCM PLANT EXPANSION (type of new facility/modification) which was submitted to the commission on 2/5/80 (date) and which new emissions are to be existing by 11/1/82 (date).

CONOCO VCM PLANT (plant's name, if any) — WESTLAKE (nearest town) — CALCASIEU (parish of plant site)

INSTRUCTIONS: Keep the original of this form; return a photocopy to this agency. Do not write information in the top or left side margins of this form, as file folder bindings may cover the information. We have tried to ask only for the information we need, please do your best to answer each question. Our authority to ask for this information is contained in R.S. 40:2201 et sec. Copies of this law are available upon request. Air pollutant emission data provided on this form shall be available to the general public, without exception. All other data and information provided on this form and attachments shall also be available to the public, except that upon a showing satisfactory to the Technical Secretary that such other data and information, if made public, would divulge methods or processes entitled to protection as trade secrets, the data will be kept from all persons other than employees, or other agents, of the Louisiana and federal air pollution agencies.

☒ Confidentiality of all information, except the air pollutant emission rates, is requested, and our justification for this request is attached to the back of this form. (Check the block if this is the case.)

If certain questions are not applicable, indicate "none" or "not applicable" (N.A.). Terms such as "not significant", "nil", "trace", "negligible", etc. are not acceptable. Please attach additional sheets if more space is needed.

An updated report should be submitted in the future when the annual emission rate of any pollutant from any stack changes more than 10% from reported values.

ITEM 1 . . . ORGANIZATION ACTIVITIES

A. Circle any days of the week normally not operating: M Tu W Th F Sat Sun
B. This facility, as a whole, typically operates 341 days per year.
C. The peak production season is N.A.
D. The facility normally operates ☐ 1 ☐ 2 ☒ 3 eight hour shifts per day, or specify the hours normally worked per day. ______
E. Approximate number of employees at this location is 110.

DTH 000120360

F. If the facility, as a whole, operates intermittently, give details on the lines below: ______

G. Ownership of facility. Please check one of the following:

- ☒ corporation, partnership, or sole proprietorship
- ☐ regulated utility
- ☐ city government
- ☐ state government
- ☐ federal government
- ☐ other, specify ______

H. Please check off, or write below, the descriptive name which applies to your operation:

- ☒ chemical industry
- ☐ natural gas industry
- ☐ petroleum industry
- ☐ sugar cane industry
- ☐ lumber industry
- ☐ pulp & paper
- ☐ cement industry
- ☐ particleboard
- ☐ plywood
- ☐ asphaltic concrete
- ☐ fertilizer
- ☐ metals industry
- ☐ fish meal
- ☐ brick making
- ☐ other, specify ______

I. Please give a very brief description of your operations, with emphasis on any possible sources of air pollution. Refer to attached process description (Section II and Section III).

ITEM 2 . . . FUEL USE BY FACILITY AS A WHOLE Check one of the blocks below, and supply information as requested:

☐ *If this inventory is for "presently existing" conditions (as checked for page 1), please give the information requested below for the latest 12 month period for which you have data. Data for the 12 months ending Month: ______ Year: ______ (fill in) has been given. If future use is expected to be materially different (other than as outlined in a current permit request) give details on a separate sheet.*

☒ *If this inventory is being submitted in conjunction with a permit request (as checked on page 1), please give the annual consumption rates expected for the total plant for the 12 months following the date the new facility or modification becomes operational. This date is listed on page 1.*

Type of fuel	Annual Consumption (M = thousands)	Sulfur % (by weight)	Heating value
Natural gas	52 million cubic feet	(1 grain /	MSCF) MM BTU/ MM ft^3
Process gas	668 million cubic feet	(100 grain/	MSCF) MM BTU/ MM ft^3
No. 1 to 4 fuel oil	3237.8 M gallons	0.25	MM BTU/ M gal
No. 5 or 6 fuel oil	M gallons		MM BTU/ M gal
Bark/ wood chips	tons		MM BTU/ ton
Coal (specify ash % & anthracite/bituminous)	tons		MM BTU/ ton
Other ______			MM BTU/
Other ______			MM BTU/

DTH 000120361

ITEM 3 . . . MATERIALS USED, PRODUCED, STORED, OR TRANSPORTED BY TOTAL PLANT

A. Raw materials or materials being transported Name of material	Quantity used or transported Annual average (give units)	 Hourly average lb/hr	 Hourly maximum lb/hr	How stored (Be specific - floating roof tank, fixed roof, etc.)	How moved (Pipeline, tanktruck, etc.)
Ethylene	492 MM Lb.	59,767	62,682	Not stored	Pipeline
Chlorine	750 MM Lb.	91,108	95,552	Pressure Tank	Pipeline/Railcar
Oxygen	13.125 MM Lb.	1,709	1,792	Not stored	Pipeline
B. Products or byproducts					
Intermediate Products:					
1. Hydrogen Chloride	528 MM Lb.	64,140	67,269	Pressure Tank	Pipeline
2. 1,2 Dichloroethane	1,663 MM Lb.	202,038	211,894	Nitrogen Padded Fixed Roof Tanks	Ship and Railcar.
Final Product					
1. Vinyl Chloride	1,000 MM Lb.	121,477	127,403	Pressure Spheres	Ship, railcar, or pipeline

ITEM 4 . . . EMISSION INFORMATION ON THE ENTIRE PLANT AS A WHOLE *The rates given should correspond, in most cases, to the sum of the individual average rates of the point sources listed in the Item 5 pages for each type of air pollutant.*

A. PARTICULATE SOLIDS OR LIQUIDS	Material name (if must specify)	Emission rate lbs/hr	Emission rate tons/yr
soot from combustion		20.33	86.83
mineral dust			
other, specify:			
other, specify:			
other, specify:			
B. ORGANIC GASES OR VAPORS			
alkanes/ paraffins	Methane and Ethane	1.19	4.88
alkenes/ olefins, specify:			
alkynes/ acetylenes			
aromatics, specify:			
alcohols, specify:			
other, specify: Halogenated	1,2 Dichloroethane	1.61	7.05
other, specify: Halogenated	Vinyl Chloride	2.55	11.18
other, specify: Other Halogenated Materials		0.06	0.28
C. INORGANIC GASES OR VAPORS			
sulfur dioxide	SO_2	17.01	68.45
hydrogen sulfide			
carbon monoxide	CO	6.52	17.73
nitrogen oxides	NO_2	58.05	244.97
ammonia			
halogens, specify:	HCl and Cl_2	99.19	434.69
inorganic sulfides (except H_2S)			
other, specify:			

NOTES TO ITEM 5 Please read all notes before attempting to fill out page(s) 6.

1. Use any number you wish, but please be consistent in identifying this point by the same number on calculations, maps, future correspondence, computer printouts, etc.

2. If the emission point is not a vertically discharging stack, or if there is no clear-cut point of emission (e.g., dust from moving equipment, multiple leaking valves, evaporation from storage tanks, etc.), put a zero in this column.

3. Give the inside diameter at the top. For non-round exits, use the equivalent diameter, equal to 1.128 times the square root of the cross-sectional area at the point of discharge. Diameter, volume flow rate, and exit velocity must be consistent!

4. A "boiler", for purposes of this form, is to be understood to be any combustion device which heats a fluid and is separated from such fluid by a partition. Therefore oil heaters, Dowtherm heaters, etc. are included. Internal combustion engines and incinerators are not included. Direct fired kilns are not included.

5. Enter the proper code number, taken from the list below:

000 No control equipment
001 Wet scrubber, above 95% efficiency
002 Wet scrubber, 80% - 95% efficient
003 Wet scrubber, below 80% efficiency
004 Gravity collector, above 95% efficiency
005 Gravity collector, 80% - 95% efficient
006 Gravity collector, below 80% efficiency
007 Centrifugal collector above 95% efficiency
008 Centrifugal collector 80% - 95% efficient
009 Centrifugal collector below 80% efficiency
010 Electrostatic Precip. above 95% efficiency
011 Electrostatic Precip. 80% - 95% efficient
012 Electrostatic Precip. below 80% efficient
013 Gas scrubber, general
014 Mist eliminator
017 Fabric filter
019 Catalytic afterburner
020 Catalytic afterburner, with heat exchanger
021 Direct flame afterburner
022 Direct flame afterburner with exchanger
023 Flaring
039 Catalytic oxidation - flue gas desulfurization
040 Alkalized aluminia
041 Dry limestone injection
042 Wet limestone injection
043 Sulfuric acid plant, contact process
044 Sulfuric acid plant, double contact process
045 Sulfur recovery plant use
046 Reduced emissions by changing process
047 Vapor recovery system
048 Activated carbon adsorption
050 Gas absorption column, packed.
052 Spray tower for gases
053 Venturi scrubber for gases
049 Liquid filtration system
051 Gas absorption column, tray-type

6. Give the percent by weight of uncontrolled emission removed. If unknown, leave blank; if there is no effective removal, enter a zero in the column.

7. Enter the number of the method used, as follows:

(1) By actual stack test

(2) By material balance, provided that this method is applicable (i. e., this method obviously cannot be used where the inaccuracies in measurement are equal to or greater than the absolute magnitude of the losses. An example of proper use would be where solvent emissions are not directly measured, but all solvent purchased is eventually lost to the atmosphere, and therefore material bought divided by operating hours equals loss rate.)

(3) By the use of E.P.A. emission factors. (See the "Compilation of Air Pollution Emission Factors", E.P.A. publication AP-42)

(4) By making a conservative estimate.

(5) By the use of emission factors other than those supplied by the E.P.A.

NOTES TO ITEM 5, CONTINUED (-continuing with note 7:)

(6) Use this number if and only if you are submitting this form in connection with a permit request, and the emissions referred to have no present existence, but are simply the result of design calculations.

(7) Sources ceasing emissions must be reported on one inventory document after they cease operation (see note 8). Emissions will be zero, and a number 7 should be placed in the "emission estimation method" column.

8. If this particular pollutant, from this particular stack (point source), was not included in the stack or point source information submitted on your last Emissions Inventory Questionnaire, or if this is the first Emissions Inventory Questionnaire you are submitting, write "add" in this column.

If this particular pollutant, from this particular point, was included on the last Emissions Inventory Questionnaire (EIQ) submitted, but the amount has been increased or decreased (to other than zero), write "change" in this column.

If a point source has ceased operation since your last EIQ, the pollutants from that point should be reported as having zero emission rates on next submitted EIQ, and you should write "delete" in this column. *AFTER A DELETION HAS BEEN ONCE REPORTED, DO NOT REPORT THE POINT AT ALL ON ANY FUTURE EIQ'S AND DO NOT USE THAT POINT'S INDENTIFICATION (ID) NUMBER IN THE FUTURE FOR ANY OTHER POINT.*

9. Report the concentration of particulate matter only for incinerator flue gases, in grains per standard cubic foot of dry flue gas. (See Regulation 20.6.1). If this point is not an incinerator flue, write "N.A." in the column. Report SO_2 concentrations for any stack in which it is found, in PPM by volume at standard conditions. Stack exit concentrations need not be reported for other pollutants.

10. If the hydrocarbons being emitted are of unknown type or have been obtained from emission factors which do not indicate the hydrocarbon type, simply report the data requested on the line marked "hydrocarbons". If, however, you know more about the specific hydrocarbons being emitted (for example - that they are non-methane hydrocarbons, or that they are paraffinic hydrocarbons, or that they are, say, 20 weight % alkenes with remainder paraffins, or if you know the specific name of the hydrocarbon being emitted, say, benzene or methanol or methylethylketone or whatever) please leave the line marked hydrocarbons blank, write in the name or partial identification of your specific hydrocarbons in one of the blank lines below, and give the data requested on that line.

11. Report the fuel charging rate, if any, in units of MM ft^3 (million cubic feet) for gases, M gal for fuel oil, and tons for coal, bagasse, sawdust, etc. Report the process materials charging rate, if any, in units such as M Bbl. (thousand barrels), tons (of material processed or produced), tons (air dried unbleached pulp), M gal (storage capacity of tanks; breathing losses), etc. Please telephone us and ask if unsure of what units to use. Do not list air or water as "process materials". In determining rates, do not include any recycle amount unless asked to do so, in general the rates should be determined on a "fresh feed" basis. For storage tanks, list separately under "Name of fuel/ process material" the two catagories of breathing losses and working losses. The "rate" of the breathing loss determinant is M gal (storage capacity) and, of the working loss, is also M gal (throughput).

If any one pollutant type (i.e., SO_2, particulate matter, etc.) is emitted from more than one stack (or other emission point) serving the same piece of equipment, please explain briefly on the reverse side of the page 6 subsheet, and write "See reverse side" prominently at the bottom of the form side.

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
II-A	Cracking Furnace Stack	119.97 ft	4.50 ft	550 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)
17,607 ft^3/min	18.5ft/sec	Refinery Fuel Gas type(s) of fuel 51.7 x 10^6 BTU/hr 1st fuel (2) 10^6 BTU/hr 2nd fuel, if any (2) Natural Gas to be used as back-up fuel

% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
25 %	25 %	25 %	25 %	24	7	49

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter	000	0	0.93	1.01	3.81	(3)		N.A. gr/std ft^3
sulfur dioxide	000	0	1.09	1.13	4.48	(2)		10.8 PPM (VOL.)
nitrogen dioxide	000	0	11.9	12.9	48.7	(3)		Fill in this column only as required by note 9.
hydrocarbons 10	000	0	0.155	0.168	0.634	(3)		
carbon monoxide	000	0	0.88	0.95	3.6	(3)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0.0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
Refinery Fuel Gas	334 MMSCF /yr	44.2 MSCF /hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120365

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
11-B	Cracking Furnace Stack	119.97 ft	4.5 ft	550 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
17,607 ft^3/min	18.5 ft/sec	Refinery Fuel Gas type(s) of fuel 51.7 x 10^6 BTU/hr 1st fuel (1) 10^6 BTU/hr 2nd fuel, if any (1) Natural gas to be used as back-up fuel	25 %	25 %	25 %	25 %	24	7	49

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter	000	0	0.93	1.01	3.81	(3)		N. A. gr/std ft^3
sulfur dioxide	000	0	1.09	1.13	4.48	(2)		10.8 PPM (VOL)
nitrogen dioxide	000	0	11.9	12.9	48.7	(3)		Fill in this column only as required by note 9.
hydrocarbons[10]	000	0	0.155	0.168	0.634	(3)		
carbon monoxide	000	0	0.88	0.95	3.6	(3)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials chargilig rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
Refinery Fuel Gas	334 MMSCF /yr	44.2 MSCF /hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120366

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-A	C-500 (Main Plant Vent Stack)	148 ft	3.0 ft	____ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
0 ft^3/min	0 ft/sec	N A type(s) of fuel; ____ 10^6 BTU/hr 1st fuel; ____ 10^6 BTU/hr 2nd fuel, if any	___%	___%	___%	___%	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft^3
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons 10			0		0	(7)	Delete	
carbon monoxide			0		0	(7)	Delete	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
N A	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120367

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
IV-C	Propylene Vent (BL-501)	148 ft	0.666 ft	___ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
0 ft^3/min	0 ft/sec	N.A. type(s) of fuel ___ 10^6 BTU/hr 1st fuel ___ 10^6 BTU/hr 2nd fuel, if any	___ %	___ %	___ %	___ %	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft^3
sulfur dioxide								PPM (VOL)
nitrogen dioxide								
hydrocarbons 10			0		0	(7)	Delete	Fill in this column only as required by note 9.
carbon monoxide								

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
N.A.	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120368

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-J	Dock EDC Tank (T-415)	35 ft	0.83 ft	84 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
5.28 ft^3/min	16 ft/sec	N.A. type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	24	7	52

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons 10 TOT	000	0	1.67	11.9	7.33	(4)		
carbon monoxide								
1,2 Dichloroethane	000	0	1.61	11.4	7.05	(4)		
Other Chlorinated								
Hydrocarbons	000	0	0.06	0.45	0.28	(4)		
HCl	000	0	0.04	0.31	0.19	(4)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
Breathing Losses	6.66 Tons /yr	/hr
Working Losses	0.57 Tons /yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

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Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-K	Dock VCM Vent Recovery	148 ft	1.0 ft	75 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
		N.A. type(s) of fuel	Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
316 ft³/min	6.7 ft/sec	____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	3	1	52

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								
hydrocarbons 10	(below)							Fill in this column only as required by note 9.
carbon monoxide								
Vinyl Chloride	048			<0.01	<0.1	(4)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
N.A.	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120370

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number1	Descriptive name of the equipment served by this stack	Height of stack above grade2	Stack diameter3	Stack gas exit temperature
11-C	Cracking Furnace	119.97 ft	6.0 ft	550 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
22,375 ft^3/min	13.2 ft/sec	No. 2 Fuel Oil type(s) of fuel 51.3 x 10^6 BTU/hr 1st fuel 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	24	7	47.62

(1) Natural gas or Refinery off gas may be used as a backup fuel.

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter	000	0	0.81	0.81	3.24	(3)	Add	N.A. gr/std ft^3
sulfur dioxide	000	0	14.37	14.37	57.47	(3)	Add	123 PPM (VOL.)
nitrogen dioxide	000	0	5.54	5.54	22.17	(5)	Add	Fill in this column only as required by note 9.
hydrocarbons 10	000	0	0.41	0.41	1.62	(3)	Add	
carbon monoxide	000	0	2.03	2.03	8.1	(3)	Add	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.11

Name of fuel/ process material	Annual rate	Maximum hourly rate
No. 2 Fuel Oil	3.238 MM Gal. /yr	485.7 Gal. /hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120371

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
V-A	Vent Incinerator	75 ft	3.0 ft	125 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
			Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
28,817 ft³/min	67.9 ft/sec	N.A. type(s) of fuel; ___ 10^6 BTU/hr 1st fuel; ___ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	24	7	52

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter	022		17.39	17.39	75.97	(4)	Change	0.079 gr/std ft³
sulfur dioxide	022		0.46	0.46	2.02	(4)	Change	1.78 PPM (VOL)
nitrogen dioxide	022		28.71	28.71	125.40	(4)	Change	Fill in this column only as required by note 9.
hydrocarbons as TOT	022		2.98	2.98	13.07	(4)	Change	
carbon monoxide	·022		0.55	0.55	2.43	(4)	Change	
Vinyl Chloride	022		2.54	2.54	11.08	(4)	Change	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

ITEM 6 . . . PLANT LOCATION FOR AIR POLLUTION DISPERSION MODELING

Give below the Universal Transverse Mercator zone number and Universal Transverse Mercator (UTM) coordinates, to the nearest one-tenth kilometer, of your facility. We must have this information since we are required to report it to the U. S. Environmental Protection Agency for wide area dispersion modeling purposes.

The coordinates can be obtained from most U. S. Geological Survey maps, scale 1:24,000 or 1:62,000 for your particular area. These maps, if not already in your possession, may be found in your local library, or can be purchased from the U. S. Geological Survey (USGS) at the address shown below for 75¢ each (1974 price). An index of all the maps available for Louisiana, together with prices and detailed instructions for ordering, may be obtained free by addressing a request to:

U. S. Geological Survey, Distribution Center, Denver Federal Center, Bldg. 41
Denver, Colorado 80225

If the map has the Universal Transverse Mercator (UTM) coordinates listed, it will have the UTM zone number mentioned among the writing along the bottom of the map. This zone number will be either 15 or 16 for Louisiana.

Please note that latitude and longitude are not what we need, and that the USGS maps do not show UTM grid lines as they do latitude and longitude; however, tick marks along the edges of the maps do indicate the UTM grid locations. A straight edge must be used to connect tick marks at the opposite sides of USGS maps when interpolating between UTM tick marks because the map grid is drawn on the latitude-longitude system and, therefore, the UTM grid may appear quite skewed. For the scales mentioned, tick marks appear for every 1000 meters (1 kilometer), with every fifth tick mark and the tick marks nearest the southeast and northwest corners of the map giving the value in meters. The 1:24,000 scale is preferred to accurately locate the facility, but the 1:62,000 scale may be used if the 1:24,000 scale map is unavailable for your area.

For example: The state capitol building in Baton Rouge would be:
UTM zone No. 1 5 horizontal coordinate: 6 7 4.1 Km. E
vertical coordinate: 3 3 7 0.6 Km. N

Your facility: UTM zone No. 1 5 horizontal coordinate: 4 7 2.9 Km. E
vertical coordinate: 3 3 4 6 5 Km. N

ITEM 7 . . . COMPLIANCE STATUS

Check one of the blocks below, regarding your facility's "Compliance Schedule":

☒ Such a document has not been requested of us, so far as we know.

☐ Such a document was requested, or submitted, but we haven't yet received notification that it was accepted at a public hearing by the Commission.

☐ We were notified that the document was accepted at a public hearing; no schedule of actions to achieve compliance was necessary.

☐ We were notified that the document was accepted at a public hearing; our schedule of actions to achieve compliance by _ _ (month), 197 _ (year) was approved. The most recent "increment of progress" date in our schedule of actions was achieved on _ _ (month) _ _ (day) 7 _ (year). [YOU MUST FILL IN THE DATE BLANKS IF YOU HAVE CHECKED THIS PARAGRAPH]

DTH 000120373

ITEM 8 . . . REFUSE COLLECTION AND DISPOSAL

A. Amount of combustible refuse disposed of per year: 5915 Tons
(give the applicable units)

B. Description of refuse; check off applicable catagories:
- ☒ Paper scrap
- ☐ Rubber scrap
- ☒ Wood scraps & sawdust
- ☐ Wet garbage or animal wastes
- ☒ Other, specify: Rubbish

C. Method of refuse disposal; check off applicable catagories:
- ☐ City pickup
- ☐ On-site dump
- ☐ On-site incineration
- ☒ Contractor pickup
- ☐ On-site outdoor burning
- ☐ On-site landfill
- ☐ Other, specify:

D. If disposal is by contractor pickup, give the name and address of the contractor:
Browning-Ferris Industries of Louisiana Inc. Solid Waste Division-Cities Service Highway - Maplewood, LA 70663

E. The on-site incinerator, if any, has the following design features:
- ☒ No on-site incinerator
- ☐ Afterburners
- ☐ Water scrubber installed
- ☐ Single chamber
- ☐ Primary & secondary
- ☐ burners installed
- ☐ Waste material disposed of
- ☐ Multiple chamber
- ☐ by burning in a boiler

F. Incinerator equipment data (if applicable):
Manufacturer: N.A. Model:
Capacity: Installation date:
Auxiliary fuel used: (type, how used, rate of use)

ITEM 9 . . . SUPPLEMENTARY INFORMATION

A. *Please supply a unit plot plan or map which shows the locations of stacks (or other sources), together with the source identification numbers from Item 5, the plant boundaries, a distance scale, and the direction North. Please also show, on a separate diagram if necessary, the location of the plant in relation to nearest highways, residential areas, and towns. Attach the maps to the back of this form.*
See Figures I and II.

B. Approximately how much money have you spent on air pollution control equipment and operation in the past 10 years? Equipment $15,500,000 Operation $2,935,000

ITEM 10 . . . TOXIC GASES & HAZARDOUS MATERIALS

A. Are there any substances used or produced in your facility which could cause immediate injury to life or property, if they were emitted to the atmosphere, which are not already listed in this form as one which is presently being emitted to the atmosphere? (e.g., chlorine for water treatment, toxic gases, gases used as catalysts, etc., which ordinarily do not escape) Please list such substances below. If none, please so state. No

B. Does your facility use or produce asbestos, mercury (other than laboratory use), beryllium in any amount whatsoever? If answer is yes, give details below or in separate sheet. If answer is no, please write "no" below: No

ITEM 11 . . . PERSONNEL & CERTIFICATION

A. The manager of the facility, on location at the plant site, is as follows:

Name:	James A. DeBernardi, Plant Manager - VCM Plant
Title:	Conoco Chemicals Company, A Division of
Name of Company:	Conoco, Inc.
Business street address/ P. O. Box:	P. O. Box 605
City or town, parish, Zip code:	Westlake, LA 70669
Business area code/ telephone No.:	318/491-5064

B. Person to contact at the site of the facility about air pollution control, if different from the above:

Name:	Gary L. Foshee
Title:	Chief Process Engineer
Business telephone No./ extension:	318/491-5062

C. If the company's air pollution control correspondence and documents are prepared at a headquarters office, at a different site, give the information on the person to be contacted below:

Name:	H. J. Neeld
Title:	Director of Environmental Control
Name of company; or parent company:	Conoco Chemicals Company
Business street address/ P. O. Box:	P. O. Box 727
City, state, Zip code:	Westlake, LA 70669
Business area code; telephone No.:	318/491-5436

D. Person who prepared this report: *(If one of the above, just check appropriate block:)*
☐ A. ☐ B. ☐ C.

Name:	Jonathan G. Cole
Title:	Process Engineer
Firm: (if prepared by a consultant)	
Company: (if prepared in-house)	Conoco Chemicals Company
Street address/ P. O. Box:	P. O. Box 605
City, state, Zip code:	Westlake, LA 70669
Area code, telephone #, extension:	318/491-5057

E. CERTIFICATION. *I certify, under the provisions in Louisiana and United States law which provide criminal penalties for false statements, that this Emission Inventory Questionnaire, including all attachments thereto, contains information which is true and correct to the best of my knowledge and belief.*

[signature]
(signature of manager, or other company agent)

J. A. DeBernardi, Plant Manager - VCM Plant
(printed or typed name & title of person above)

8/21/80
(date signed)

DTH 000120375

LOUISIANA AIR CONTROL COMMISSION
P. O. Box 60630, New Orleans, La. 70160
Telephone: (504) 527-5119

EMISSION INVENTORY QUESTIONNAIRE (Revision of 11/74)

Conoco Chemicals Company
(name of company)

Conoco Inc.
(parent company; if above is a division)

Submitted by company on 8-23-79 (date)

CHECK ONE OF THE BLOCKS BELOW:

☐ This inventory includes only presently existing emissions.

☒ This inventory includes both those old emissions (expected to be still existing) and those proposed additional emissions included in our permit request for Alternate Fuel Gas System (type of new facility/modification) which was submitted to the commission on 8-23-79 (date) and which new emissions are to be existing by 12-1-79 (date).

Please file a separate report for each of your plants physically located in Louisiana. This inventory covers the following plant location:

(plant's name, if any) (nearest town) (parish of plant site)

INSTRUCTIONS: Keep the original of this form; return a photocopy to this agency. Do not write information in the top or left side margins of this form, as file folder bindings may cover the information. We have tried to ask only for the information we need, please do your best to answer each question. Our authority to ask for this information is contained in R.S. 40:2201 et sec. Copies of this law are available upon request. Air pollutant emission data provided on this form shall be available to the general public, without exception. All other data and information provided on this form and attachments shall also be available to the public, except that upon a showing satisfactory to the Technical Secretary that such other data and information, if made public, would divulge methods or processes entitled to protection as trade secrets, the data will be kept from all persons other than employees, or other agents, of the Louisiana and federal air pollution agencies.

☐ Confidentiality of all information, except the air pollutant emission rates, is requested, and our justification for this request is attached to the back of this form. (Check the block if this is the case.)

If certain questions are not applicable, indicate "none" or "not applicable" (N.A.). Terms such as "not significant", "nil", "trace", "negligible", etc. are not acceptable. Please attach additional sheets if more space is needed.

An updated report should be submitted in the future when the annual emission rate of any pollutant from any stack changes more than 10% from reported values.

ITEM 1 . . . ORGANIZATION ACTIVITIES

A. Circle any days of the week normally not operating: M Tu W Th F Sat Sun
B. This facility, as a whole, typically operates 311 days per year.
C. The peak production season is Year Round.
D. The facility normally operates ☐ 1 ☐ 2 ☒ 3 eight hour shifts per day, or specify the hours normally worked per day.
E. Approximate number of employees at this location is 100.

DTH 000120376

F. If the facility, as a whole, operates intermittently, give details on the lines below: ______

G. Ownership of facility. Please check one of the following:

☒ corporation, partnership, or sole proprietorship ☐ regulated utility
☐ city government ☐ state government ☐ federal government
☐ other, specify ______

H. Please check off, or write below, the descriptive name which applies to your operation:

☒ chemical industry ☐ lumber industry ☐ asphaltic concrete
☐ natural gas industry ☐ pulp & paper ☐ fertilizer
☐ petroleum industry ☐ cement industry ☐ metals industry
☐ sugar cane industry ☐ particleboard ☐ fish meal
☐ other, specify ______ ☐ plywood ☐ brick making

I. Please give a very brief description of your operations, with emphasis on any possible sources of air pollution. ______

ITEM 2 . . . FUEL USE BY FACILITY AS A WHOLE Check one of the blocks below, and supply information as requested:

☐ *If this inventory is for "presently existing" conditions (as checked for page 1), please give the information requested below for the latest 12 month period for which you have data. Data for the 12 months ending Month: ______ Year: ______ (fill in) has been given. If future use is expected to be materially different (other than as outlined in a current permit request) give details on a separate sheet.*

☒ *If this inventory is being submitted in conjunction with a permit request (as checked on page 1), please give the annual consumption rates expected for the total plant for the 12 months following the date the new facility or modification becomes operational. This date is listed on page 1.*

Type of fuel	Annual Consumption (M = thousands)		Sulfur % (by weight)	Heating value
Natural gas	82	million cubic feet	(1 grain/MSCF	MM BTU/ MM ft^3
Process gas	668	million cubic feet	10 grain/100 SCF	MM BTU/ MM ft^3
No. 1 to 4 fuel oil		M gallons		MM BTU/ M gal
No. 5 or 6 fuel oil		M gallons		MM BTU/ M gal
Bark/ wood chips		tons		MM BTU/ ton
Coal (specify ash % & anthracite/bituminous)		tons		MM BTU/ ton
Other ______				MM BTU/
Other ______				MM BTU/

ITEM 3 . . . MATERIALS USED, PRODUCED, STORED, OR TRANSPORTED BY TOTAL PLANT

A. Raw materials or materials being transported Name of material MM Lbs.	Quantity used or transported Annual average (give units)	 Hourly average lb/hr	 Hourly maximum lb/hr	How stored (Be specific - floating roof tank, fixed roof, etc.)	How moved (Pipeline, tanktruck, etc.)
Ethylene	332	40,567	50,092	NOT STORED	PIPELINE
Chlorine	451	55,107	72,875	PRESSURE TANK	PIPELINE & RAILCAR
B. Products or byproducts					
INTERMEDIATE PRODUCTS					
1. Hydrogen Chloride	403	49,242	55,385	PRESSURE TANK	PIPELINE
2. 1,2 Dichloroethane	1,115	136,241	159,040	NITROGEN PADDED	SHIP AND
				FIXED ROOF TANKS	RAILCAR
Final Product	690	84,311	91,535	PRESSURE SPHERES	SHIP OR RAILCAR
Vinyl Chloride					

ITEM 4 . . . EMISSION INFORMATION ON THE ENTIRE PLANT AS A WHOLE *The rates given should correspond, in most cases, to the sum of the individual average rates of the point sources listed in the Item 5 pages for each type of air pollutant.*

A. PARTICULATE SOLIDS OR LIQUIDS	Material name (if must specify)	Emission rate lbs/hr	Emission rate tons/yr
Soot from combustion		13.7	60.0
mineral dust			
other, specify:			
other, specify:			
other, specify:			
B. ORGANIC GASES OR VAPORS			
alkanes/ paraffins	Methane/Ethane	43/5	173/20
alkenes/ olefins, specify:	Ethylene/Propylene	117/14.6	479/59.7
alkynes/ acetylenes			
aromatics, specify:			
alcohols, specify:			
halogenated	Ethyl Chloride	489	2,001
	1,2 Dichloroethane	417	1,701
	Vinyl Chloride	14.6	60.2
	(As 1,2 Dichloroethane)	46	188
C. INORGANIC GASES OR VAPORS			
sulfur dioxide	SO_2	2,218	9,126
hydrogen sulfide			
carbon monoxide	CO	436	1,784
nitrogen oxides	NO_x	52.8	224
ammonia			
halogens, specify:	HCl/Cl_2	60.5/9.5	248/39.7
organic sulfides (except H_2S)			
other, specify:			

DTH 000120378

NOTES TO ITEM 5 Please read all notes before attempting to fill out page(s) 6.

1. Use any number you wish, but please be consistent in identifying this point by the same number on calculations, maps, future correspondence, computer printouts, etc.

2. If the emission point is not a vertically discharging stack, or if there is no clear-cut point of emission (e.g., dust from moving equipment, multiple leaking valves, evaporation from storage tanks, etc.), put a zero in this column.

3. Give the inside diameter at the top. For non-round exits, use the equivalent diameter, equal to 1.128 times the square root of the cross-sectional area at the point of discharge. Diameter, volume flow rate, and exit velocity must be consistent!

4. A "boiler", for purposes of this form, is to be understood to be any combustion device which heats a fluid and is separated from such fluid by a partition. *Therefore oil heaters, Dowtherm heaters, etc. are included.* Internal combustion engines and incinerators are not included. Direct fired kilns are not included.

5. Enter the proper code number, taken from the list below:

- 000 No control equipment
- 001 Wet scrubber, above 95% efficiency
- 002 Wet scrubber, 80% - 95% efficient
- 0[illegible] Wet scrubber, below 80% efficiency
- 004 Gravity collector, above 95% efficiency
- 005 Gravity collector, 80% - 95% efficient
- 006 Gravity collector, below 80% efficiency
- 007 Centrifugal collector above 95% efficiency
- 008 Centrifugal collector 80% - 95% efficient
- 009 Centrifugal collector below 80% efficiency
- 010 Electrostatic Precip. above 95% efficiency
- 011 Electrostatic Precip. 80% - 95% efficient
- 012 Electrostatic Precip. below 80% efficient
- 013 Gas scrubber, general
- 014 Mist eliminator
- 017 Fabric filter
- 019 Catalytic afterburner
- 020 Catalytic afterburner, with heat exchanger
- 021 Direct flame after-burner
- 022 Direct flame after-burner with exchanger
- 023 Flaring
- 039 Catalytic oxidation - flue gas desulfurization
- 040 Alkalized aluminia
- 041 Dry limestone injection
- 042 Wet limestone injection
- 043 Sulfuric acid plant, contact process
- 044 Sulfuric acid plant, double contact process
- 045 Sulfur recovery plant use
- 046 Reduced emissions by changing process
- 047 Vapor recovery system
- 048 Activated carbon adsorption
- 050 Gas absorption column, packed.
- 052 Spray tower for gases
- 053 Venturi scrubber for gases
- 049 Liquid filtration system
- 051 Gas absorption column, tray-type

6. Give the percent by weight of uncontrolled emission removed. If unknown, leave blank; if there is no effective removal, enter a zero in the column.

7. Enter the number of the method used, as follows:

(1) By actual stack test

(2) By material balance, provided that this method is applicable (*i. e., this method obviously cannot be used where the inaccuracies in measurement are equal to or greater than the absolute magnitude of the losses. An example of proper use would be where solvent emissions are not directly measured, but all solvent purchased is eventually lost to the atmosphere, and therefore material bought divided by operating hours equals loss rate.*)

(3) By the use of E.P.A. emission factors. (See the "Compilation of Air Pollution Emission Factors", E.P.A. publication AP-42)

(4) By making a conservative estimate.

(5) By the use of emission factors other than those supplied by the E.P.A.

DTH 000120379

NOTES TO ITEM 5, CONTINUED (-continuing with note 7:)

(6) Use this number if and only if you are submitting this form in connection with a permit request, and the emissions referred to have no present existence, but are simply the result of design calculations.

(7) Sources ceasing emissions must be reported on one inventory document after they cease operation (see note 8). Emissions will be zero, and a number 7 should be placed in the "emission estimation method" column.

8. If this particular pollutant, from this particular stack (point source), was not included in the stack or point source information submitted on your last Emissions Inventory Questionnaire, or if this is the first Emissions Inventory Questionnaire you are submitting, write "add" in this column.

If this particular pollutant, from this particular point, was included on the last Emissions Inventory Questionnaire (EIQ) submitted, but the amount has been increased or decreased (to other than zero), write "change" in this column.

If a point source has ceased operation since your last EIQ, the pollutants from that point should be reported as having zero emission rates on next submitted EIQ, and you should write "delete" in this column. *AFTER A DELETION HAS BEEN ONCE REPORTED, DO NOT REPORT THE POINT AT ALL ON ANY FUTURE EIQ'S AND DO NOT USE THAT POINT'S IDENTIFICATION (ID) NUMBER IN THE FUTURE FOR ANY OTHER POINT.*

9. Report the concentration of particulate matter only for incinerator flue gases, in grains per standard cubic foot of dry flue gas. (See Regulation 20.6.1). If this point is not an incinerator flue, write "N.A." in the column. Report SO_2 concentrations for any stack in which it is found, in PPM by volume at standard conditions. Stack exit concentrations need not be reported for other pollutants.

10. If the hydrocarbons being emitted are of unknown type or have been obtained from emission factors which do not indicate the hydrocarbon type, simply report the data requested on the line marked "hydrocarbons". If, however, you know more about the specific hydrocarbons being emitted (for example - that they are non-methane hydrocarbons, or that they are paraffinic hydrocarbons, or that they are, say, 20 weight % alkenes with remainder paraffins, or if you know the specific name of the hydrocarbon being emitted, say, benzene or methanol or methylethylketone or whatever) please leave the line marked hydrocarbons blank, write in the name or partial identification of your specific hydrocarbons in one of the blank lines below, and give the data requested on that line.

11. Report the fuel charging rate, if any, in units of MM ft^3 (million cubic feet) for gases, M gal for fuel oil, and tons for coal, bagasse, sawdust, etc. Report the process materials charging rate, if any, in units such as M Bbl. (thousand barrels), tons (of material processed or produced), tons (air dried unbleached pulp), M gal (storage capacity of tanks; breathing losses), etc. Please telephone us and ask if unsure of what units to use. Do not list air or water as "process materials". In determining rates, do not include any recycle amount unless asked to do so, in general the rates should be determined on a "fresh feed" basis. For storage tanks, list separately under "Name of fuel/ process material" the two catagories of breathing losses and working losses. The "rate" of the breathing loss determinant is M gal (storage capacity) and, of the working loss, is also M gal (throughput).

If any one pollutant type (i.e., SO_2, particulate matter, etc.) is emitted from more than one stack (or other emission point) serving the same piece of equipment, please explain briefly on the reverse side of the page 6 subsheet, and write "See reverse side" prominently at the bottom of the form side.

EMISSION INVENTORY - CRACKING FURNACE STACK(1)

AVERAGE EMISSIONS IN TONS/YEAR

Name of Pollutant	Emissions for Natural Gas Firing	Emissions for Refinery Fuel Gas Firing
Particulate Matter	3.81	3.81
Sulfur Dioxide	0.123	4.48
Nitrogen Dioxide	48.7	48.7
Hydrocarbons	0.634	0.634
Carbon Monoxide	3.6	3.6

(1) The VCM Plant has two cracking furnaces. In the EIQ they are identified by point source ID numbers IIA and IIB. The data presented here are the emissions for each individual stack.

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IIA	CRACKING FURNACE STACK	119.97 ft	4.50 ft	550 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
			Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
17,607 ft^3/min	18.5 ft/sec	Refinery Fuel Gas type(s) of fuel 51.7 x 10^6 BTU/hr 1st fuel (2) 10^6 BTU/hr 2nd fuel, if any (2) Natural Gas to be used as back-up fuel	25 %	25 %	25 %	25 %	24	7	49

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter	000	0	.93	1.01	3.81	(3)		N.A. gr/std ft^3
sulfur dioxide	000	0	1.09	1.13	4.48	(2)		10.8 PPM (VOL)
nitrogen dioxide	000	0	11.9	12.9	48.7	(3)		Fill in this column only as required by note 9.
hydrocarbons[10]	000	0	.155	.168	.634	(3)		
carbon monoxide	000	0	.88	.95	3.6	(3)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0.0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
Refinery Fuel Gas	334 MMSCF /yr	44.2 MSCF /hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120382

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
II B	CRACKING FURNACE STACK	119.97 ft	4.5 ft	550 °F

Stack gas flow rate at process conditions, not at standard: 17,607 ft^3/min

Stack gas exit velocity: 18.5 ft/sec

If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)
Refinery Fuel Gas type(s) of fuel
51.7 x 10^6 BTU/hr 1st fuel
(1) 10^6 BTU/hr 2nd fuel, if any
(1) Natural gas to be used as back-up fuel.

% of annual throughput of pollutants through this emission point (totals 100%)

Dec-Feb	Mar-May	June-Aug	Sept-Nov
25 %	25 %	25 %	25 %

Normal operating time of this point

hrs/day	days/week	wks/yr
24	7	49

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter	000	0	0.93	1.01	3.81	(3)		N.A. gr/std ft^3
sulfur dioxide	000	0	1.09	1.13	4.48	(2)		10.8 PPM (VOL)
nitrogen dioxide	000	0	11.9	12.9	48.7	(3)		Fill in this column only as required by note 9.
hydrocarbons 10	000	0	.155	.168	.634	(3)		
carbon monoxide	000	0	.88	.95	3.6	(3)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
Refinery Fuel Gas	334 MMSCF/yr	44.2 MSCF /hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-A	C-500 (MAIN PLANT VENT STACK)	148 ft	3.0 ft	100 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
10,565 ft^3/min	25 ft/sec	NA type(s) of fuel; ____ 10^6 BTU/hr 1st fuel; ____ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	24	7	49

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons 10	SEE ATTACHMENT A							
carbon monoxide								

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

ATTACHMENT A

(SUBPAGE NO. 4 OF 18)

C-500 VENT STACK (IV-A)

Name of Pollutant	Pollution Control Equipment Code 5	Control Equipment Efficiency 6	Average Emission Rate lbs/Hr	Maximum Emission Rate lb/Hr	Annual Emission Rate Tons/Yr	Emission Estimation Method 7	Add, Change Or Delete Code 8
PARTICULATE MATTER							
SULFUR DIOXIDE							
NITROGEN DIOXIDE							
CARBON MONOXIDE	003		434	464	1,776	(4)	CHANGE
HCl	003	< 80%	59.8	63.8	245	(4)	
Cl_2	003		7.3	7.79	29.9	(4)	
HYDROCARBONS TOTAL	003		1,127	1,205	4,610	(4)	CHANGE
VCM	003		13.63	14.57	55.8	(4)	CHANGE
C_2H_4	003		117	125	479	(4)	CHANGE
METHANE	003		42	45	172	(4)	CHANGE
OTHERS	003		949	1,015	3,833	(4)	CHANGE
ETHANE	003		5	5.4	20	(4)	CHANGE

DTH 000120385

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
IV-B	LOADING/TANK VENT RECOVERY	148 ft	1.0 ft	°F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
0 ft³/min	0 ft/sec	NA type(s) of fuel; ___ 10^6 BTU/hr 1st fuel; ___ 10^6 BTU/hr 2nd fuel, if any	%	%	%	%	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons 10 (BELOW)								
carbon monoxide								
vinyl chloride			0		0	(7)	DELETE	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-C	PROPYLENE VENT (BL-501)	148 ft	0.666 ft	75 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)
.31 ft³/min	.015 ft/sec	NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any

% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
25 %	25 %	25 %	25 %	24	7	49

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter								gr/scf ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons[10]	000	0	2.0	4.0	8.2	(4)	CHANGE	
carbon monoxide								

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120387

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-D	DRY CRUDE EDC TANK (T-450)	50 ft	0.5 ft	____ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
			Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
0 ft³/min	0 ft/sec	NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	___%	___%	___%	___%	0	0	0

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter								gr/std ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons as TOL			0		0	(7)	DELETE	
carbon monoxide								
1,2 dichloroethane			0		0	(7)	DELETE	
HCl			0		0	(7)	DELETE	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-F	PURE EDC TANK (T-451)	50 ft	0.5 ft	____ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
0 ft³/min	0 ft/sec	NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	____ %	____ %	____ %	____ %	0	0	0

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter								gr/std ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons to TOI			0		0	(7)	DELETE	
carbon monoxide								
1,2 Dichloroethane			0		0	(7)	DELETE	
other chlorinated								
hydrocarbons			0		0	(7)	DELETE	
HCl			0		0	(7)	DELETE	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120389

ITEM NO. 5 EMISSION INVENTORY QUESTIONNAIRE (Revised 11/74) Page 6 of 9 (SUBPAGE NO. 9 OF 18)

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
IV-F	SALES EDC TANK (T-452)	25 ft	0.5 ft	°F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
0 ft^3/min	0 ft/sec	NA type(s) of fuel; 10^6 BTU/hr 1st fuel; 10^6 BTU/hr 2nd fuel, if any	%	%	%	%	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft3
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
[illegible] TOL			0		0	(7)	DELETE	
carbon monoxide								
1,2 Dichloroethane			0		0	(7)	DELETE	
other chlorinated hydrocarbons			0		0	(7)	DELETE	
HCl			0		0	(7)	DELETE	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120390

ITEM NO. 5 EMISSION INVENTORY QUESTIONNAIRE (Revised 11/74) Page 6 of 9 (SURFACE NO.10 OF18)

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-G	SLOPS EDC TANK (T-460)	25 ft	0.5 ft	____ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)
0 ft³/min	0 ft/sec	NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any

% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
___%	___%	___%	___%	0	0	0

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter								gr/std ft³
sulfur dioxide								PPM (Vol.)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons as			0		0	(7)	DELETE	
carbon monoxide								
1,2 Dichloroethane			0		0	(7)	DELETE	
[illegible]			0		0	(7)	DELETE	
[illegible]			0		0	(7)	DELETE	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120391

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
17-H	TARS TANK (T-405)	25 ft	0.5 ft	°F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%) Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point hrs/day	days/week	wks/yr
0 ft³/min	0 ft/sec	NA type(s) of fuel 10^6 BTU/hr 1st fuel 10^6 BTU/hr 2nd fuel, if any	%	%	%	%	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons 10 (BELOW)								
carbon monoxide								
1,2 Dichloroethane			0		0	(7)	DELETE	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120392

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-I	WET CRUDE EDC TANK (T-453)	50 ft	9.5 ft	___ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
0 ft³/min	0 ft/sec	NA type(s) of fuel; ___ 10^6 BTU/hr 1st fuel; ___ 10^6 BTU/hr 2nd fuel, if any	___ %	___ %	___ %	___ %	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
Particulate matter								gr/std ft³
Sulfur dioxide								PPM (VOL)
Nitrogen dioxide								Fill in this column only as required by note 9.
Hydrocarbons as			0	0	0	(7)	DELETE	
Carbon monoxide								

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
IV-J	DOCK EDC TANK (T-415)	35 ft	0.83 ft	84 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
5.28 ft³/min	16 ft/sec	NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	24	7	52

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
Particulate matter								gr/scf ft³
Sulfur dioxide								PPM (VOL)
Nitrogen dioxide								Fill in this column only as required by note 9.
Hydrocarbons as TOT	000	0	3.35	11.9	7.33	(4)		
Carbon monoxide								
1,2 Dichloroethane	000	0	3.22	11.4	7.05	(4)		
Other chlorinated								
hydrocarbons	000	0	0.13	.45	0.28	(4)		
HCl	000	0	0.09	.31	0.19	(4)		

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120394

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
IV-K	DOCK VCM VENT RECOVERY	148 ft	1.0 ft	75 °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
			Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs day	days week	wks yr
316 ft³/min	6.7 ft/sec	NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	3	1	52

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/std ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								
hydrocarbons	(BELOW)							Fill-in-this-column only as required by note 9.
carbon monoxide			Average	Maximum	Annual			
vinyl chloride	048			<0.01	<0.1	(4)	CHANGE	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

--Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from <u>one stack</u> (or other emission point) <u>only</u>. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
IV-1	EDC ACID WASH TANK VENT (T-103)	43 ft	0.32 ft	____ °F

Stack gas flow rate at process conditions, <u>not</u> at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
		NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
0 ft^3/min	0 ft/sec		___ %	___ %	___ %	___ %	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/scf ft^3
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons 10			0		0	(7)	DELETE	
carbon monoxide								

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for <u>space heating</u> (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

DTH 000120396

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
IV-H	WASH WATER NEUTRALIZATION PIT VENT (T-252)	43 ft	0.32 ft	___ °F

Stack gas flow rate at process conditions, not at standard: 0 ft^3/min

Stack gas exit velocity: 0 ft/sec

If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)
NA type(s) of fuel
____ 10^6 BTU/hr 1st fuel
____ 10^6 BTU/hr 2nd fuel, if any

% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb ___ %; Mar-May ___ %; June-Aug ___ %; Sept-Nov ___ %

Normal operating time of this point: hrs/day 0; days/week 0; wks/yr 0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/scf ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								
[illegible]			0		0	(7)	DELETE	Fill in this column only as required by note 9.
carbon monoxide								

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from one stack (or other emission point) only. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number 1	Descriptive name of the equipment served by this stack	Height of stack above grade 2	Stack diameter 3	Stack gas exit temperature
IV-N	LIGHT ENDS STORAGE TANK (T-402)	30 ft	0.5 ft	____ °F

Stack gas flow rate at process conditions, not at standard	Stack gas exit velocity	If this stack serves a "boiler" 4, give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%): Dec-Feb	Mar-May	June-Aug	Sept-Nov	Normal operating time of this point: hrs/day	days/week	wks/yr
0 ft³/min	0 ft/sec	NA type(s) of fuel; ____ 10^6 BTU/hr 1st fuel; ____ 10^6 BTU/hr 2nd fuel, if any	___%	___%	___%	___%	0	0	0

Name of pollutant	Pollution control equipment code 5	Control equipment efficiency 6	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method 7	Add, change or delete code 8	Concentration in gases exiting the stack 9
particulate matter								gr/scd ft³
sulfur dioxide								PPM (VOL)
nitrogen dioxide								Fill in this column only as required by note 9.
hydrocarbons 10 TOT			0		0	(7)	DELETE	
carbon monoxide								
1,2 Dichloroethane			0		0	(7)	DELETE	
vinyl chloride			0		0	(7)	DELETE	
other chlorinated								
hydrocarbons			0		0	(7)	DELETE	
HCl			0		0	(7)	DELETE	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for space heating (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack. 11

Name of fuel/ process material	Annual rate	Maximum hourly rate
NA	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

This page is to be used to record the data from <u>one stack</u> (or other emission point) <u>only</u>. Photocopy this page as many times as there are individual emission points, and use one page for each point. Note that the subscripted numbers indicate explanatory notes on pages 4 and 5.

Point source ID number[1]	Descriptive name of the equipment served by this stack	Height of stack above grade[2]	Stack diameter[3]	Stack gas exit temperature
V-A	VENT INCINERATOR	75 ft	3.0 ft	125 °F

Stack gas flow rate at process conditions, <u>not</u> at standard	Stack gas exit velocity	If this stack serves a "boiler"[4], give the type(s) of fuel used and the heat input (i.e., fuel rate x heating value)	% of annual throughput of pollutants through this emission point (totals 100%)				Normal operating time of this point		
			Dec-Feb	Mar-May	June-Aug	Sept-Nov	hrs/day	days/week	wks/yr
11,200 ft^3/min	26 ft/sec	NA type(s) of fuel ____ 10^6 BTU/hr 1st fuel ____ 10^6 BTU/hr 2nd fuel, if any	25 %	25 %	25 %	25 %	24	7	52

Name of pollutant	Pollution control equipment code[5]	Control equipment efficiency[6]	Average emission rate lbs/hr	Maximum emission rate lbs/hr	Annual emission rate tons/yr	Emission estimation method[7]	Add, change or delete code[8]	Concentration in gases exiting the stack[9]
particulate matter	022		13.7	28.3	60.0	(4)	ADD	0.17 gr/std ft^3
sulfur dioxide	022		0.038	0.040	0.166	(4)	ADD	0.50 PPM (VOL)
nitrogen dioxide	022		28.96	72.4	126.5	(4)	ADD	Fill in this column only as required by note 9.
[illegible]	022		2.1		9.1	(4)	ADD	
carbon monoxide	022		0.22	0.24	0.96	(4)	ADD	
vinyl chloride	022		0.98		4.3	(4)	ADD	
chlorine	022		2.2		9.8	(4)	ADD	
HCl	022		0.57		2.5	(4)	ADD	

If this stack is from equipment which burns fuel, give the % of the total fuel used by the equipment which is used, either directly or indirectly, for <u>space heating</u> (or cooling) at the plant. (i.e., to heat or cool the air in a room) If this stack is not from a fuel burning equipment, or if fuel is burned but none of the heat is intended to heat or cool air in a room, enter a zero below:

0 % "space heat"

Give below the fuel or process materials charging rate to the unit served by this stack.[11]

Name of fuel/ process material	Annual rate	Maximum hourly rate
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr
	/yr	/hr

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ITEM 6 . . . PLANT LOCATION FOR AIR POLLUTION DISPERSION MODELING

Give below the Universal Transverse Mercator zone number and Universal Transverse mercator (UTM) coordinates, to the nearest one-tenth kilometer, of your facility. We must have this information since we are required to report it to the U. S. Environmental Protection Agency for wide area dispersion modeling purposes.

The coordinates can be obtained from most U. S. Geological Survey maps, scale 1:24,000 or 1:62,000 for your particular area. These maps, if not already in your possession, may be found in your local library, or can be purchased from the U. S. Geological Survey (USGS) at the address shown below for 75¢ each (1974 price). An index of all the maps available for Louisiana, together with prices and detailed instructions for ordering, may be obtained free by addressing a request to:

U. S. Geological Survey, Distribution Center, Denver Federal Center, Bldg. 41
Denver, Colorado 80225

If the map has the Universal Transverse Mercator (UTM) coordinates listed, it will have the UTM zone number mentioned among the writing along the bottom of the map. This zone number will be either 15 or 16 for Louisiana.

Please note that latitude and longitude are not what we need, and that the USGS maps do not show UTM grid lines as they do latitude and longitude; however, tick marks along the edges of the maps do indicate the UTM grid locations. A straight edge must be used to connect tick marks at the opposite sides of USGS maps when interpolating between UTM tick marks because the map grid is drawn on the latitude-longitude system and, therefore, the UTM grid may appear quite skewed. For the scales mentioned, tick marks appear for every 1000 meters (1 kilometer), with every fifth tick mark and the tick marks nearest the southeast and northwest corners of the map giving the value in meters. The 1:24,000 scale is preferred to accurately locate the facility, but the 1:62,000 scale may be used if the 1:24,000 scale map is unavailable for your area.

For example: The state capitol building in Baton Rouge would be:
UTM zone No. 1 5 horizontal coordinate: 6 7 4.1 Km. E
vertical coordinate: 3 3 7 0.6 Km. N

Your facility: UTM zone No. 1 5 horizontal coordinate: 4 7 2.9 Km. E
vertical coordinate: 3 3 4 6.5 Km. N

ITEM 7 . . . COMPLIANCE STATUS

Check one of the blocks below, regarding your facility's "Compliance Schedule":

☐ Such a document has not been requested of us, so far as we know.

☐ Such a document was requested, or submitted, but we haven't yet received notification that it was accepted at a public hearing by the Commission.

☒ We were notified that the document was accepted at a public hearing; no schedule of actions to achieve compliance was necessary.

☐ We were notified that the document was accepted at a public hearing; our schedule of actions to achieve compliance by 12 (month), 1975 (year) was approved. The most recent "increment of progress" date in our schedule of actions was achieved on 2 (month) 0 1 (day) 7 5 (year). [YOU MUST FILL IN THE DATE BLANKS IF YOU HAVE CHECKED THIS PARAGRAPH.]

ITEM 8 . . . REFUSE COLLECTION AND DISPOSAL

A. Amount of combustible refuse disposed of per year: 4,140 Tons
(give the applicable units)

B. Description of refuse; check off applicable catagories:
- ☒ Paper scrap
- ☐ Rubber scrap
- ☒ Wood scraps & sawdust
- ☐ Wet garbage or animal wastes
- ☒ Other, specify: SPENT CATALYST AND RUBBISH

C. Method of refuse disposal; check off applicable catagories:
- ☐ City pickup
- ☐ On-site dump
- ☐ On-site incineration
- ☒ Contractor pickup
- ☐ On-site outdoor burning
- ☐ On-site landfill
- ☐ Other, specify: ______

D. If disposal is by contractor pickup, give the name and address of the contractor:
BROWNING-FERRIS INDUSTRIES OF LOUISIANA INC. SOLID WASTE DIVISION-CITY SERVICE HIGHWAY - MAPLEWOOD, LA 70663

E. The on-site incinerator, if any, has the following design features:
- ☐ No on-site incinerator
- ☐ Afterburners
- ☐ Water scrubber installed
- ☐ Single chamber
- ☐ Primary & secondary burners installed
- ☐ Waste material disposed of by burning in a boiler
- ☐ Multiple chamber

F. Incinerator equipment data (if applicable):
Manufacturer: ______ Model: ______
Capacity: ______ Installation date: ______
Auxiliary fuel used: (type, how used, rate of use) ______

ITEM 9 . . . SUPPLEMENTARY INFORMATION

A. *Please supply a unit plot plan or map which shows the locations of stacks (or other sources), together with the source identification numbers from Item 5, the plant boundaries, a distance scale, and the direction North. Please also show, on a separate diagram if necessary, the location of the plant in relation to nearest highways, residential areas, and towns. Attach the maps to the back of this form.*

B. Approximately how much money have you spent on air pollution control equipment and operation in the past 10 years? Equipment \$3,658,000 Operation \$ 3,473,000

ITEM 10 . . . TOXIC GASES & HAZARDOUS MATERIALS

A. Are there any substances used or produced in your facility which could cause immediate injury to life or property, if they were emitted to the atmosphere, which are not already listed in this form as one which is presently being emitted to the atmosphere? (e.g., chlorine for water treatment, toxic gases, gases used as catalysts, etc., which ordinarily do not escape) Please list such substances below. If none, please so state. NH_3

B. Does your facility use or produce asbestos, mercury (other than laboratory use), beryllium in any amount whatsoever? If answer is yes, give details below or on separate sheet. If answer is no, please write "no" below: NO

ITEM 11 . . . PERSONNEL & CERTIFICATION

A. The manager of the facility, on location at the plant site, is as follows:

Name:	James A. DeBernardi, Plant Manager - VCM Plant
Title:	Conoco Chemicals Company, A Division of
Name of Company:	Conoco Inc.
Business street address/ P. O. Box:	P. O. Box 605
City or town, parish, Zip code:	Westlake, LA 70669
Business area code/ telephone No.:	318/491-5064

B. Person to cantact at the site of the facility about air pollution control, if different from the above:

Name:	Gary L. Foshee
Title:	Chief Process Engineer
Business telephone No./ extension:	318/491-5062

C. If the company's air pollution control correspondence and documents are prepared at a headquarters office, at a different site, give the information on the person to be contacted below:

Name:	H. J. Neeld
Title:	Director of Environmental Control
Name of company; or parent company:	Conoco Chemicals Company
Business street address/ P. O. Box:	P. O. Box 727
City, state, Zip code:	Westlake, LA 70669
Business area code; telephone No.:	318/491-5436

D. Person who prepared this report: *(If one of the above, just check appropriate block:)*

☐ A. ☐ B. ☐ C.

Name:	Christopher W. Turner
Title:	Process Engineer
Firm: (if prepared by a consultant)	Conoco Chemicals Company
Company: (if prepared in-house)	P. O. Box 605
Street address/ P. O. Box:	Westlake, LA 70669
City, state, Zip code:	318/491-5211
Area code, telephone #, extension:	

E. CERTIFICATION. *I certify, under the provisions in Louisiana and United States law which provide criminal penalties for false statements, that this Emission Inventory Questionnaire, including all attachments thereto, contains information which is true and correct to the best of my knowledge and belief.*

(signature of manager, or other company agent)

J. A. DeBernardi, Plant Manager - VCM Plant

(printed or typed name & title of person above)

August 23, 1979

(date signed)

REMARKS

ITEM 1, I. BRIEF PROCESS DESCRIPTION

Gaseous chlorine (supplied by pipeline from PPG Industries) and gaseous ethylene (supplied across the fence by a CONOCO ethylene plant) is reacted to form crude 1, 2 dichloroethane (EDC). The crude EDC is purified by two stages of distillation to produce a relatively pure EDC.

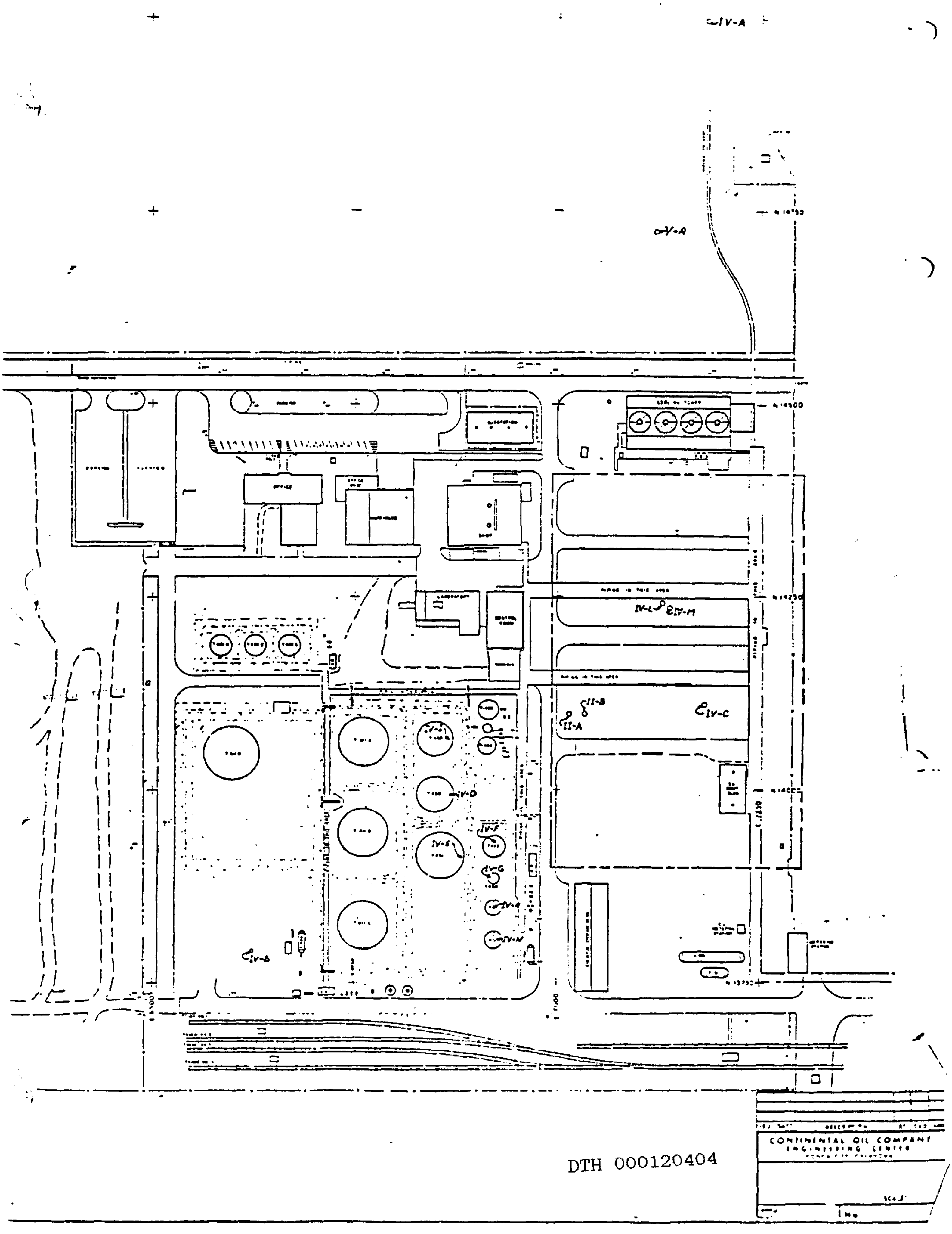
Pure EDC is thermally cracked in a gas-fired furnace at about 500°C and cracks into vinyl chloride (VCM) and anhydrous HCl. This mixture is purified by two stages of distillation to separate the heavy tars and the HCl from the VCM and unreacted EDC. The VCM is then redistilled to separate uncracked EDC (which is recycled back to the process) and the pure VCM is dried, neutralized and stored in pressure spheres at about 80 psig.

The HCl separated in the above process is reacted in a multi-stage catalytic reactor with oxygen and ethylene to form additional EDC. The vent from this reaction makes up the primary stream to C-500, the main plant vent stack. This extra EDC is recycled into the two stage EDC distillation process and blends with the EDC produced by the chlorine/ethylene reactor.

Storage is provided in the plant for several grades of EDC, VCM product and two liquid organic by-products. Essentially all of the VCM product is shipped out by ship or railcars. A small amount of EDC is also sold in ships or rail-cars. Design capacity of the plant is 600,000,000 lbs/yr of VCM.

CONFIDENTIALITY

The brief process description (described above) is considered to be a trade secret. Item 1-I relates to technology obtained under license and in confidence from Stauffer Chemical Company. This technology is incorporated in our commercial plant. It is our understanding that it is also licensed by Stauffer to other companies. We consider this technology to be quite valuable and proprietary to Continental and Stauffer and request that it be held in confidence.



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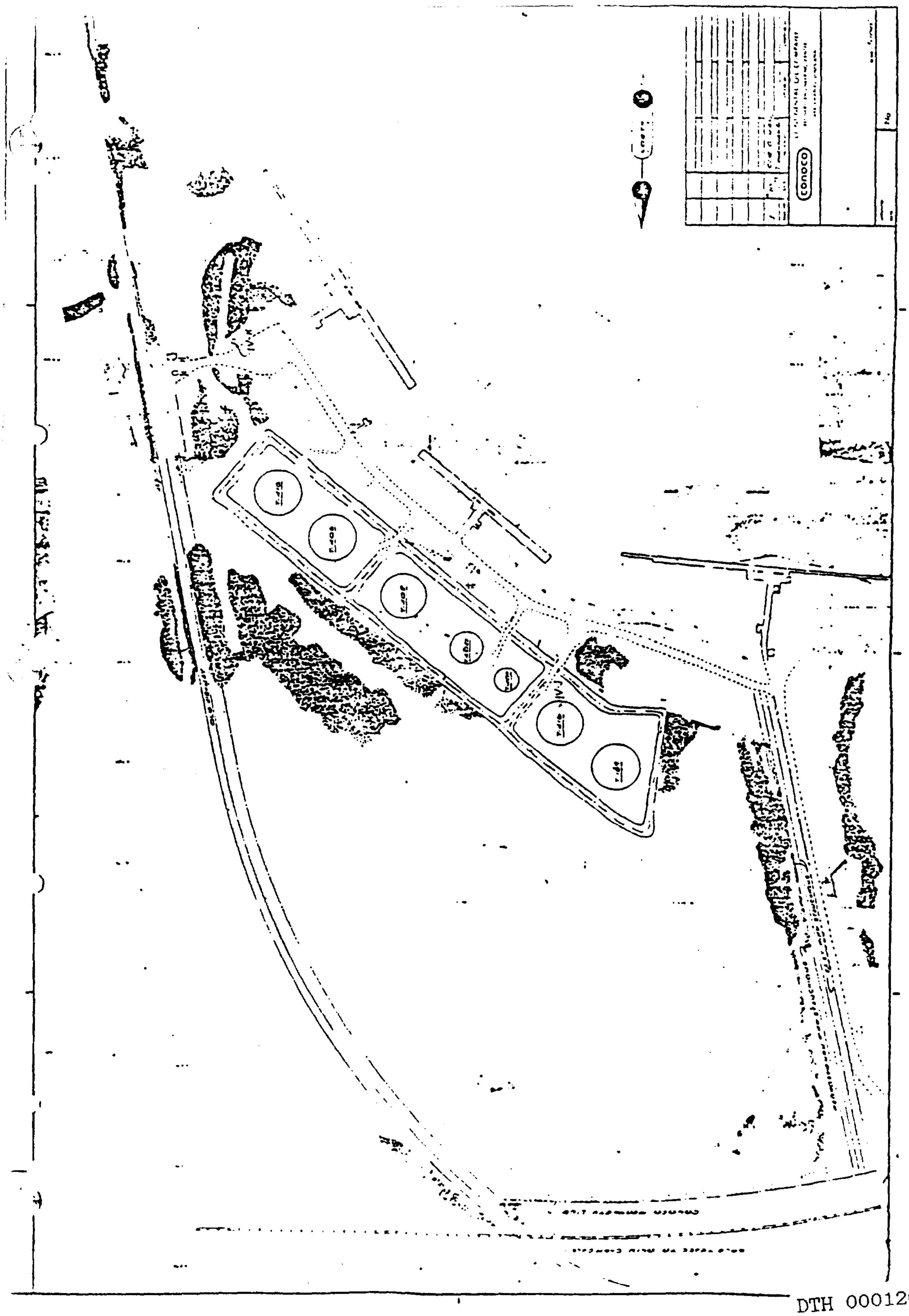

conoco

TABLE II

CONTAMINANT EMISSION DATA
- VCM PLANT

Stack	CONTAMINANT FLOW RATE (LBS/HR)							
	Part.	SO_2	NO_2	Hydrocarbons	CO	HCl	Cl_2	VCM
II-A	1.01	0.033	12.9	0.168	0.95	-	-	-
II-B	1.01	0.033	12.9	0.168	0.95	-	-	-
IV-a	-	-	-	1,205.0	464.0	63.8	7.79	14.57
IV-c	-	-	-	14.6	-	-	-	-
IV-j	-	-	-	11.9	-	0.31	-	-
IV-k	-	-	-	-	-	-	-	0.01
V-A	28.3	0.04	72.4	2.1	0.24	0.57	2.2	0.98

ATMOSPHERIC DISPERSION

ESTIMATE

TABLE III

RESULTS OF AIR QUALITY CALCULATIONS - PARTICULATES

Wind Speed (mph)	Stability Class	MAX. GLC (µg/cu m) 15 Min	24 Hr	LOCATION (FT)* Downwind	Cross-wind
0.56	A	191	69	1,100	-400
1.12	A	217	78	600	-400
1.68	A	224	81	400	-400
2.24	A	222	80	300	-400
2.80	A	215	77	200	-400
3.35	A	208	75	200	-400
3.91	A	198	71	100	-400
4.47	A	182	66	100	-400
5.03	A	182	66	100	-400
5.59	A	174	63	100	-400
6.15	A	165	59	100	-400
6.71	A	157	57	0	-400
1.12	D	124	45	5,600	-400
2.24	D	163	59	2,900	-400
4.47	D	161	58	1,800	-400
6.71	D	142	51	1,500	-400
8.94	D	124	45	1,300	-400
11.18	D	109	39	1,200	-400
13.41	D	97	35	1,200	-400
15.64	D	87	31	1,100	-400
17.87	D	79	28	1,100	-400
20.11	D	72	26	1,100	-400
22.35	D	67	24	1,000	-400
26.82	D	58	21	1,000	-400
33.52	D	48	17	1,000	-400
4.47	F	16	6	25,000	0
5.03	F	15	5	24,000	0
5.59	F	14	5	23,500	0
6.15	F	13	5	23,000	0
6.71	F	13	5	22,500	0
7.27	F	12	4	22,000	0
7.82	F	12	4	21,500	0
8.33	F	11	4	21,000	0
8.93	F	11	4	20,500	0
9.49	F	11	4	20,500	0
10.05	F	10	4	20,000	0
10.61	F	10	4	20,000	0
11.17	F	10	4	19,500	0

*Origin is propylene vent stack. (IV-C)

ATMOSPHERIC DISPERSION

ESTIMATE

TABLE IV

RESULTS OF AIR QUALITY CALCULATIONS - SULFUR DIOXIDE

Wind Speed (mph)	Stability Class	MAX. GLC (µg/cu m) 15 Min	24 Hr	LOCATION (FT)* Downwind	Cross-wind
0.56	A	0.27	0.097	1,100	-400
1.12	A	0.31	0.112	600	-400
1.68	A	0.32	0.115	400	-400
2.24	A	0.31	0.112	300	-400
2.80	A	0.30	0.108	200	-400
3.35	A	0.29	0.104	200	-400
3.91	A	0.28	0.101	100	-400
4.47	A	0.27	0.097	100	-400
5.03	A	0.26	0.094	100	-400
5.59	A	0.25	0.090	100	-400
6.15	A	0.23	0.083	100	-400
6.71	A	0.22	0.079	0	-400
1.12	D	0.18	0.065	5,600	-400
2.24	D	0.23	0.083	2,900	-400
4.47	D	0.23	0.083	1,800	-400
6.71	D	0.20	0.072	1,500	-400
8.94	D	0.18	0.065	1,300	-400
11.18	D	0.15	0.054	1,200	-400
13.41	D	0.14	0.050	1,200	-400
15.64	D	0.12	0.043	1,100	-400
17.87	D	0.11	0.040	1,100	-400
20.11	D	0.10	0.036	1,100	-400
22.35	D	0.09	0.032	1,000	-400
26.82	D	0.08	0.029	1,000	-400
33.52	D	0.07	0.025	1,000	-400
4.47	F	0.023	0.008	28,500	0
5.03	F	0.022	0.008	28,000	0
5.59	F	0.021	0.008	27,000	0
6.15	F	0.020	0.007	26,500	0
6.71	F	0.020	0.007	26,000	0
7.27	F	0.019	0.007	25,500	0
7.82	F	0.018	0.006	25,500	0
8.38	F	0.018	0.006	25,000	0
8.93	F	0.017	0.006	24,500	0
9.49	F	0.017	0.006	24,500	0
10.05	F	0.016	0.006	24,000	0
10.61	F	0.016	0.006	24,000	0
11.17	F	0.015	0.005	24,000	0

*Origin is propylene vent stack. (IV-C)

ATMOSPHERIC DISPERSION ESTIMATE

TABLE V

RESULTS OF AIR QUALITY CALCULATIONS - NO_2

Wind Speed (mph)	Stability Class	MAX. GLC (µg/cu m) 15 Min	24 Hr	LOCATION (FT)* Downwind	Cross-wind
0.56	A	488	176	1,100	-400
1.12	A	556	200	600	-400
1.68	A	574	207	400	-400
2.24	A	569	205	300	-400
2.80	A	551	198	200	-400
3.35	A	531	191	200	-400
3.91	A	506	182	100	-400
4.47	A	488	176	100	-400
5.03	A	467	168	100	-400
5.59	A	444	160	100	-400
6.15	A	422	152	100	-400
6.71	A	403	145	0	-400
1.12	D	317	114	5,600	-400
2.24	D	418	150	2,900	-400
4.47	D	412	148	1,800	-400
6.71	D	362	130	1,500	-400
8.94	D	316	114	1,300	-400
11.18	D	278	100	1,200	-400
13.41	D	247	89	1,200	-400
15.64	D	223	80	1,100	-400
17.87	D	202	73	1,100	-400
20.11	D	184	66	1,100	-400
22.35	D	170	61	1,000	-400
26.82	D	147	53	1,000	-400
33.52	D	122	44	1,000	-400
4.47	F	40	14	25,500	0
5.03	F	38	14	24,500	0
5.59	F	36	13	24,000	0
6.15	F	35	13	23,500	0
6.71	F	33	12	23,000	0
7.27	F	32	12	22,500	0
7.82	F	31	11	22,000	0
8.38	F	29	10	21,500	0
8.93	F	28	10	21,500	0
9.49	F	28	10	21,000	0
10.05	F	27	10	21,000	0
10.61	F	26	9	20,500	0
11.17	F	25	9	20,500	0

*Origin is propylene vent stack. (IV-C)

ATMOSPHERIC DISPERSION

ESTIMATE

TABLE VI

RESULTS OF AIR QUALITY CALCULATIONS - HYDROCARBONS

Wind Speed (mph)	Stability Class	MAX. GLC (µg/cu m) 15 Min	MAX. GLC (µg/cu m) 24 Hr	LOCATION (FT)* Downwind	LOCATION (FT)* Cross-wind
0.56	A	11,688	4,208	700	-600
1.12	A	9,576	3,447	500	-600
1.68	A	7,884	2,838	400	-600
2.24	A	6,704	2,413	300	-600
2.80	A	5,764	2,075	300	-600
3.35	A	5,079	1,828	200	-600
3.91	A	4,542	1,635	200	-600
4.47	A	4,100	1,476	200	-600
5.03	A	3,733	1,344	200	-600
5.59	A	3,423	1,232	200	-600
6.15	A	3,160	1,138	200	-600
6.71	A	2,933	1,056	200	-600
1.12	D	5,604	2,017	5,200	-600
2.24	D	4,431	1,595	3,800	-600
4.47	D	2,896	1,043	3,200	-600
6.71	D	2,124	765	2,900	-600
8.94	D	1,675	603	2,800	-600
11.18	D	1,381	497	2,800	-600
13.41	D	1,174	423	2,700	-600
15.64	D	1,021	368	2,700	-600
17.87	D	904	325	2,700	-600
20.11	D	810	292	2,700	-600
22.35	D	734	264	2,700	-600
26.82	D	618	222	2,600	-600
33.52	D	500	180	2,600	-600
4.47	F	466	168	31,000	-1,000
5.03	F	432	156	30,500	-1,000
5.59	F	404	145	29,500	-1,000
6.15	F	379	136	29,000	-1,000
6.71	F	358	129	29,000	-1,000
7.27	F	339	122	28,500	-1,000
7.82	F	322	116	28,000	-1,000
8.38	F	307	111	27,500	-1,000
8.93	F	294	106	27,500	-1,000
9.49	F	282	102	27,000	-1,000
10.05	F	270	97	27,000	-1,000
10.61	F	260	94	26,500	-1,000
11.17	F	251	90	26,500	-1,000

*Origin is propylene vent stack. (IV-C)

ATMOSPHERIC DISPERSION

ESTIMATE

TABLE VII

RESULTS OF AIR QUALITY CALCULATIONS - CO

Wind Speed (mph)	Stability Class	MAX. GLC (µg/cu m) 15 Min	MAX. GLC (µg/cu m) 24 Hr	LOCATION (FT)* Downwind	LOCATION (FT)* Cross-wind
0.56	A	4,501	1,620	700	-600
1.12	A	3,688	1,328	500	-600
1.68	A	3,037	1,093	400	-600
2.24	A	2,583	930	300	-600
2.80	A	2,220	799	300	-600
3.35	A	1,956	704	200	-600
3.91	A	1,750	630	200	-600
4.47	A	1,580	569	200	-600
5.03	A	1,438	518	200	-600
5.59	A	1,319	475	200	-600
6.15	A	1,217	438	200	-600
6.71	A	1,130	407	200	-600
1.12	D	2,146	773	5,200	-600
2.24	D	1,705	614	3,800	-600
4.47	D	1,116	402	3,200	-600
6.71	D	818	294	2,900	-600
8.94	D	645	232	2,800	-600
11.18	D	532	192	2,800	-600
13.41	D	453	162	2,700	-600
15.64	D	394	142	2,700	-600
17.87	D	348	125	2,700	-600
20.11	D	312	112	2,700	-600
22.35	D	283	102	2,700	-600
26.82	D	238	86	2,600	-600
33.52	D	193	69	2,600	-600
4.47	F	169	61	31,500	-1,000
5.03	F	157	57	30,500	-1,000
5.59	F	147	53	30,000	-1,000
6.15	F	138	50	29,500	-1,000
6.71	F	131	47	29,000	-1,000
7.27	F	124	45	28,500	-1,000
7.82	F	118	42	28,000	-1,000
8.38	F	113	41	27,500	-1,000
8.93	F	108	39	27,500	-1,000
9.49	F	103	37	27,000	-1,000
10.05	F	99	36	26,500	-1,000
10.61	F	96	35	26,500	-1,000
11.17	F	92	33	26,000	-1,000

*Origin is propylene vent stack. (IV-C)

DTH 000120411

ATMOSPHERIC DISPERSION ESTIMATE

TABLE VIII

RESULTS OF AIR QUALITY CALCULATIONS - HCl

Wind Speed (mph)	Stability Class	MAX. GLC (µg/cu m) 15 Min	MAX. GLC (µg/cu m) 24 Hr	LOCATION (FT)* Downwind	LOCATION (FT)* Cross-wind
0.56	A	621	224	700	-600
1.12	A	510	184	500	-600
1.68	A	420	151	400	-600
2.24	A	357	129	300	-600
2.80	A	308	111	200	-600
3.35	A	271	98	200	-600
3.91	A	242	87	200	-600
4.47	A	219	79	200	-600
5.03	A	199	72	200	-600
5.59	A	183	66	200	-600
6.15	A	169	61	200	-600
6.71	A	157	57	200	-600
1.12	D	297	107	5,200	-600
2.24	D	237	85	3,800	-600
4.47	D	155	59	3,100	-600
6.71	D	114	41	2,900	-600
8.94	D	90	32	2,800	-600
11.18	D	74	27	2,800	-600
13.41	D	63	23	2,700	-600
15.64	D	55	20	2,700	-600
17.87	D	48	17	2,700	-600
20.11	D	43	15	2,700	-600
22.35	D	39	14	2,700	-600
26.82	D	33	12	2,600	-600
33.52	D	27	10	2,600	-600
4.47	F	24	9	31,000	-1,000
5.03	F	22	8	30,500	-1,000
5.59	F	21	8	30,000	-1,000
6.15	F	20	7	29,000	-1,000
6.71	F	19	7	28,500	-1,000
7.27	F	18	6	28,500	-1,000
7.82	F	17	6	28,000	-1,000
8.38	F	16	6	27,500	-1,000
8.93	F	15	5	27,500	-1,000
9.49	F	15	5	27,000	-1,000
10.05	F	14	5	26,500	-1,000
10.61	F	14	5	26,500	-1,000
11.17	F	13	5	26,500	-1,000

*Origin is propylene vent stack. (IV-C)

ATMOSPHERIC DISPERSION ESTIMATE

TABLE IX

RESULTS OF AIR QUALITY CALCULATIONS - Cl_2

Wind Speed (mph)	Stability Class	MAX. GLC (µg/cu m) 15 Min	MAX. GLC (µg/cu m) 24 Hr	LOCATION (FT)* Downwind	LOCATION (FT)* Cross-wind
0.56	A	84	30	800	-600
1.12	A	73	26	500	-600
1.68	A	62	22	400	-600
2.24	A	53	19	300	-600
2.80	A	46	17	300	-600
3.35	A	41	15	300	-600
3.91	A	37	13	300	-600
4.47	A	33	12	200	-600
5.03	A	30	11	200	-600
5.59	A	28	10	200	-600
6.15	A	26	9	200	-600
6.71	A	24	9	200	-600
1.12	D	44	16	5,400	-600
[illegible].24	D	38	14	3,800	-600
4.47	D	26	9	3,100	-600
6.71	D	19	7	2,900	-600
8.94	D	15	5	2,800	-600
11.18	D	13	5	2,700	-600
13.41	D	11	4	2,700	-600
15.64	D	9	3	2,600	-600
17.87	D	8	3	2,600	-600
20.11	D	7	3	2,600	-600
22.35	D	7	3	2,600	-600
26.82	D	6	2	2,600	-600
33.52	D	5	2	2,500	-600
4.47	F	4	1	31,500	-1,000
5.03	F	4	1	30,500	-1,000
5.59	F	3	1	30,000	-1,000
6.15	F	3	1	29,000	-1,000
6.71	F	3	1	28,500	-1,000
7.27	F	3	1	28,000	-1,000
8.38	F	3	1	27,500	-1,000
8.93	F	2	1	27,000	-1,000
9.49	F	2	1	27,000	-1,000
10.05	F	2	1	26,500	-1,000
10.61	F	2	1	26,500	-1,000
11.17	F	2	1	26,000	-1,000

*Origin is propylene vent stack. (IV-C)

TABLE X

RESULTS OF AIR QUALITY CALCULATIONS - VCM

Wind Speed (mph)	Stability Class	MAX. GLC (µg/cu m) 15 Min	MAX. GLC (µg/cu m) 24 Hr	LOCATION (FT)* Downwind	LOCATION (FT)* Cross-wind
0.56	A	125.6	45.2	800	-800
1.12	A	96.4	34.7	600	-800
1.68	A	76.8	27.6	400	-800
2.24	A	63.7	22.9	400	-800
2.80	A	53.9	19.4	400	-800
3.35	A	46.7	16.8	400	-800
3.91	A	41.0	14.8	400	-800
4.47	A	36.6	13.2	400	-800
5.03	A	33.0	11.9	400	-800
5.59	A	30.0	10.8	400	-800
6.15	A	27.5	9.9	400	-800
6.71	A	25.4	9.1	200	-800
1.12	D	64.0	23.0	5,800	-800
2.24	D	48.3	17.4	4,400	-800
4.47	D	30.3	10.9	3,800	-800
6.71	D	21.8	7.8	3,600	-800
8.94	D	17.0	6.1	3,600	-800
11.18	D	13.9	5.0	3,400	-800
13.41	D	11.8	4.2	3,400	-800
15.64	D	10.2	3.7	3,400	-800
17.87	D	9.0	3.2	3,400	-800
20.11	D	8.1	2.9	3,400	-800
22.35	D	7.3	2.6	3,400	-800
26.82	D	6.1	2.2	3,400	-800
33.52	D	4.9	1.8	3,400	-800
4.47	F	8.2	3.0	23,500	-800
5.03	F	7.6	2.7	23,000	-800
5.59	F	7.1	2.6	22,500	-800
6.15	F	6.6	2.4	22,000	-800
6.71	F	6.3	2.3	21,500	-800
7.27	F	5.9	2.1	21,500	-800
7.82	F	5.6	2.0	21,000	-800
8.38	F	5.4	1.9	20,500	-800
8.93	F	5.1	1.8	20,500	-800
9.49	F	4.9	1.8	20,000	-800
10.05	F	4.7	1.7	20,000	-800
10.61	F	4.5	1.6	20,000	-800
11.17	F	4.4	1.6	19,500	-800

*Origin is propylene vent stack.

DTH 000120414

TABLE XI

RESULTS OF ANNUAL AVERAGE CALCULATIONS

BASIS:

Ambient Temperature	= 82°F
Atmospheric Pressure	= 14.7 psia
Mixing Depth	= 1,162 meters
Stack Height Correlation	= Briggs
Program	= "AQDM"

Contaminant	Max. Conc. (μg/cu m)	LOCATION (FT)* X	Y
Sulfur Dioxide	0.06	0	4,000
Chlorine	0.74	-2,000	0
VCM	0.87	-1,000	0
Carbon Monoxide	28.7	-2,000	0
Nitric Oxide	9.4	-1,000	-400
Hydrocarbons	76.3	-2,000	0
Particulates	3.6	-1,000	-400
Hydrogen Chloride	4.0	-2,000	0

*Origin is propylene vent stack (IV-c).

DTH 000120415

SECTION III

WASTE WATER REGULATIONS

AND GUIDELINES

DTH 000120416

SECTION III

NPDES PERMIT

Permit No. LA0003476
Application No. LA0003476

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

CONOCO Chemical Co.
Division of Continental Oil Company
P. O. Box 605
Westlake, Louisiana 70669

is authorized to discharge from a facility located at

Calcasieu Parish, Westlake, Louisiana

to receiving waters named

Bayou Verdine thence to the Calcasieu River

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on August 26, 1979

This permit and the authorization to discharge shall expire at midnight, March 31, 1981

Signed this 23rd day of May 1979

Diana Dutton
Director
Enforcement Division (6AE)

DTH 000120418

EPA Form 3320-4 (10-73)

A-1 **EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

During the period beginning effective date and lasting through the expiration date the permittee is authorized to discharge from outfall(s) serial number(s) 101 (acid neutralization pit effluent).

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Other Units (Specify)		Monitoring Requirements	
	Daily Avg	Daily Max	Daily Avg	Daily Max	Measurement Frequency	Sample Type
Flow—m^3/Day (MGD)	N/A	N/A	N/A	N/A	Continuous	Recorded
TSS	N/A	N/A	50 mg/l	75 mg/l	two/week	24-hr Composite

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored N/A

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At the acid neutralization pit weir box prior to mixing with other waste streams.

A-2 EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning effective date and lasting through the date of expiration the permittee is authorized to discharge from outfall(s) serial number(s) 201 (waste treatment system).

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Other Units (Specify)		Monitoring Requirements	
	Daily Avg	Daily Max	Daily Avg	Daily Max	Measurement Frequency	Sample Type
Flow—m^3/Day (MGD)	N/A	N/A	N/A	N/A	Continuously	Recorded
BOD	272(600)	612(1350)	N/A	N/A	1/week	24-hr Composite
COD	1895(4177)	4263(9398)	N/A	N/A	2/week	24-hr Composite
TSS	253(558)	570(1256)	N/A	N/A	1/week	24-hr Composite
Ammonia (as Nitrogen)	14(30)	31(68)	N/A	N/A	1/week	24-hr Composite
Chlorinated Hydrocarbons (as ethylene dichloride)	680(1500)	1531(3375)	N/A	N/A	1/week	24-hr Composite

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored N/A

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At the waste treatment system weir box where the effluent leaves the reareation basin and prior to mixing with other wastes.

A- 3 EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning effective date and lasting through the expiration date the permittee is authorized to discharge from outfall(s) serial number(s) 001 (combined waste streams).

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations kg/day (lbs/day)		Discharge Limitations Other Units (Specify)		Monitoring Requirements	
	Daily Avg	Daily Max	Daily Avg	Daily Max	Measurement Frequency	Sample Type
Flow—m^3/Day (MGD)	N/A	N/A	N/A	N/A	N/A	N/A
Temperature	N/A	N/A	N/A	N/A	Continuously	Recorded

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored continuoulsy and recorded.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at the weir collecting the wastewater treatment plant and acid neutralization effluents.

B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

   None

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

C. MONITORING AND REPORTING

1. *Representative Sampling*

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. *Reporting*

Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on October 28, 1979 . Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Regional Administrator and the State at the following addresses:

Diana Dutton, Director
Enforcement Division (6AE)
Environmental Protection Agency
First International Building
1201 Elm Street
Dallas, exas 75270

Robert A. Lafleur, Exec Secretary
Louisiana Stream Control Commission
Drawer FC, University Station
Baton Rouge, Louisiana 70803

3. *Definitions*

   a. The "daily average" discharge means the total discharge by weight during a calendar month divided by the number of days in the month that the production or commercial facility was operating. Where less than daily sampling is required by this permit, the daily average discharge shall be determined by the summation of all the measured daily discharges by weight divided by the number of days during the calendar month when the measurements were made.

   b. The "daily maximum" discharge means the total discharge by weight during any calendar day.

4. *Test Procedures*

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(g) of the Act, under which such procedures may be required.

5. *Recording of Results*

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

   a. The exact place, date, and time of sampling;

   b. The dates the analyses were performed;

   c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analyses.

6. *Additional Monitoring by Permittee*

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form (EPA No. 3320-1). Such increased frequency shall also be indicated.

7. *Records Retention*

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State water pollution control agency.

A. MANAGEMENT REQUIREMENTS

1. *Change in Discharge*

   All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. *Noncompliance Notification*

   If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

   a. A description of the discharge and cause of noncompliance; and

   b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. *Facilities Operation*

   The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

4. *Adverse Impact*

   The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. *Bypassing*

   Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass.

6. *Removed Substances*

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. *Power Failures*

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;

or, if such alternative power source is not in existence, and no date for its implementation appears in Part I,

b. Halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

B. RESPONSIBILITIES

1. *Right of Entry*

The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and /or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. *Transfer of Ownership or Control*

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

3. *Availability of Reports*

Except for data determined to be confidential under Section 30S of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. *Permit Modification*

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. *Toxic Pollutants*

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. *Civil and Criminal Liability*

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. *Oil and Hazardous Substance Liability*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. *State Laws*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. *Property Rights*

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. *Severability*

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

PART III

OTHER REQUIREMENTS

A. Monitoring Requirements

In the event that either the Daily Average or the Daily Maximum Limitations are exceeded for any limited effluent characteristic, daily monitoring of that characteristic shall be made until fifteen (15) consecutive samples are obtained with an average equal to or less than the Daily average Limitaitons and no individual results greater than the Daily Maximum Limitation.

B. This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C), and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

a. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

b. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

C. Any bypass of wastewater through the Flood Control Box shall be analyzed for the effluent characteristics listed in Part I.A.2., using grab samples at one (1) hour intervals during the period of bypass. Flow will be monitored continuously and recorded.

SECTION III

LAKE CHARLES CONOCO VCM PLANT

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

APRIL 1981

GENERAL INFORMATION
SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN
CONOCO VCM PLANT

A. PREVIOUS SPILL EVENTS

This facility did not experience a spill event (as defined by Section 112.2 (i) of Federal Register, Volume 38, Number 237, December, 1973) within the twelve months prior to January 10, 1974, nor during the time period from January 10, 1974, to the date of issuance of this plan.

B. POTENTIAL EQUIPMENT FAILURE

Past experience of this facility indicates that there is no reasonable potential for equipment failure which would result in a discharge to navigable waters.

C. SPILL PREVENTION SYSTEM USED FOR ONSHORE FACILITY

1. DIKES, BERMS, AND RETAINING WALLS

All bulk storage tanks that are diked have the dike drainage diverted to inplant sewers that discharge to the waste water treatment facilities. Dike drains serving T-411D, T-401A, T-401B, and T-401C are kept closed.

All bulk oil storage vessels in the facility with the exception of T-76 and T-76A are located within an impervious earth dike or concrete retaining wall. T-76 and T-76A contain a Calgon Polymer (WT-1255) used at the secondary waste water treatment system. Curbing in the area of these two tanks will divert any potential spills to a large holding pond. Waste water contained in the holding pond is recycled to the Activated Sludge Unit (ASU). The ASU provides secondary bio-treatment for water received before being discharged from the facility. Should any oil be discharged to the ASU, the physical layout and retention times are such that the oil would not reach public waters. The ASU and associated equalization basins are not subject to flooding.

There are several pieces of equipment used in the process which contain large quantities of oil. The propylene refrigeration unit (BL-501) contains approximately 620 gallons of oil and air compressor BL-301 contains 466 gallons. The probability of a spill from either of these units is remote, however a spill would collect in the inplant sewer and gravity drain to the secondary waste treatment system. The bulk of the spilt oil would be collected by vacuum truck and the remainder would be degraded in the ASU.

This facility uses portable storage tanks occasionally to contain fuel for temporary equipment. Any oil spilled from a portable storage vessel which is located within the facility will either be discharged to an API separator, the Holding Pond, or a collection sump where the oil will be recovered, or will be contained and cleaned up in a manner that will prevent a discharge into navigable waters.

T-902, in the incineration area, is diked. The entire incinerator area drains to the waste treatment facilities.

The plant operates a dock, to load products, on the Calcasieu River. At the dock facilities there is only one large storage vessel T-415 which is included in the Refinery's SPCC Plan. This tank contains ethylene dichloride and has a capacity of 52,660 BBLS. Any spilled liquid would be contained in the diked area surrounding the tank and then removed by vacuum truck.

2. CURBING

Curbing is used throughout the processing area for containing potential spills. These curbed areas are drained to the facility sewer system.

ELECTRICAL TRANSFORMERS

Electrical transformers located in areas of the plant that could result in oil reaching public waters due to a spill are drained to the waste treatment system via inplant sewer lines. The following is a list of electrical transformers in the plant:

TRANSFORMER I. D. NO.	RATING KVA	OIL CAPACITY GALLONS	LOCATION
Substation A	1000	350	Transformer Bldg.
Substation B	1000	350	Transformer Bldg.
Substation C	1000	350	Transformer Bldg.
Substation D	1000	350	Transformer Bldg.
Large Transformer	7500	1300	Transformer Bldg.
Secondary System	50	180	Wast Treatment Facilities

NOTE: PCB's are not used in any of the electrical transformers located on plant property.

3. CULVERTING, GUTTERS, AND DRAINAGE SYSTEMS

The processing area of the plant has been engineered to drain toward the process sewer system. Any potential spill would collect in the sewer system and gravity flow to the secondary waste water treatment system. The waste water treatment system consists of two equalization basins and an ASU basin. The equalization basins have the capability of impounding up to one million gallons.

The rail car loading facility has a collection system for leaks and spills. Any spilt material and rain water run-off in the rail loading vicinity will gravity flow to the waste treatment system.

(Prior to completing Part I, refer to regulations and instructions page 5.)

SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN

PART I
GENERAL INFORMATION

1. Name of facility CONOCO VCM PLANT

2. Type of facility CHEMICAL MANUFACTURING PLANT

3. Location of facility One and half miles west of Westlake, LA on VCM Plant Road, Calcasieu Parish, LA. Property bounded approximately by latitude w. 93^{o} 17' 15" to W 93^{o} 17' longitude N. 30^{o} 14' 55" to N. 30^{o} 15' 15" on Westlake Quadrangle U. S. Geological Survey Map.

4. Name and address of owner or operator:

   Name CONOCO CHEMICALS COMPANY, A DIVISION OF CONOCO INC.

   Address LAKE CHARLES VCM PLANT
   P. O. BOX 605
   WESTLAKE, LOUISIANA 70669

5. Designated person accountable for oil spill prevention at facility:

   Name and title J. A. DeBernardi, Plant Manager - Conoco VCM Plant

6. Facility experienced a reportable oil spill event during the twelve months prior to Jan. 10, 1974 (effective date of 40 CFR, Part 112). (If YES, complete Attachment #1.) No

MANAGEMENT APPROVAL

This SPCC Plan will be implemented as herein described.

Signature [signature]

Name J. A. DeBernardi, Plant Manager - Conoco VCM Plant

Title Manager, Lake Charles VCM, CONOCO Chemicals

CERTIFICATION

I hereby certify that I have examined the facility, and being familiar with the provisions of 40 CFR, Part 112, attest that this SPCC Plan has been prepared in accordance with good engineering practices.

James L. Robertson
Printed Name of Registered Professional Engineer

(Seal)

James L. Robertson
Signature of Registered Professional Engineer

Date 9/10/80

Registration No. 62-32580 State Illinois

DTH 000120432

7. Potential Spills — Prediction & Control:

Source	Major Type of Failure	Total Quantity Gallons	Rate Gallons/hr.	Direction of Flow*	Secondary Containment
BL-501*	Structural Failure	620	620	into inplant sewer	Contained in waste treatment faciliti
BL-301*	Structural Failure	466	466	into inplant sewer	Contained in waste treatment faciliti
Eight individual* barrels of oil	Rupture of barrel	336	42	small quantity will cover immediate area only	
T-76+	Rupture of Tank	1500	1500	Gravity flow into holding pond	
T-76A+	Rupture of Tank	100	100	Gravity flow into holding pond	

* These are the only large sources of oil in the plant. The following page lists other sources of potential spills.

\+ Contains a polymer used at secondary treatment facilities.

Discussion:

*Attach map if appropriate.

Name of facility CONOCO VCM PLANT

Operator CONTINENTAL OIL COMPANY

DTH 000120433

7. POTENTIAL SPILLS - PREDICTION & CONTROL CONT.

The following tanks are located in diked areas:

SOURCE	CONTENTS	TOTAL QUANTITY, gal.
T-401 A	Vinyl Chloride	84,000
T-401 B	Vinyl Chloride	84,000
T-401 C	Vinyl Chloride	84,000
T-411 A	Vinyl Chloride	840,000
T-411 B	Vinyl Chloride	840,000
T-411 C	Vinyl Chloride	840,000
T-411 D	Vinyl Chloride	1,287,000
T-402	Light ends storage	60,000
T-405	Tars storage	60,000
T-421	50% NaOH	20,000
T-422	3.5% NaOH	75,000
T-450	Ethylene Dichloride	500,000
T-451	Ethylene Dichloride	780,000
T-452	Ethylene Dichloride	115,000
T-453	Ethylene Dichloride	420,000
T-460	SLOPS	30,000
T-78*	Aqua Ammonia	3,000
T-78 A*	Aqua Ammonia	200
T-77*	Phosphoric Acid	1,500
T-77 A*	Phosphoric Acid	100
T-902	Light ends storage	15,228
T-960 A	Dilute Acid	51,700
T-960 B	Dilute Acid	51,700
T-962 A	Muriatic Acid	51,700
T-962 B	Muriatic Acid	51,700

*These tanks are not located in diked area, however, drainage is routed so that any spill is diverted to a one million gallon diversion basin.

PART I
GENERAL INFORMATION

[*Response to statements should be: YES, NO, or NA (Not Applicable).*]

8. Containment or diversionary structures or equipment to prevent oil from reaching navigable waters are practicable. (If NO, complete Attachment #2.) Yes

9. Inspections and Records
   A. The required inspections follow written procedures. Yes
   B. The written procedures and a record of inspections, signed by the appropriate supervisor or inspector, are attached. Yes
   Discussion: Written procedures for the inspections required by this SPCC Plan have been developed by the supervisor of the company's Inspection Department. These written procedures and a record of the inspections, signed by the appropriate supervisor or inspector, will be made part of this SPCC Plan and will be maintained for a period of three years. Records of facility inspections will be kept in the inspection records required by RCRA. Appendix I lists facility inspection procedures.

10. Personnel, Training, and Spill Prevention Procedures
   A. Personnel are properly instructed in the following:
      (1) operation and maintenance of equipment to prevent oil discharges, and Yes
      (2) applicable pollution control laws, rules, and regulations. Yes
   Describe procedures employed for instruction: Operating personnel receive informal training in this area as a part of their on-the-job training.

   B. Scheduled prevention briefings for the operating personnel are conducted frequently enough to assure adequate understanding of the SPCC Plan. Yes
   Describe briefing program: The VCM Plant has a pollution control manual which contains guidelines for reporting spills and general inplant pollution control procedures. This manual is updated at least once per year.

Name of facility: CONOCO VCM PLANT

Operator: CONTINENTAL OIL COMPANY

DTH 000120435

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

A. Facility Drainage

1. Drainage from diked storage areas is controlled as follows (include operating description of valves, pumps, ejectors, etc. (Note: Flapper-type valves should not be used):
Drainage from diked storage areas is restrained by valves to prevent spills or excessive leakages of oil into the drainage system or inplant effluent treatment system. Diked areas are emptied by gravity flow. All diked areas are discharged to sewers that discharge to the waste treatment system. The accumulation in the four above mentioned diked areas are examined before discharging to assure no oil is present.

2. Drainage from undiked areas is controlled as follows (include description of ponds, lagoons, or catchment basins and methods of retaining and returning oil to facility):
Plant drainage systems are designed such that all processing areas drain inwardly to sewer systems that discharge to the wastewater treatment facilities. All waste water drainage is gravity flow wherever possible. Where it is necessary for pump transfer, two pumps are provided. All four of the above mentioned tanks contain vinyl chloride monomer which is a highly volatile hydrocarbon which would vaporize if rupture occured.

3. The procedure for supervising the drainage of rain water from secondary containment into a storm drain or an open watercourse is as follows (include description of (a) inspection for pollutants, and (b) method of valving security). (A record of inspection and drainage events is to be maintained on a form similar to Attachment #3):

a) Visual inspection is made of all contained water prior to drainage.

b) The tank dike drain is kept closed when not being used.

All drain valves are opened and closed under responsible supervision.

Name of facility CONOCO VCM PLANT

Operator CONTINENTAL OIL COMPANY

DTH 000120436

PART II. ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or NA (Not Applicable).]

B. Bulk Storage Tanks

1. Describe tank design, materials of construction, fail-safe engineering features, and if needed, corrosion protection: The material and construction of all storage in this facility are compatible with the material stored and the conditions of storage; e.g., temperature, pressure, etc. See next page.

2. Describe secondary containment design, construction materials, and volume: All of the bulk oil storage tanks and product spheres in the facility, with the exception of those listed in the general information section, are provided with a secondary means of containment large enough to accommodate the largest single tank plus sufficient freeboard to allow for precipitation. These are all in the form of dikes and curbs which are impervious to spilled oil.

3. Describe tank inspection methods, procedures, and record keeping:

   Refer to Appendix I

4. Internal heating coil leakage is controlled by one or more of the following control factors:
   (a) Monitoring the steam return or exhaust lines for oil. ______
   Describe monitoring procedure: The steam condensate from internal heating coils in T-421 and T-422 discharge within the tank dikes and drain to the sewer system that is sent to the waste treatment facilities. The feasibility of installing external heating systems was considered prior to construction of each tank.
   (b) Passing the steam return or exhaust lines through a settling tank, skimmer, or other separation system. No
   (c) Installing external heating systems. No

5. Disposal facilities for plant effluents discharged into navigable waters are observed frequently for indication of possible upsets which may cause an oil spill event. Yes
   Describe method and frequency of observations: Effluents discharged from this facility into navigable waters are monitored in accordance with NPDES Permit LA0003476. The disposal facilities are observed frequently enough to detect possible system upsets that could cause oil spill event. The waste treatment facility is observed at least 3 times on a daily basis. All visible oil leaks which result in a loss of oil from tank seams, gaskets, rivets, and bolts sufficiently large to cause the accumulation of oil in diked areas are promptly corrected.

Name of facility CONOCO VCM PLANT

Operator CONTINENTAL OIL COMPANY

DTH 000120437

B. BULK STORAGE TANKS

1. Fail-safe engineered tank installations (high liquid level alarms - audible and visual signal in Control Room) have been installed on the following storage tanks:

T-401 A	Vinyl Chloride
T-401 B	Vinyl Chloride
T-401 C	Vinyl Chloride
T-411 A	Vinyl Chloride
T-411 B	Vinyl Chloride
T-411 C	Vinyl Chloride
T-411 D	Vinyl Chloride
T-402	Light ends
T-405	Tars storage
T-421	50% NaOH
T-422	3.5% NaOH
T-460	SLOPS
T-450	Dry EDC
T-451	EDC
T-452	Wet EDC
T-453	Wet EDC

2. Direct vision gauges or their equivalent are used for fast response determination of all bulk storage tank liquid levels.

3. Liquid level indicating devices are regularly checked to insure proper operation.

[Response to statements should be: YES, NO, or NA (Not Applicable).]

C. Facility Transfer Operations, Pumping, and In-plant Process

1. Corrosion protection for buried pipelines:
   (a) Pipelines are wrapped and coated to reduce corrosion. Yes
   (b) Cathodic protection is provided for pipelines if determined necessary by electrolytic testing. Yes
   (c) When a pipeline section is exposed, it is examined and corrective action taken as necessary. Yes

2. Pipeline terminal connections are capped or blank-flanged and marked if the pipeline is not in service or on standby service for extended periods. Yes

   Describe criteria for determining when to cap or blank-flange: If a pipeline is taken out of service for an extended period of time or for repairs, the terminal connection at the transfer point is capped or blind-flanged.

3. Pipe supports are designed to minimize abrasion and corrosion and allow for expansion and contraction. Yes

   Describe pipe support design: All pipe supports for the facility are designed according to company standards to allow for expansion and contraction to minimize abrasion.

4. Describe procedures for regularly examining all above-ground valves and pipelines (including flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces): All above ground pipelines and valves are subject to regular examination by the company's inspection department, at which time, the general condition of the installation is assessed and the average thickness of the pipes is determined. These piping installations are also subject to constant examination by operating personnel.

5. Describe procedures for warning vehicles entering the facility to avoid damaging above-ground piping: Vehicular traffic of any type is prohibited from entering any area of the facility where piping and equipment would be susceptible to damage. For vehicle entry, the consent of the operator in charge of the area must be obtained. These areas are clearly marked by signs and/or barriers.

Name of facility CONOCO VCM PLANT

Operator CONTINENTAL OIL COMPANY

DTH 000120439

PART II, ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or NA (Not Applicable).]

D. Facility Tank Car & Tank Truck Loading/Unloading Rack

Tank car and tank truck loading/unloading occurs at the facility. (If YES, complete 1 through 5 below.) Yes

1. Loading/unloading procedures meet the minimum requirements and regulations of the Department of Transportation. Yes

2. The unloading area has a quick drainage system. Yes

3. The containment system will hold the maximum capacity of any single compartment of a tank truck loaded/unloaded in the plant. Yes

   Describe containment system design, construction materials, and volume: The loading rack area drainage for the facility, except for a portion of the tracks used for siding, flow into the sewer system which discharge into waste treatment facilities.
   The waste treatment facility has capacity to collect up to one million gallons.

4. An interlocked warning light, a physical barrier system, or warning signs are provided in loading/unloading areas to prevent vehicular departure before disconnect of transfer lines. Yes

   Describe methods, procedures, and/or equipment used to prevent premature vehicular departure: Warning signs are provided in loading/unloading areas to prevent vehicle departure before complete disconnection of transfer lines. These signs are positioned by the rack operator. There is also a standard operating procedure to place wheel chocks around each vehicle.

5. Drains and outlets on tank trucks and tank cars are checked for leakage before loading/unloading or departure. Yes

Name of facility: CONOCO VCM

Operator: Continental Oil Company

DTH 000120440

PART II. ALTERNATE A
DESIGN AND OPERATING INFORMATION
ONSHORE FACILITY (EXCLUDING PRODUCTION)

[Response to statements should be: YES, NO, or NA (Not Applicable).]

E. Security

1. Plants handling, processing, or storing oil are fenced. Yes

2. Entrance gates are locked and/or guarded when the plant is unattended or not in production. Yes

3. Any valves which permit direct outward flow of a tank's contents are locked closed when in non-operating or standby status. No

4. Starter controls on all oil pumps in non-operating or standby status are:
   (a) locked in the off position; No
   (b) located at site accessible only to authorized personnel. Yes

5. Discussion of items 1 through 4 as appropriate:
   3. The master flow and drain valves and any other valves that permit direct outward flow of the tank's content to the surface are securely locked (or equivalent) in the closed position when in non-operating or non-standby status.

   The loading/unloading connections of oil pipelines are securely capped or blank-flanged when not in service or standby service for extended time.

6. Discussion of the lighting around the facility: The lighting around the facility provides for safe working conditions and adequate visibility around all storage containers.

Name of facility CONOCO VCM PLANT

Operator CONTINENTAL OIL COMPANY

DTH 000120441

OIL PRODUCTION FACILITIES (ONSHORE) - Not applicable.

OIL DRILLING AND WORKOVER FACILITIES (ONSHORE) - Not applicable.

OIL DRILLING,PRODUCTION OR WORKOVER FACILITIES (OFFSHORE) - Not applicable.

APPENDIX I

FACILITY INSPECTION PROCEDURES

I. Above Ground Storage Tanks

All above ground storage tanks will be inspected at least once every two years. The vessel will be visually inspected. External thickness measurements will be taken with ultrasonic equipment. An inspection of the foundation and support structures is also to be made.

If the vessel is opened, an internal inspection is to be made. This will include a visual inspection and thickness measurements with ultrasonic equipment if practicable. If corrosion is found, the depth of the pits will be measured and recorded.

II. Buried Piping Installations

Any section of buried line which is uncovered and exposed at any time is to be visually inspected and external thickness measurements taken with ultrasonic equipment.

III. Miscellaneous Process Equipment

All other process equipment requiring inspection, will be inspected on a two year interval. Units will be inspected when down for cleanouts more often than the two year interval. When a vessel shows signs of corrosion, inspection will be made on shorter intervals as determined by the Inspection Department.

IV. Records/Administration

All inspections and records will be performed and recorded in accordance with CONOCO standards.

Letters detailing inspections will be written and distributed to the appropriate persons for information and/or corrective action.

INFORMATION TO BE FURNISHED TO REGULATORY AGENCIES

WHEN REPORTING A MAJOR SPILL

The following information will be provided when reporting spills of oil or hazardous materials by telephone.

A. Name of company reporting spill; time and date of call.

B. Name of person reporting spill and telephone number at which caller can be reached if additional information is needed.

C. Time and date spill occurred.

D. Location of spill.

E. Approximate amount and type of material spilled.

F. Source of spill and action taken to control spill.

REGULATORY AGENCY NOTIFICATION

FOR MAJOR SPILLS INTO

NAVIGABLE WATERS

I. REGULAR WORKING HOURS (8-5, MONDAY - FRIDAY)

Report spills greater than 100 gallons to:

a. NATIONAL RESPONSE CENTER — 1-800-424-8802
DUTY OFFICER — (TOLL FREE CALL)

If the National Response Center cannot be reached, contact:

b. U.S. COAST GUARD — (713) 971-2261
CAPTAIN OF THE PORT
PORT ARTHUR, TEXAS

OR

c. U.S. COAST GUARD — (504) 589-6275
COMMANDING OFFICER
NEW ORLEANS, LA.

If more than five (5) barrels, 210 gallons, also report spill to:

d. DEPARTMENT OF NATURAL RESOURCES — 491-2082
LAKE CHARLES, LA.
LARRY RACCA (491-2091)
or
LOUISIANA DEPARTMENT OF NATURAL RESOURCES — (504) 342-6363
BATON ROUGE, LA.

NIGHTS, WEEKENDS, HOLIDAYS — (504) 342-5595

II. NIGHTS, WEEKENDS, AND HOLIDAYS

Report spills greater than 100 gallons to:

a. NATIONAL RESPONSE CENTER — 1-800-424-8802
DUTY OFFICER — (TOLL FREE CALL)

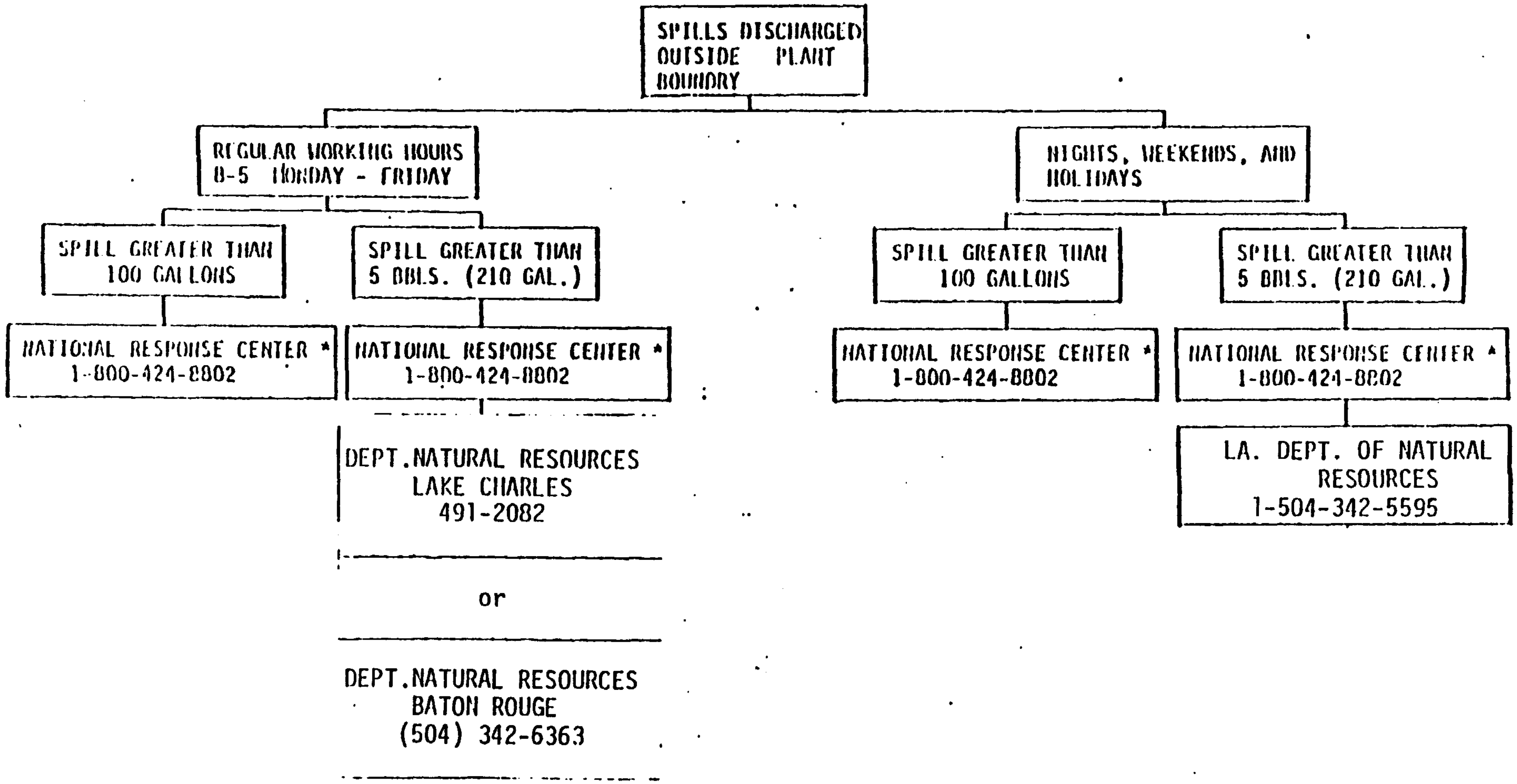
If the National Response Center cannot be reached, contact:

b. U.S. COAST GUARD (713) 971-2261
CAPTAIN OF THE PORT
PORT ARTHUR, TEXAS

<u>OR</u>

c. U.S. COAST GUARD (504) 589-6275
COMMANDING OFFICER
NEW ORLEANS, LA

REGULATORY AGENCY NOTIFICATION PROCEDURE FOR MAJOR SPILLS DISCHARGED OUTSIDE PLANT BOUNDRY



* If the National Response Center Cannot Be Reached, contact:

U.S. COAST GUARD CAPTAIN OF THE PORT PORT ARTHUR, TX (713) 971-2261	OR	U.S. COAST GUARD COMMANDING OFFICER NEW ORLEANS, LA. (504) 589-6275

DTH 000120448

REGULATORY NOTIFICATION

FOR SPILLS OF OIL OR HAZARDOUS SUBSTANCES IN TRANSIT

1. STATE POLICE EMERGENCY RESPONSE TEAM
   Working Hours - (504) 925-6593
   24 Hour Number - (504) 925-6595

2. DEPARTMENT OF NATURAL RESOURCES
   Lake Charles - 491-2082 (or)
   Baton Rouge - (504) 342-6363
   24 Hour Number - (504) 342-5595

3. CHEM-TREC (For advice or assistance in reporting handling or cleanup)

   1-800-425-9300

SECONDARY WASTE WATER TREATMENT

OPERATING MANUAL

CONOCO VCM PLANT

MARCH 26, 1982

INDEX

SECONDARY WASTE WATER TREATMENT

OPERATING MANUAL

CONOCO VCM PLANT

Introduction

This operating manual is intended to provide basic flow logic and operating data for the secondary waste water treatment system. A general flow logic description together with general operating philosophy is presented first. This section is followed by a detailed description of each major portion of the system.

The method of operation of the Secondary Waste Water Treatment Facility will be continuously updated and refined as more experience and data are obtained.

General Description

All waters leaving the plant which flow into public waters are controlled by the Federal Environmental Protection Agency (EPA) or the Louisiana Department of Natural Resources (LDNR). The Conoco VCM Plant operates under a National Pollutant Discharge Elimination System (NPDES) permit issued by the EPA. The permit allows the discharge of limited quantities of materials which exert a biological oxygen demand (BOD) and/or chemical oxygen demand (COD). Also, limited quantities of chlorinated hydrocarbons, suspended solids, and ammonia may be discharged into the receiving body of water. The effluent pH is restricted to not less than 6.0 nor more than 9.0 standard pH units.

In order for the plant effluent to meet these standards, the effluent is treated in an activated sludge unit (ASU) which is both preceded and followed by other treatment steps.

The effluent water from Limestone Neutralization Pit, T-500 flows south through an underground line to a covered, trim-neutralization pit located east of the chlorine compressor building. Here caustic is added to raise the pH to between 4.0 and 6.0 pH units.

It continues to flow south until it reaches the storm-water diversion box located just east of the sludge thickener in the secondary waste treatment area. Under normal conditions, water flows out of the box and into the west equalization basin. However, during very heavy rains, the equalization basins may fill up. If the rain continues then water is diverted directly to the bayou by flowing over the baffle in the storm-water diversion box. In this way the secondary treatment system is protected from being washed out or filled to overflowing.

The EPA requires the reporting of any by-pass of the treatment system which results in water going untreated into the bayou. Therefore, should a by-pass occur, the depth of water flowing over the baffle and the duration of the flow must be recorded. The water must also be sampled hourly and the samples taken to the Laboratory for analysis.

In the west equalization basin, volatile components such as EDC are allowed to evaporate, thus reducing the organic loading on the ASU. Incoming solids are also allowed to settle in the west basin before the wastewater passes into the south basin.

The west and south basins are connected by an underground line.

Water flowing into the south equalization basin is contacted by two 25 h.p. high-speed aerators which serve the following purposes:

1) They mix the concentrated influent with the water in the basin to produce a homogeneous mixture, thus reducing the effect of concentration changes.

2) They further air-strip volatile components such as EDC, thus reducing the organic loading on the ASU.

3) They aerate the water to prevent septic conditions from forming in the equalization basin.

The south equalization basin is operated approximately 40% full to provide rain water containment capacity.

Water is pumped from the south equalization basin into the ASU by the ASU feed pumps P-516 A and B. Flow is controlled by LIC-702 based on pump sump liquid level. The pumps are protected against operating at low liquid levels by automatic low level shutdown switches. They are also protected against operating at their deadhead pressure by an orifice-regulated recycle line to the south equalization basin from the pump discharge header.

Normally, only one ASU feed pump is operated with the other as a spare. However, during a heavy rainstorm, operation of both lift pumps may be necessary to control the level in the South Equalization Basin. If rain is forecasted to last for several days or if several inches of precipitation are expected, both ASU feed pumps may be started as soon as the rain begins to insure adequate level control and prevent stormwater bypasses.

The Activated Sludge Unit (ASU) feed enters the basin at the southeast corner, near the point where the recycle sludge is returned from the clarifier. The ASU is thoroughly mixed and aerated by seven, 40 h.p., high-speed aerators. In this way the bacteria that consume the organic materials which exert a BOD or COD are kept suspended in the water. Thus the bacteria have better contact with the waste and are in an area of high oxygen concentration which enables them to more effectively degrade the wastes. Bacteria that settle out in the system form a mud-like layer which becomes anaerobic due to the inability of the dissolved oxygen to penetrate the layer.

After approximately a 3-day average residence time in the ASU, the treated water flows out of the northwest corner of the basin through an underground line to the diversion box at the east end of the ASU where polymer is added. Polymer is used to flocculate the solids (bacteria) and thus improve their settling characteristics. The mixer in the box disperses the polymer in the clarifier feed so as to optimize the flocking effect.

From the diversion box the liquid flows into the clarifier. Here the solids settle by gravity to the bottom and the clarified liquid flows out over the weir at the top. The clarifier rake moves the sludge around the bottom of the clarifier to the recycle pump suction sump. From there it is pumped back into the ASU. The recycling of sludge prevents the depletion of the bacteria population in the ASU. Recycle sludge flow is measured by a venturi flow meter and controlled by a manual globe valve located downstream of the meter in the metering loop. The normal recycle sludge flow rate is 640 gpm.

Some of the recycle sludge is diverted to the Sludge Thickener A-119 on an intermittent basis by Sludge Wasting Pump P-509. Here the solid sludge is separated from the treated wastewater by gravity settling in the Sludge Thickener prior to final disposal. Presently, the thickened sludge is transferred to the DAF unit at LCCP by gravity flow. The sludge is then sent to the filter press at LCCP for dewatering. The diverted sludge is then removed by truck. The clear water which overflows the sludge thickener weir is returned to the ASU. By removing sludge in this manner, the bacteria population in the ASU an be controlled to prevent starvation due to too many bacteria or poor waste treatment due to too few. The intermittent flow to the sludge thickener is controlled at approximately 16 gpm as indicated by a venturi meter located east of the thickener. The manual globe valve used to adjust the flow rate is located immediately downstream of the flow meter.

NO

Treated water from the clarifier overflows into the re-aeration basin where it is contacted by a 15 h.p., high-speed aerator. The dissolved oxygen concentration is raised to the saturation point--approximately 8 ppm, depending on the temperature--to assure compliance with Louisiana State Law.

The oxygen-rich effluent flows into the effluent weir box where temperature, pH, dissolved oxygen and flow rate are continuously monitored. This is the EPA discharge station 201. The recording of these parameters at this location is either required by law or required to prove our compliance with the law. Therefore, all instruments must be kept in good working order.

The NPDES permit under which the plant operates requires that a flow-proportioned refrigerated sample be collected twice each week and analyzed for several parameters. These samples are collected using the Collins sampler located at the southeast corner of the switchgear building.

The treated effluent which flows out through the V-notch weir in the weir box goes via an underground clay tile line to the bayou.

Three chemicals are stored in bulk at the secondary. Aqua ammonia and phosphoric acid are added to the ASU only when required, and polymer is added continuously to the clarifier feed. All three systems utilize a bulk storage tank that gravity feeds into a smaller day tank.

Ammonia or phosphoric acid is added to the ASU only if the food supply in the ASU is severely depleted, as shown by laboratory analysis.

Care must be taken not to exceed the daily maximum discharge limit of 68 pounds of ammonia. Phosphoric acid has also been used in the past to lower the ASU pH during high pH upsets.

Aqua ammonia and phosphoric acid are nutrients, necessary for the proper growth and functioning of the bacteria. Both chemicals are pumped from the day tanks, through underground pipes, to the east end of the ASU where they enter under the liquid surface. Diaphragm metering pumps are used to control the addition rates by changing the micrometer adjustable pump strokes. Excessive amounts of ammonia will cause a violation of the NPDES permit while insufficient quantities of ammonia or phosphorus will hinder the growth and operation of the bacteria, thus causing an upset condition in the ASU and clarifier.

Polymer is pumped by a progressive cavity pump from the day tank into a water-flushed header downstream of the polymer pump discharge. The rate of polymer addition is controlled by the variable speed pump motor controller located behind the motor-starter panel in the switchgear building. The water flush is controlled by the globe valve downstream of the flow-indicating rotometer located beside the polymer pumps. Water is used to dilute the polymer and thus improve its ability to mix with the clarifier feed liquor and to flocculate the solids. Also, the water flushes the viscous polymer through the pipe, preventing the line from plugging.

Dilution water is added to the raw secondary waste to protect the bio-mass from high concentrations of 2-chloroethanol and other organics. This situation occurs only rarely, and therefore dilution water is seldom added. If dilution water addition ever did become necessary, it could be obtained from any of the following sources:

1) LCCP treated effluent. A steel line equipped with a flow indicator and globe valve can divert effluent water from the LCCP dissolved air flotation (DAF) unit into the VCM Plant raw waste line just ahead of the storm water diversion box. Water from this source can be measured and accurately controlled. However, operation of this source must be by LCCP personnel upon instructions from the VCM Plant Shift Supervisor.

2) LCCP south lagoon effluent. The pipe from the LCCP south lagoon connects to the line from the DAF unit downstream of the flow indicator and control valve. Therefore, flow from this source is controlled by trial and error using a manual, non-indicating butterfly valve located at the inlet to the pipe. Like the first source, this one must also be operated by LCCP personnel upon instruction from the VCM Plant Shift Supervisor.

3) VCM Plant fresh water. Water is diverted through hoses from the fresh water line at the northeast corner of the VCM Plant cooling tower to the process sewer on the north side of the road. This is the only source over which VCM Plant personnel have direct control. Flow must be estimated, then adjusted by trial and error.

Use of dilution water together with the source should be noted on the secondary waste treatment log sheet. This information will aid in the interpretation of analytical data received from the Laboratory.

Information necessary to control the secondary waste treatment system is obtained from Laboratory analyses of samples taken around the system. The sample number and locations are as follows:

#1 - "Feed to the secondary" is collected from the diversion box located in the southeast corner of the plant, south of the railroad tracks.

#2 - "Equalization basin outlet" is collected from the ASU feed pump discharge.

#3 - "Clarifier feed" is collected from the diversion box where polymer is added.

#4 - "Clarifier overflow" is collected from the north side of the clarifier overflow ring where the water flows into the re-aeration basin.

#4A- "Recycle sludge" is collected from the recycle sludge line where it flows into the ASU.

#5 - "Effluent" is collected by the Collins sampler at EPA station 001.

The control samples (#1 through #4A) are collected by automatic, 24-hour composite samplers. The half gallon sample bottles are picked up once each day and clean empty bottles are put in their place. Samples are taken to the Laboratory immediately for analysis. If a composite sampler fails to function, a grab sample should be taken, marked, and delivered to the Lab. The Shift Supervisor should then be notified of the malfunctioning sampler.

Under normal conditions, the Collins Sampler (#5) is operated twice each week. A clean sample container is placed in the sampler refrigerator and the power is turned on. When the sample is picked up, it is labeled with an appropriate tag, the power is turned off, and the sample is taken to the Laboratory. If the Collins Sampler fails to function, a work order must be issued. Do not collect a grab sample from EPA station 001.

Detailed Description

Raw Plant Effluent

Raw plant waste water that flows to the secondary waste water treatment facility varies considerably in composition, physical properties, and flow rate. However, the three most important parameters of this stream for the proper operation of the treatment system are EDC concentration, 2-chloroethanol concentration and pH.

EDC and 2-chloroethanol are antimicrobial agents which will kill the bacteria in the ASU if their concentrations are allowed to rise high enough. Present data indicate that 350 ppm EDC in the ASU feed and 250 ppm 2-chloroethanol in the ASU may be toxic to the basteria. EDC is a chlorinated hydrocarbon that can be air-stripped out of water. Consequently, if a large quantity of EDC accidentally gets into the secondary treatment system it can be removed by the aerators. On the other hand, 2-chloroethanol is a biodegradable chlorinated hydrocarbon that cannot be air-stripped. Should a high concentration of 2-chloroethanol occur in the feed to the secondary waste treatment system it must be diluted as discussed under "Dilution Water".

Waste water pH is controlled by neutralization with limestone in T-500 and trim-neutralization with slops (30%) or fresh (50%) caustic (sodium hydroxide). The caustic addition at the trim neutralization pit is operated automatically from the control room to maintain the secondary waste treatment feed pH between 4 and 6 standard pH units. Some deviation outside this range can be tolerated for a short time due to the buffering characteristic of the ASU. However, pH corrections should be made within one hour.

Major changes in any parameter of the secondary waste treatment feed can cause an upset in the ASU. However, a major change in EDC or 2-chloroethanol concentration or in pH can completely kill the biomass which would result in a permit violation. It takes many weeks for the treatment system to recover from such upsets and kills.

Storm Water Diversion Box

Waste water from the plant flows through the storm water diversion box before entering the west equalization basin. During rain storms, the equalization basins fill up until water begins to flow over the baffle in the storm water diversion box. In this way the secondary treatment system is protected against high flow rates and flooding of the basins.

Any time untreated water bypasses the secondary treatment system and goes directly to the bayou, it must be reported to the EPA and the Department of Natural Resources. A steel rule is mounted on top of the baffle in the storm water diversion box. During a bypass, the depth of water flowing over the baffle must be measured and recorded together with the length of time the bypass occurred. In addition to this data, an hourly sample of the bypass water must be collected and taken to the Laboratory for analysis. A one gallon sample bottle can be obtained from the Laboratory for collecting this sample.

Equalization Basins

The west (small) equalization basin and south (large) equalization basin are connected by an underground line and overflow notch and are operated as a single unit. The south basin is equipped with two, 25 h.p., high-speed aerators (A-106, A-114). The equalization system serves the following purposes:

1) Raw waste is mixed with the waste in the basins. In this way changes in waste composition are diluted and the ASU feed remains more uniform.

2) The agitation created by the aerators strips EDC out of the waste water. EDC concentration must be maintained below the toxic level to protect the biomass.

3) The aerators maintain the dissolved oxygen concentration in the basins high enough to prevent septic conditions from forming. This reduces the problem of dispersed growth caused by anaerobic digestion.

4) The south equalization basin is operated about 40% full, The unused volume provides storm water containment capacity so that in only the very heaviest rain falls will untreated waste water enter the bayou.

5) Mechanical aeration of the basins causes some of the water to evaporate. In this way the water in the basins is cooled, thus preventing the discharge of hot water into the bayou.

The operation of the equalization basin aerators helps optimize the secondary waste treatment system. However, their functioning is not imperative for the continued operation of the ASU.

ASU Feed

Water flows out the east end of the south equalization basin, through a trash screen and into the ASU feed pump sump. The sump is connected to the east end of the ASU by an underground line. Thus, when the equalization basin level is high enough, it is possible to gravity feed into the ASU. However, under normal conditions, the butterfly valve on the sump end of the underground line is kept closed. This valve is equipped with a manually operated valve stem extension which protrudes above the top in the northwest corner of the sump.

The lift pumps may be shut off during upsets in the feed to the Secondary. Such upsets would include high pH upsets, high organic material concentration toxic chemical contamination of the Secondary Feed, etc. By shutting down the lift pumps, the South Basin can be isolated and the upset condition can be corrected before the wastewater reaches the ASU.

One ASU feed pump, P-516A, is a horizontal self-priming sump pump, and the other ASU feed pump, P-516B, is a vertical sump pump. Both are fitted with large basket suction strainers. Shaft bushings are lubricated with water supplied from the pump discharge. This flushing water passes through a Y-strainer which should be blown down daily.

The pumps are protected against operating at their deadhead pressure by a restriction orifice and recycle line from the pump discharge to the south equalization basin.

The manufacturer states that the vertical sump pump, P-515A, should not be operated with less than eighteen inch (18") submergence of the pump head. Due to the calibrated range of level controller LIC-702, this is equivalent to a 40% level indication on this meter. The pump is protected against operating with insufficient submergence by low-level shutdown switches LC-703 and LC-704. These switches are set to shut down at 35% level and restart the pump at 45% level. However, for the switches to be operative, the pump must be started in the automatic (A) position. By starting the pump on manual (H) the switches are bypassed leaving the pump unprotected. The pump should be operated on manual only with the approval of the Process Superintendent.

The discharge from P-516A and B to the ASU is controlled by LIC-702. The level controller, located in the pump sump, is calibrated such that a 0% indication is 7'0" below the top of the concrete sump and a 100% indication is 2'0" below the top of the sump. Consequently, each 10% of level indication represents a 6" liquid level change.

Solids tend to accumulate in the sump around the end of the level controller dip tube, causing a false level indication. To prevent such inaccuracies, the dip tube should be shaken once each day. A visual check of the south equalization basin level should be made each shift. If the pipe connecting the south equalization basin to the pump sump is visible, the water level is too low (less than 40%) and corrective action must be taken.

Under normal operating conditions the level controller set point should be at a 40% indication. This level provides sufficient submergence to protect the pump while maintaining enough reserve volume to satisfy rain water containment demands.

Level in the pump sump is controlled by LIC-702 acting on LCV-702. In the event of a controller or control valve failure, a manually operated globe-type bypass valve may be opened and adjusted to provide feed to the ASU.

Normally, only one ASU feed pump is operated with the other as a spare. However, during a heavy rainstorm, operation of both lift pumps may be necessary to control the level in the South Equalization Basin. If rain is forecasted to last for several days or if several inches of precipitation are expected, both ASU feed pumps may be started as soon as the rain begins to insure adequate level control and prevent stormwater bypasses.

"Urgent" priority work orders should be issued for failures involving the ASU feed system. If the feed to the ASU is interrupted and the following day is not a maintenance work day, then a callout should be made on daylight hours.

Activated Sludge Unit (ASU)

Plant raw waste water contains organic materials that exert a chemical oxygen demand (COD) and a biological oxygen demand (BOD). The ASU is filled with a concentrated collection of naturally occurring bacteria that consume the organic matter in the waste water. In order for the ASU to function properly it requires oxygen, nutrients, mixing, sufficient food, and an adequate bacteria population.

Oxygen and mixing are supplied by seven, 40 h.p., high speed aerators (A-107, 108, 109, 110, 111, 112, 113). Oxygen is required to keep the aerobic bacteria alive. Mixing keeps the bacteria (solids) in suspension allowing better contact with the waste water for more effective degradation of the organic materials. Bacteria that settle in the system form a mud-like sludge layer which becomes anaerobic due to the inability of dissolved oxygen to penetrate the layer. Dead aerobic bacteria, or active anaerobic bacteria tend to float in water, thus adversely affecting the operation of the clarifier and other downstream equipment. The loss of a single aerator will reduce mixing and allow solids to settle. Therefore, when an ASU aerator fails, an "Emergency" priority work order should be issued. If the aerator cannot be returned to service in less than 24 hours, maintenance should move an aerator from the south equalization basin into the ASU.

The nutrients required to maintain the bacteria in a healthy condition are ammonia and phosphorus. They are added when required to the ASU in the form of 29.5% aqua ammonia and 75% phosphoric acid. The amount of nutrients added to the system is proportional to the quantity of COD or BOD being fed to the ASU. Detailed operation of the nutrient addition system can be found under Nutrient Addition in this manual.

Primary control of the ASU is based on the food to biomass ratio (F/M). Little or no control is exercised over the food supply to the ASU since the ASU feed pumps are operated to maintain a desired level in the equalization basins. Therefore, control of the ASU is maintained by controlling the amount of bacteria or biomass in the ASU. Bacteria concentration is measured by the volatile suspended solids (VSS) in the clarifier feed (#3 sample). VSS is controlled by batch wasting of sludge from the clarifier. If insufficient quantities of sludge are wasted, then the F/M ratio will drop, indicating an inadequate supply of food for the number of bacteria in the system. This condition can lead to bacteria starvation which results in a light pin-floc floating on the ASU and clarifier. On the other hand, too high a wasting rate will deplete the bacteria population (increase the F/M ratio). In severe cases, there will not be enough bacteria to adequately remove the COD and BOD, thus leading to an NPDES permit violation. In less severe cases, the overfed bacteria will form large, light floc that floats on the ASU and clarifier.

Past experience indicates that the treatment system works well in an F/M range of 0.0005 to 0.2. This may change as more operating experience is gained.

Changes in the ASU are slow and usually take days or weeks to develop. The exception is major upsets or biomass kills due to toxic compounds or very large changes in the ASU feed composition.

Nutrient Addition

Ammonia and phosphorus are nutrients necessary for the health of the biomass. They are added when required to the ASU in the form of 29.5% aqua-ammonia (ammonium hydroxide) and 75% phosphoric acid. Both of these products are hazardous and should be handled with care.

Our NPDES permit does not have a phosphate emission limit. However, to prevent wasting acid, the addition rate should be adjusted to control the phosphate in the feed to the clarifier (#3 sample) between 1 ppm and 5 ppm.

Ammonia in the effluent is limited by the NPDES permit to a maximum of 68 lb. per day and a monthly average of 30 lb. per day. Ammonia concentrations greater than 10 ppm will cause a permit violation at effluent flow rates of 600 gpm or more. Consequently, ammonia addition is adjusted to maintain the ammonia concentrationin the clarifier feed between 0.01 ppm and 0.5 ppm.

Nutrients are stored in bulk tanks on the chemical pad located at the northeast corner of the ASU. They flow by gravity into their respective day tanks. The valves between the bulk and day tanks should be kept closed except during the filling operation. In this way only a limited quantity of material could flow into the secondary treatment system in the event of equipment failure or human error.

Pumps meter the nutrients from the day tanks, through underground piping, into the east end of the ASU where they discharge below the liquid surface. The flow rate is adjusted by altering the pump stroke by means of the micrometer stroke adjustment on the pump body.

Day tank liquid levels should be kept within the visable range of the sight glasses. Pumps should be checked once each shift to ensure proper pumping action. This is easily done by blocking in the pump suction at the day tank and observing the liquid level change in the sight glass. If there is an unexpected or unusual level change in a day tank, check the pump system for proper operation.

The bulk tanks are filled from trucks equipped to pump or pressure the liquids into the tanks. When filling a bulk tank ensure that the truck driver connects the hose to the proper fill line. Each line is labeled with the tank number and product name. When phosphoric acid is being transferred, the truck driver must wear boots, gloves, slicker suit and face shield during the entire operation. Before the truck driver opens any valves on the truck, close the drain valve between the hose connection and the block valve. Then open the block valve and have the driver fill the tank. Once the tank is full, close the block valve, carefully open the drain valve and drain the hose. After the hose has drained and the driver has disconnected it, wash down the entire area to remove all spilled material.

Any time a valve is opened or closed that might discharge phophoric acid to the atmosphere, boots, gloves, slicker suit and face shield must be worn. If acid gets on skin or clothing, wash it off immediately with large quantities of running water. A safety shower and eye wash station are located at the west end of the chemical pad for this purpose. In the event of a phosphoric acid spill, notify the Shift Supervisor or control room of the spill. Put on a slicker suit, gloves, boots and face shield. Then proceed to clean up the spill while ensuring that the acid does not go into the bayou.

If there is an aqua ammonia spill, put on the Scott-Air Pak found on the outside, west wall of the switchgear building. Notify the Shift Supervisor or control room of the spill and than proceed to aid anyone in the area. Two 5-minute excape capsules are located on the wall beside the Scott-Air Pak. These units are to be used for escape and to evacuate people from the area who are unable to do so without assistance. Hose down anyone who has been wetted with large quantities of the aqua ammonia. Clean up will consist of preventing the aqua ammonia from going into the bayou and washing down the area.

Technical data sheets for these materials can be found in the Appendix.

Antifoam Addition

Foaming in the ASU often leads to the formation of a mat of bacteria on the surface of the basin. These bacteria become starved of food, nutrients, and oxygen and will eventually die. Consequently, antiform liquid is added to the ASU to disperse the foam and prevent the mat from forming.

In the past, antifoam has been added periodically in batches as large as 5 gallons. Recent experience indicates that a small, continuous injection of antifoam provides better foam control. A temporary metering pump has been installed at the point where ASU feed enters the basin. However, this pump clogs easily, and antifoam is usually added manually. Antifoam should be added at the discretion of the Process Superintendent until a permanent system and rate are established.

Antifoam is flammable and should be handled with care. Do not smoke or cause an open flame or spark in the area around the antifoam drums and pump. A technical data sheet for this material can be found in the Appendix.

Polymer Addition

The NPDES permit limits the discharge of suspended solids to 1,256 lb. per day with a monthly average of 558 lbs. per day. Solids concentrations above 175 ppm will cause a permit violation at flow rates of 600 gpm or more. Therefore, polymer is added continuously to the mixed liquor from the ASU to improve flocculation and settling of solids in the clarifier.

Polymer is stored in a bulk tank (T-76) on the chemical pad at the northeast corner of the ASU. The bulk and day tanks in this system are filled exactly the same way as those in the nutrient addition system.

Polymer is pumped from the day tank (T-76A) into a water-flushed header by a variable speed progressive cavity metering pump (P-513 A&B). The injection rate is controlled by adjusting the pump speed by means of the controllers on the inside, north wall of the switchgear building (behind the motor-starter panel).

Flush water dilutes the polymer and improves its ability to mix with the clarifier feed and to flocculate the solids. The water also keeps the polymer transfer line clear of viscous polymer which could plug the pipe. The water flow rate is indicated by the rotameter located beside the polymer pump and is controlled by the glove valve downstream of the rotameter.

The diluted polymer flows into the east side of the ASU outlet diversion box where an agitator mixes it with the clarifier feed. This mechanical mixing provides better dispersion of the polymer in the mixed liquor and thus produces a more uniform floc for improved solids settling. If the mixer fails, an air sparger should be used until repairs can be made.

If there is a spill of polymer, it should be washed down with water. No special protective equipment is required. However, care should be taken when walking in the area since polymer is very slippery.

Clarifier and Sludge Recycle

The clarifier (T-704) is a gravity settler used to remove suspended solids in order to comply with the NPDES permit and to prevent large losses of bacteria from the system.

ASU mixed liquor, which has had polymer added to it, enters the clarifier center feed well. Heavy solids sink to the bottom of the clarifier where two rakes move the sludge into the recycle pump suction. The sludge recycle pumps draw the solids from the bottom of the clarifier and return them to the southeast corner of the ASU. Recycling sludge in this manner helps prevent the depletion of the bacteria population. The sludge recycle rate is controlled at approximately 640 gpm by adjusting the manual globe control valve in the metering loop. Flow rate is indicated by a venturi flow meter (FI-708) located ahead of the control valve. This meter has a water purge which should be checked once each shift.

If the recycle sludge flow rate is too low, a sludge blanket will form in the clarifier. This layer will eventually become anaerobic, causing solids to float in the clarifier. However, if the flow rate is too great the clarifier may become hydraulically overloaded and the solids will be unable to settle.

In the event of a failure in the metering loop, sludge recycle can be controlled with the manual globe bypass valve based on pump discharge pressure.

A 3-inch stream is taken off the recycle sludge line and pumped approximately once every ten days to the sludge thickener (A-119) by P-509. This pump is an air-operated diaphragm pump. The sludge thickener is the primary means for wasting sludge.

If the clarifier rake or both sludge recycle pumps fail, an "emergency" priority work order is to be issued.

When the clarifier is restarted following a malfunction that has stopped the recycling of sludge for more than one hour, the recycle pump is started first. When the flow has stabilized, the rake is rotated one quarter of a revolution and stopped. This normally pushes solids into the recycle pump suction, causing the recycle stream to appear dark. When the flow lightens in color, rotate the rake another quarter revolution. Again wait until the recycle stream color lightens. Repeat this procedure until the rake has made at least two full revolutions. Then start the rake and observe the recycle system operation to ensure that it is operating properly.

Light solids entering the clarifier float to the surface where they are raked into a surface skimmer for recycling back to the ASU by the sludge recycle pumps.

Any solids that neither sink nor float quickly are carried out over the clarifier overflow weir with the clarified water.

The presence of large quantities of floating solids or solids being carried out of the clarifier should be noted on the log sheet. Such conditions may indicate a problem in the ASU.

If the clarified water becomes muddy or hazy, it may be an indication of too much or too little polymer.

Sludge Thickener

Sludge from the clarifier is wasted on a batch basis. Sludge is pumped by P-509 from the clarifier to the sludge thickener A-119. The amount of sludge wasted helps control the concentration of suspended solids remaining in the ASU and thus the F/M ratio.

The principles of operation of the sludge thickener are the same as those of the clarifier. The heavy solids sink to the bottom of the clarifier. The heavy solids sink to the bottom of the thickener where they accumulate. Periodically, the thickened sludge is allowed to gravity flow to the DAF unit at the LCCP Secondary. During periods when sludge is being wasted, the flow of thickened sludge to the DAF unit is controlled by a timer on the west side of the sludge thickener. The timer is used to set the frequency and duration of sludge transfers to the DAF unit.

Light solids float to the top of the sludge thickener where they are pushed into a trough by the surface rake. The trough drains through a hose into the scum sump at the LCCP DAF unit. Clarified water flows over the surface weir and back into the ASU.

Normal operation of the clarifier calls for wasting sludge as soon as the total suspended solids (TSS) in the clarifier feed reaches 7500 ppm. Sludge is wasted until the TSS level has fallen to about 4000 ppm in the clarifier feed.

Four sampling tubes are located at different depths on the sludge thickener. These tubes allow sampling to determine the depth of the sludge layer (visually) and the solids concentration of the layer (analytically). When sampling the thickener, the sample trough should be flushed thoroughly with water when finished.

Effluent Re-aeration

Louisiana State Law requires that water discharged into public waters must not deplete the dissolved oxygen to less than 4 ppm. To ensure compliance with the law, clarified water is re-aerated after leaving the clarifier. The operation of the 15 h.p., high-speed areator (A-115) in the re-aeration basin virtually gurantees an effluent dissolved oxygen concentration of 8 ppm--depending upon the water temperature. If the aerator fails, a "critical" priority work order should be issued, and an air line should be submerged in the re-aeration basin until the areator is repaired.

Effluent Weir Box - EPA Station 201

Water flows directly from the re-aeration basin into the effluent weir box located east of the switchgear building. Here all the continuous monitoring and sampling required by law are done. Sensors for the monitoring of effluent flow rate, temperature, pH and dissolved oxygen are located in the pit while the associated recorders are in the switchgear building.

The flow meter should be checked once every three or four days. To do this, determine the depth of water flowing through the V-notch weir in the pit. The rule attached to the weir or a yard stick laid beside the rule may be used. Then, using the chart in the switchgear building and the measured water depth, determine the corresponding flow rate. Record this value on the secondary treatment log sheet under "remarks". If the flow recorder reading and the measured value to not agree within 25 gpm to 50 gpm, issue a work order to have the meter repaired. If the following day is not a normal maintenance workday, then a callout should be made on daylight hours.

The NPDES permit requires that the effluent pH be not less than 6 nor more than 9 standard pH units and that it be monitored continuously. The monitor is set to alarm if the pH goes outside the range from 6.5 to 8.5 pH units. In the event of the alarm sounding, collect an effluent grab sample from the weir box and have it analyzed immediately in the Laboratory. If the monitor is reading incorrectly, issue a work order. However, if the reading is correct, quick corrective action is to be taken to prevent or correct a permit violation.

In order to assure compliance with Louisiana State Law regarding dissolved oxygen (DO), the effluent water is aerated in the re-aeration basin and the oxygen content is monitored in the effluent weir box. If the dissolved oxygen recorder shows less than 4 ppm and the re-aeration aerator is operating, issue a "critical" priority work order for the meter.

Louisiana State Law requires that the effluent water temperature not exceed 95°F. Under normal operating conditions the temperature of the water leaving the effluent weir box will never be hotter than 95°F.

The NPDES permit requires that a flow-proportioned, refrigerated effluent water sample be collected and analyzed twice each week. These samples are taken using the Collins sampler located outside the east wall of the switchgear building.

To collect a sample, place a clean sample container inside the sampler refrigerator. Make sure that the sample tube is well inside the neck of the container and is not pinched off between the container and the top of the refrigerator. Check the counter located in the electronic package on top of the refrigerator. Normally, the counter should be set at 400 which collects approximately one gallon of sample in 24 hours at an effluent flow rate of 450 gpm. If a larger sample is required, reduce the counter setting proportionally to the increased sample volume desired. Conversely, the counter number is increased to obtain a smaller sample volume. Then turn the power switch on and check that power is indicated by the panel light. Before closing the sampler enclosure door, observe one complete sample cycle to ensure proper operation.

Every effort should be made to prevent excessive quantities of water from spilling or collecting inside the sample enclosure or refrigerator. Do not collect a grab sample if the sampler has malfunctioned.

Dilution Water

Current operating methods and philosophy are based on R&D data, information available in the literature and experience gained by successful operation of our secondary waste water treatment system. Dilution water is added to the secondary treatment raw feed as required to protect the ASU from high concentrations of 2-chloroethanol and other organic materials.

Large, sudden changes in any raw feed parameter may upset the biomass. Such changes can and do occur due to upsets and changes in plant operation. If these changes cause more than a doubling in the ASU feed parameter, then dilution water should be added to reduce the increase.

Dilution water is available from three sources. The first source for dilution is the LCCP dissolved air flotation (DAF) unit clarified effluent. Flow is measured by an indicating meter (FI-706) and controlled with a manually operated globe valve located at ground level on the southwest side of the DAF unit. If the DAF unit is not operating or if its effluent is contaminated, the second source of dilution water is the LCCP south treatment lagoon. A manually operated butterfly valve in the overflow box at the west end of the LCCP south lagoon controls the dilution water flow rate from this source. The valve does not have a position indicator and there is no flow measuring device. Consequently, flow rate adjustments must be made by trial and error. These two sources flow through a common line into the raw feed line just ahead of the storm water diversion box. This common line has an automatic on/off control valve actuated by level switch LC-705 located in the ASU feed pump sump. When the level rises above a 55% indicated on LIC-702, the valve is closed. The valve can also be closed from VCM Plant property by turning off breaker number 26 in the breaker box located on the west wall of the switchgear building.

Operation of these dilution water sources must be by LCCP personnel. When dilution water is required the Shift Supervisor or Chief Operator should contact one of the following LCCP personnel:

1.	G. L. Satterfield - PB 61452	5426 (days only)
2.	Ethylene Plant Shift Foreman	5421
3.	Steam Plant Top Operator	5310 or 5426

Requests for dilution water should include which source is desired, the flow rate (if from the DAF unit) or the approximate valve opening (if from the south lagoon). Flow adjustments must be made in a similar manner.

If the LCCP dilution water sources are not available or are not suitable for some reason, then the third source is VCM Plant fresh water. Fresh water is obtained from the fresh water header at the northeast corner of the cooling tower and is routed by hose north across the road and into the head of the sewer line.

When adding dilution water, consideration must be given to other sources of dilution water to avoid overdiluting the raw waste water. Dilution water should be reduced in proportion to the amount of water entering the sewer from fire monitors, hoses, additional cooling tower blowdown, and others. Overdilution can increase the hydraulic loading on the clarifier, thus causing reduced efficiency and increasing the solids in the effluent. Nevertheless, it is better, under most conditions, to have too much dilution water than not enough.

Control Samples

Five samples are collected around the secondary treatment system each day. The analytical data obtained from these samples allows monitoring of the system efficiency and provides a basis for changing nutrient, polymer and sludge wasting rates. All samples are collected by 24-hour composite samplers.

The No. 1 sample, "Feed to the Secondary" is collected from the diversion box in the southeast corner of the plant, south of the railroad tracks. It provides data on the undiluted raw waste (unless fresh water dilution is in use) and should alert personnel to possible problems due to EDC, 2-chloroethanol, pH and COD.

The No. 2 sample, "Equalization Basin Outlet", is collected from the ASU feed pump discharge and provides data on the fresh feed going into the ASU.

The No. 3 sample, "Clarifier Feed", is collected from the ASU outlet diversion box where polymer is added. The general health of the bacteria population is determined from this sample. The difference between sample No. 2 and sample No. 3 is used to determine the actual F/M ratio, the bacteria activity coefficient K, and the addition rates for aqua ammonia and phosphoric acid.

The No. 4 sample, "Clarifier Overflow", os collected at the clarifier overflow-ring outlet. This sample indicates how well the effluent is meeting the NPDES permit limits. The data should also alert personnel to possible trends which may cause a permit violation.

The No. 4A sample, "Recycle Sludge", is collected from the sludge recycle line just prior to its emptying into the ASU. It provides data for determining the concentration effectiveness of the clarifier and the solids loading on the sludge thickener. This sample is seldom obtained because the sludge wasting process is now down on a "batch" basis.

These five samples are an important part of the secondary waste treatment control system.

The sample collected from the EPA station 201 is not a control sample, but rather, is a compliance sample. Nevertheless, it is called the No. 5 sample.

If one of the control samplers (#1 through #4A) fails, a grab sample should be collected, marked, and taken to the Laboratory for analysis with the other control samples. Grab samples should continue to be taken until the sampler is repaired.

This procedure does not apply to the EPA compliance sample (#5). Information concerning this sample is in the section entitled, <u>"Effluent Weir Box - EPA Station 201"</u>.

<u>Incinerator Wastewater</u>

Wastewater from the bottom of HCl Absorber Column C-901 is fed into Neutralization Pits T-981 and T-982. These are filled with clam shell which contains calcium carbonate used for neutralization. The wastewater from these pits contain a high concentration of solids and thus cannot be treated in the VCM Plant Secondary. The wastewater from the incineration area flows to the diversion box at the Secondary, and is then pumped to the North Lagoon at LLCP. The incinerator wastewater is treated and discharged through the LCCP Wastewater Treatment facility.

DTH 000120468

Turnaround System

During turnaround, the concentration of organic compounds in the raw plant wastewater falls to approximately zero. Thus, the food supply to the ASU is seriously depleted. To supply the ASU with an adequate supply of food during turnarounds, raw wastewater from LCCP is added to the secondary. The LCCP raw wastewater is added to either the ASU feed pump sump or the ASU through a 6" transfer line. Water is obtained from the LCCP raw wastewater header.

A flow indicator-controller (FIC-710) and a continuous, flow-through pH analyzer (AI-710) are included on the transfer line inside the VCM Plant. The flow indicating-controller is necessary because the pressure in the LCCP raw waste header fluctuates making it difficult to manually control the flow in the transfer line. The pH analyzer is necessary because the pH of this stream also fluctuates widely and is not continuously monitored by the LCCP. An alarm will sound if the pH of the LCCP raw wastewater exceeds 9 or falls below 5. If this should occur during the turnaround, the LCCP Steam Plant Control Room must be notified. The Shift Supervisor may then elect to cut the LCCP feed to the ASU. Laboratory analyses will be used to set daily wastewater flow rates from the LCCP. If any abnormal results or rapid changes in results are notices by the Laboratory personnel, the Shift Supervisor should be notified immeidately.

The wastewater transfer line from LCCP can also be used to divert raw waste water from LCCP to the ASU during times when the bacteria in the ASU are not healthy. The LCCP wastewater contains compounds which are easily digestable by the bacteria, such as methanol.

During turnaround, the Oxychlorination Reactors (R-301, R-302, R-303, and R-304), the HCl Column C-202 and the Quench Column C-201 are cleared and washed. The wash water contains a concentration of copper ions which would be toxic to the bacteria in the ASU. The source of this copper is the copper-based oxychlorination catalyst in the oxychlorination reactors, the monel-clad HCl Column, and the monel-clad Quench Column.

Becuase this contaminated wash water cannot be treated in the Secondary, it is necessary to remove the copper ions from the water. Before the Oxychlorination Reactors and the HCl Column are washed, the main plant trench is blocked in with dirt and rock at the end of Block 2 near the LCCP fence. Blocking this trench will prevent the copper contaminated wash water from flowing to T-500.

Copper Removal Pump P-435 (temporarily located during turnarounds just south of Oxy Vent Stack VS-390 at the east end of Block 2) is a horizontal sump pump which is used to transfer the copper-contaminated wash water from the plant trench in Block 2 to the Copper Removal Pit north of the Incinerator. At the Copper Removal Pit (which is concrete lined) caustic is added to raise the pH of the wash water to above 8.5 units, at which point copper hydroxide, $Cu(OH)_2$, will precipitate. The copper hydroxide settles on the bottom of the copper removal pit and the decontaminated wash water flows through the plant trench system to the Secondary. The settled copper hydroxide is then vacuumed from the Copper Removal Pit and is disposed of as a hazardous waste.

APPENDIX A

MATERIAL DATA SAFETY SHEET

FOR HAZARDOUS PRODUCTS USED IN PLACES OF EMPLOYMENT

section 1 name & product

manufacturer's name
(a) NATIONAL AMMONIA COMPANY

emergency phone no (24 hours)
(b) 215-535-7530

street address
(c) TACONY & VANKIRK STREETS

for latest data, consult manufacturer

date this form written
(d) SEPTEMBER 23, 1977

city, state, zip code
(e) PHILADELPHIA, PA.

signature of certifying company official
(f) James [illegible]

chemical name, trade name and synonyms
(g) AMMONIUM HYDROXIDE; ALSO KNOWN AS: AQUA AMMONIA

formula of primary component(s)
(h) NH4OH

section 2 ingredients

ingredients	%	TLV (units)
NH3 (AMMONIA) IN WATER (DEMINERALIZED)		

(not specification values)

section 3 physical data

2 boiling point (°F)	MP -72.4C	6 specific gravity	.8974 (26 BE)
3 vapor pressure (mmHg at 20°c)	15.298CF OR 26.6C	7 % volatile by volume	
4 vapor density (air = 1)		8 color and odor	CLEAR AND PUNGENT
5 solubility in water		9 physical state	LIQUID

section 4 fire and explosion hazard data

10 flash point (and method used)
INGNITION TEMP. OF NH3 651C

11 flammable limits (STP)
L.F.L.
U.F.L.

12 extinguishing media ☐ water fog ☐ foam ☐ alcohol foam ☐ CO_2 ☐ dry chemical ☐ other

13 special fire fighting protective equipment

14 unusual fire and explosion hazards

section 5 reactivity data

15 stability: normal conditions; fire conditions

16 conditions to avoid

17 incompatibility (materials to avoid) ☐ water ☐ acid ☐ base ☐ corrosive ☐ oxidizing material ☐ other

18 hazardous decomposition products
NH3 GAS GIVEN OFF

19 hazardous polymerization: may occur

20 conditions to avoid

DTH 000120470

MATERIAL SAFETY DATA SHEET (continued)

section 6 health hazard data

ingestion

CORROSIVE DESTRUCTION OF THE PHARYNX, ESOPHAGUS AND STOMACH; NAUSEA

eye contact

CAN CAUSE SEVERE OCULAR DAMAGE, ON EVEN SHORT CONTACT

23 skin contact

VARIES FROM MILD DERMATITIS TO SEVERE BURNS DEPENDING ON LENGTH OF CONTACT STRENGTH OR SOLUTION; SENSITIVITY

24 skin absorption

MINOR

25 inhalation (TLV or suggested control figure)

INHALATION MAY CAUSE SEVERE IRRITATION OF RESPIRATORY MUCOSA

effects of overexposure

NAUSEA, VOMITING, WEAK PULSE, CONVULSIONS AND COLLAPSE MAY OCCUR

first aid procedures

RESPIRATORY EQUIPMENT; SAFETY SHOWERS; BUBBLER DRINKING FOUNTAINS

section 7 spill or leak procedures

steps to be taken in case material is released or spilled

WASH DOWN WITH WATER

disposal method

section 8 special protection information

ventilation

local exhaust

special

mechanical (general)

other

31 respiratory protection (specify type)

MSA MASK, WITH CANNISTER

protective clothing

RUBBER CLOTHING, GLOVES

eye protection

☐ not normally necessary ☐ safety glasses without side shields ☐ safety glasses with side shields ☐ chemical workers goggles

☐ gas tight goggles or equivalent ☐ other

34 other protective equipment

section 9 special precautions or other comments

35 precautions to be taken in handling and storing

COOL STORAGE CONDITONS IF POSSIBLE; ADEQUATE VENTILATION

other precautions

MATERIAL SAFETY DATA SHEET

Form Approved
Bureau Budget No. 46-R0331

SECTION I

MANUFACTURER'S NAME AND FSCM (Federal Supply Code for Manufacturers): FMC Corporation 6810	EMERGENCY PHONE NO.: 201/541-4171
ADDRESS (Number, Street, City, State, and Zip Code): 500 Roosevelt Avenue, Carteret, N. J. 07008	
CHEMICAL NAME AND SYNONYMS: Phosphoric Acid 75%	TRADE NAME AND SYNONYMS: 75% H_3PO_4
~~CHEMICAL FAMILY~~: Acid	FORMULA: H_3PO_4
FEDERAL STOCK NUMBER (FSN) / GROSS WEIGHT (LBS)	OUTSIDE PACKAGE DIMENSIONS (Inches)

MIL-STD-1341/NATIONAL FIRE PROTECTION ASSOCIATION STD 704M SIGNAL

FLAMMABILITY 0 HEALTH 2 REACTIVITY 0 SPECIFIC HAZARD Acid

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, AND SOLVENTS	%	THRESHOLD LIMIT VALUE (Units)	ALLOYS AND METALLIC COATINGS	%	THRESHOLD LIMIT VALUE (Units)
PIGMENTS		NA	BASE METAL		NA
CATALYST		NA	ALLOYS		NA
VEHICLE		NA	METALLIC COATINGS		NA
SOLVENTS		NA	FILLER METAL PLUS COATING OR CORE FLUX		NA
ADDITIVES		NA	OTHERS		NA
OTHERS		NA			

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, or GASES	%	THRESHOLD LIMIT VALUE (Units)
NA		

SECTION III PHYSICAL DATA

BOILING POINT (°F)	226°	SPECIFIC GRAVITY (H_2O = 1)	1.583
VAPOR PRESSURE (mmHg.)	5.85	PERCENT VOLATILE BY VOLUME (%)	--
VAPOR DENSITY (AIR=1)	--	EVAPORATION RATE (_____ = 1)	--
SOLUBILITY IN WATER	Complete	Freezing Point	0°F
APPEARANCE AND ODOR	Clear liquid - odorless		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used): Non-flammable	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
		Non-flammable	

EXTINGUISHING MEDIA: NA

SPECIAL FIRE FIGHTING PROCEDURES: NA

UNUSUAL FIRE AND EXPLOSION HAZARDS: NA

DTH 000120472

SECTION V — HEALTH HAZARD

THRESHOLD LIMIT VALUE
1 mg/M^3

EFFECTS OF OVEREXPOSURE
Acid burns to skin & eyes - may involve both irreversible and reversible changes not severe enough to cause death or permanent injury.

EMERGENCY AND FIRST AID PROCEDURES
Eyes - Acid burn - flush with water - call physician.

Skin - Acid burn - flush with water - call physician.

Inhalation - Remove from exposure - call physician.

SECTION VI — REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Reaction with metals, which liberate H_2
	STABLE	X	

INCOMPATABILITY (Materials to Avoid)
Alkaline materials, non resistant metals can decompose to emit oxides of phosphorous.

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Dilute with water and/or neutralize with alkaline material such as soda ash and flush to sewer.

WASTE DISPOSAL METHOD
Neutralize and dilute with excess water, flush to sewer.

SECTION VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
U.S. Bureau of Mines approved gas mask & canister for acid mists.

VENTILATION	LOCAL EXHAUST	SPECIAL
No	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Rubber - liquid proof	Chemical safety goggles

OTHER PROTECTIVE EQUIPMENT
Full cover clothing resistent to acid - rubber.

SECTION IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Always wear eye protection - make sure lines are heated to allow material flow. Use acid resistant metals.

OTHER PRECAUTIONS

SECTION X — TRANSPORTATION DATA

PROPER SHIPPING (Article) NAME	DOT CLASSIFICATION
Phosphoric acid	UFC no. 7-2400

DOT LABEL	DOT MARKING	EMERGENCY ACCIDENT PRECAUTIONS AND PROCEDURES
None	None	Keep people away - flush with water.

DOT PLACARD	PRECAUTIONS TO BE TAKEN IN TRANSPORTATION
None	Keep from freezing.

DTH 000120473

1179 10/79

6003-10-20-80

MATERIAL SAFETY DATA SHEET

DATE March 18,1982

APPENDIX C

PRODUCT NAME WT-1255

CALGON CORPORATION

SUBSIDIARY OF MERCK & CO., INC.

SECTION I

MANUFACTURER'S NAME	Calgon Corporation	EMERGENCY TELEPHONE NO.	(412) 777-8000
ADDRESS	P.O. Box 1346, Pittsburgh, Pennsylvania 15230		
CHEMICAL NAME AND SYNONYMS	Cationic Polymer	FORMULA	Polyquaternary Amines

SECTION II HAZARDOUS INGREDIENTS

PRINCIPAL HAZARDOUS COMPONENT (S)	%	ORAL LD_{50}	DERMAL LD_{50}	TLV (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F)	> 212	SPECIFIC GRAVITY (H_2O=1)	1.08 - 1.18
VAPOR PRESSURE (mmHg.)	Similar to Water	PERCENT VOLATILE BY VOLUME (%)	60
VAPOR DENSITY (AIR=1)	Similar to Water	pH	4.5 - 5.5
SOLUBILITY IN WATER	Complete		

APPEARANCE AND ODOR Amber liquid with slight amine odor

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used)	Not Flammable	FLAMMABLE LIMITS	Lel	Uel

EXTINGUISHING MEDIA Product is not flammable.

SPECIAL FIRE FIGHTING PROCEDURES

None

UNUSUAL FIRE AND EXPLOSION HAZARDS

None

DTH 000120474

SECTION V HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

On the basis of animal testing, we would not expect this product to produce any skin or eye irritation. Furthermore, results from acute toxicity testing show that the material would not be considered toxic as defined by the CPSC protocols.

EMERGENCY AND FIRST AID PROCEDURES

Good First Aid should be followed in all cases of exposure.

In case of eye contact, flush with cool water for at least 15 minutes.
If irritation develops, call a physician.

SECTION VI REACTIVITY DATA

STABILITY	STABLE	X	CONDITIONS TO AVOID
	UNSTABLE		

INCOMPATABILITY (Materials to Avoid): Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Unknown

HAZARDOUS POLYMERIZATION				CONDITIONS TO AVOID
MAY OCCUR		NO	X	

SECTION VII SPILL OR LEAK PROCEDURES

REPORTABLE QUANTITIES (RQ) IN LBS. OF EPA HAZARDOUS SUBSTANCES IN PRODUCT

N/A

1.

2.

3.

NOTIFY EPA OF PRODUCT SPILLS EQUAL TO OR EXCEEDING N/A LBS.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Dispose of in accordance with local, state and federal regulations. Dike area to contain as much spilled material as possible. Remove any remaining material by absorbing on vermiculite or other suitable absorbing material and place in a sealed metal container for disposal.

WASTE DISPOSAL METHOD

Mix with a flammable solvent and incinerate in accordance with local, state and federal regulations.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify Type): Not Required

VENTILATION	LOCAL EXHAUST	Not Required	SPECIAL
Normal	MECHANICAL (General)	Not Required	OTHER

PROTECTIVE GLOVES: Not Required

EYE PROTECTION: Not Required

OTHER PROTECTIVE EQUIPMENT: Not Required

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Exercise caution in the storage and handling of all chemical substances.

OTHER PRECAUTIONS

DTH 000120475

6003

Janet M. Mo...

BETZ
TREVOSE, PENNSYLVANIA 19047

APPENDIX D

MATERIAL SAFETY DATA SHEET

DATE: July, 1977

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute grounds for legal action.

1.

MANUFACTURER'S NAME: Betz Laboratories, Inc.	EMERGENCY TELEPHONE NO.: 215:355-3300
ADDRESS (Number, Street, City, State and ZIP Code): 4636 Somerton Rd., Trevose, PA 19047	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: Foamtrol 144-C
CHEMICAL FAMILY:	FORMULA: A blended product

2. HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

GENERIC DESCRIPTION	%	TLV (Units)
A blend of fatty acid esters, fatty acids and modified poly-glycols in a high boiling alkane solvent.		

3. PHYSICAL DATA

BOILING POINT (F.)	>212	SPECIFIC GRAVITY (H_2O=1) 60F	0.847
VAPOR PRESSURE (mm Hg.)	N.D.	PERCENT, VOLATILE BY VOLUME (%)	N.D.
VAPOR DENSITY (AIR=1)	N.D.	EVAPORATION RATE (ether =1)	< 1
SOLUBILITY IN WATER: insoluble but dispersible to 10%		pH	5.9
APPEARANCE AND ODOR: Amber liquid - hydrocarbon odor			

4. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used): open cup 141F closed cup - 126 F	FLAMMABLE LIMITS: never determined	Lel	Uel
EXTINGUISHING MEDIA: Foam, dry chemical, carbon dioxide and water fog.			
SPECIAL FIRE FIGHTING PROCEDURES: Keep drums cooled with water if not on fire.			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

DTH 000120476

5. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Never determined for the product.

EFFECTS OF OVEREXPOSURE
Never determined for the product but may cause skin and eye irritations.

EMERGENCY AND FIRST AID PROCEDURES
Skin contact - Wash with soap and water. Eye contact - Flush thoroughly and promptly with clear water. In case of ingestion or eye contact obtain immediate medical attention.

6. REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		See 'Combustible' statement on label.
	STABLE	XX	

INCOMPATABILITY (Materials to avoid)
None to our knowledge.

HAZARDOUS DECOMPOSITION PRODUCTS
Probably carbon dioxide and water.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	XX	

7. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Contain and absorb on inert material. Incinerate or send to chemical waste disposal area. Keep heat and open flame away.

WASTE DISPOSAL METHOD
Surplus material may be incinerated. Treated effluent should be sent to sanitary sewer or waste treatment facility.

8. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
Normally not needed.

VENTILATION		
Normal	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES: Optional

EYE PROTECTION: Face mask or goggles optional.

OTHER PROTECTIVE EQUIPMENT
Any equipment necessary to protect against the hazards recited on the label.

9. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep container covered. Protect from freezing. Use material only as directed for the specific application.

OTHER PRECAUTIONS
Limit storage to (1) one year maximum for best product reactivity.
Remove contaminated clothing and wash before reuse.

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, BETZ LABORATORIES, INC. MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

DTH 000120477

BETZ®

foam-trol

ANTIFOAM AGENT

FORMULA 144-C

CAUTION

DO NOT TAKE INTERNALLY. Many chemicals in concentrated form may cause skin irritations on prolonged contact.

In case of contact with skin, wash well with soap and water. In case of contact with eyes, flush promptly and thoroughly with clear water. In case of ingestion or contact with eyes, secure immediate medical attention.

CAUTION—COMBUSTIBLE

Keep away from heat and open flame. Keep container closed when not in use.

DESCRIPTION AND USE

Betz Foam-Trol formulations are blends of specially selected agents designed to control foaming in industrial systems.

This product should be used only as directed and in accordance with the control procedures BETZ has established for a specific application.

FOR INDUSTRIAL USE ONLY. Technical advice regarding specific site problems is available from BETZ.

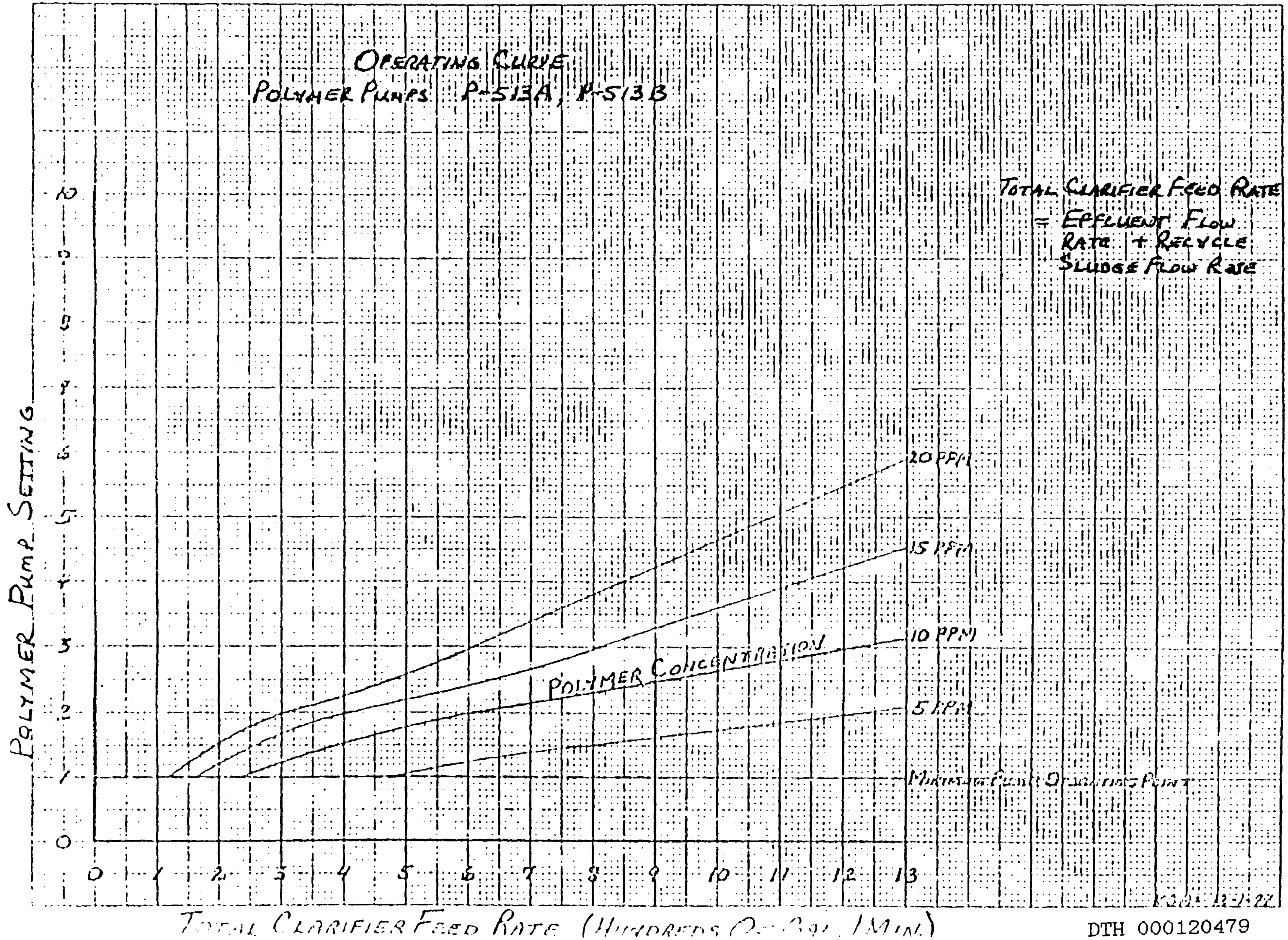
Betz Foam-Trol may become cloudy, or may separate slightly, if stored at temperatures of 55 F or below. To restore uniformity, warm to a temperature of 100 F. Mild agitation during warming helps reduce time required.

KEEP CONTAINER COVERED — PROTECT FROM FREEZING

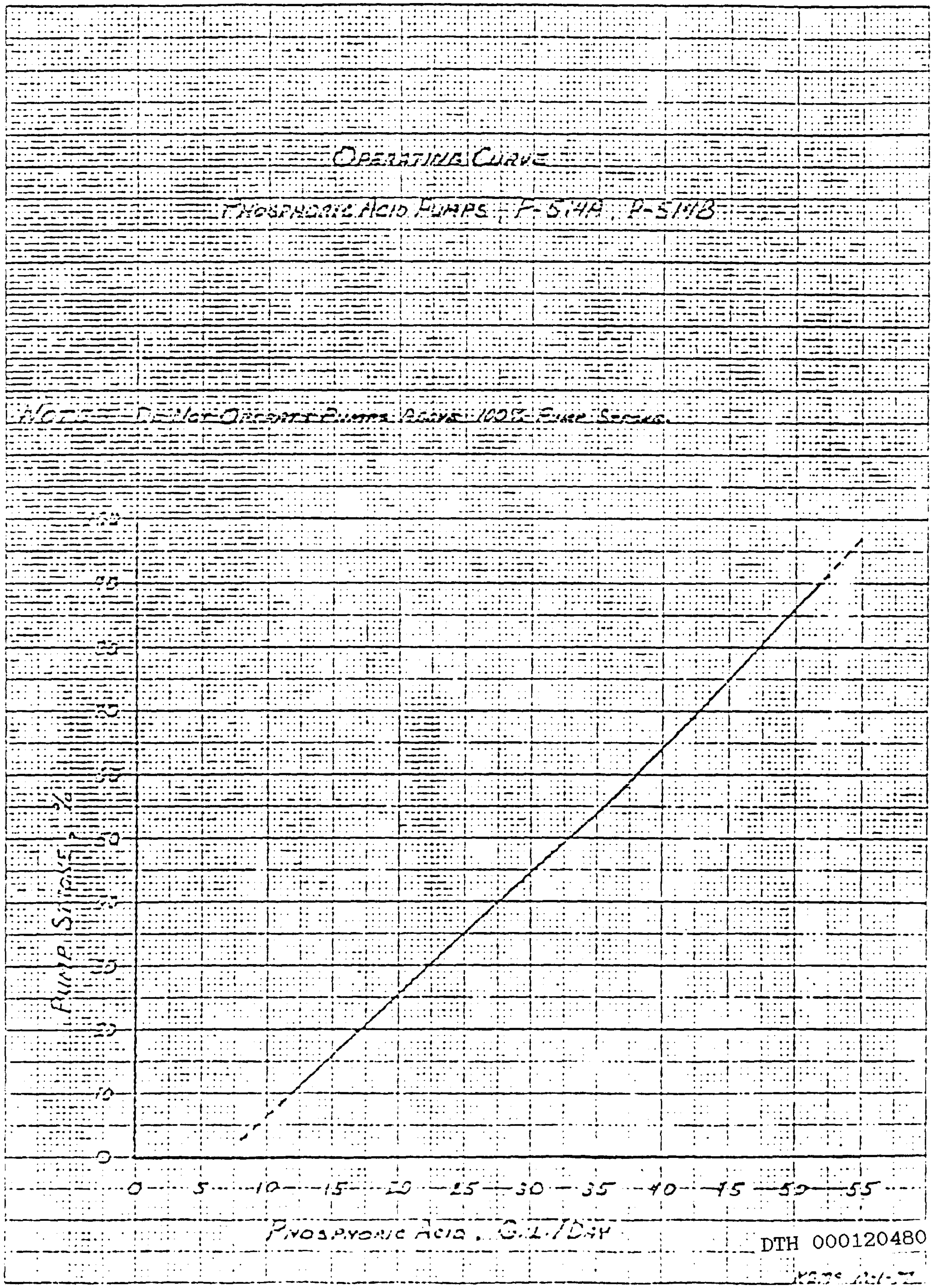
5.7034 7207

APPENDIX D

DTH 000120478



DTH 000120479



DTH 000120480

APPENDIX G

LIQUID HEIGHT/VOLUME TABLE - T-78, T-78A

T-78 Aqua Ammonia Bulk Tank

Liquid Volume Below Outlet Nozzle - 478 Gallon

Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon
0 - 0	0						
0 - 1	24	2 - 1	593	4 - 1	1162	6 - 1	1732
0 - 2	47	2 - 2	616	4 - 2	1185	6 - 2	1755
0 - 3	71	2 - 3	640	4 - 3	1209	6 - 3	1779
0 - 4	95	2 - 4	664	4 - 4	1233	6 - 4	1803
0 - 5	119	2 - 5	688	4 - 5	1257	6 - 5	1827
0 - 6	142	2 - 6	711	4 - 6	1280	6 - 6	1850
0 - 7	166	2 - 7	735	4 - 7	1304	6 - 7	1874
0 - 8	190	2 - 8	759	4 - 8	1328	6 - 8	1898
0 - 9	213	2 - 9	782	4 - 9	1351	6 - 9	1921
0 - 10	237	2 - 10	806	4 - 10	1375	6 - 10	1945
0 - 11	261	2 - 11	830	4 - 11	1399	6 - 11	1969
1 - 0	285	3 - 0	854	5 - 0	1423	7 - 0	1992
1 - 1	309	3 - 1	878	5 - 1	1447	7 - 1	2016
1 - 2	332	3 - 2	901	5 - 2	1470	7 - 2	2039
1 - 3	356	3 - 3	925	5 - 3	1494	7 - 3	2063
1 - 4	380	3 - 4	949	5 - 4	1518	7 - 4	2087
1 - 5	404	3 - 5	973	5 - 5	1542	7 - 5	2111
1 - 6	427	3 - 6	996	5 - 6	1565	7 - 6	2134
1 - 7	451	3 - 7	1020	5 - 7	1589	7 - 7	2158
1 - 8	475	3 - 8	1044	5 - 8	1613	7 - 8	2182
1 - 9	498	3 - 9	1067	5 - 9	1636	7 - 9	2205
1 - 10	522	3 - 10	1091	5 - 10	1660	7 - 10	2229
1 - 11	546	3 - 11	1115	5 - 11	1684	7 - 11	2253
2 - 0	569	4 - 0	1138	6 - 0	1708	8 - 0	2277

T-78A Aqua Ammonia Day Tank

Liquid Volume Below Outlet Nozzle - 29 Gallon (Not recoverable)

Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon
0 - 0	0						
0 - 1	6	1 - 1	76	2 - 1	147		
0 - 2	12	1 - 2	82	2 - 2	153		
0 - 3	18	1 - 3	83	2 - 3	159		
0 - 4	23	1 - 4	93	2 - 4	164		
0 - 5	29	1 - 5	99	2 - 5	170		
0 - 6	35	1 - 6	105	2 - 6	176		
0 - 7	41	1 - 7	111				
0 - 8	47	1 - 8	117				
0 - 9	53	1 - 9	123				
0 - 10	59	1 - 10	129				
0 - 11	64	1 - 11	135				
1 - 0	70	2 - 0	141				

APPENDIX H

LIQUID HEIGHT/VOLUME TABLE - T-76, T-77, T-76A, T-77A

T-76/T-77 Polymer/Phosphoric Acid Bulk Tank

Liquid Volume Below Outlet Nozzle - 282 Gallon

Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon
0 - 0	0				
0 - 1	18	2 - 1	441	4 - 1	864
0 - 2	35	2 - 2	458	4 - 2	881
0 - 3	53	2 - 3	476	4 - 3	899
0 - 4	71	2 - 4	494	4 - 4	917
0 - 5	88	2 - 5	511	4 - 5	934
0 - 6	106	2 - 6	529	4 - 6	952
0 - 7	123	2 - 7	546	4 - 7	969
0 - 8	141	2 - 8	564	4 - 8	987
0 - 9	159	2 - 9	582	4 - 9	1005
0 - 10	176	2 - 10	599	4 - 10	1022
0 - 11	194	2 - 11	617	4 - 11	1040
1 - 0	212	3 - 0	635	5 - 0	1058
1 - 1	230	3 - 1	653		
1 - 2	247	3 - 2	670		
1 - 3	265	3 - 3	688		
- 4	283	3 - 4	706		
- 5	300	3 - 5	723		
1 - 6	318	3 - 6	741		
1 - 7	335	3 - 7	758		
1 - 8	353	3 - 8	776		
1 - 9	371	3 - 9	794		
1 - 10	388	3 - 10	811		
1 - 11	406	3 - 11	829		
2 - 0	423	4 - 0	846		

T-76A/T-77A Polymer/Phosphoric Acid Day Tank

Liquid Volume Below Outlet Nozzle - 12 Gallon (Not recoverable)

Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon	Height Above Nozzle Ft.-In.	Volume Gallon
0 - 0					
0 - 1	3	1 - 1	40	2 - 1	76
0 - 2	6	1 - 2	43	2 - 2	79
0 - 3	9	1 - 3	46	2 - 3	82
0 - 4	12	1 - 4	49	2 - 4	85
0 - 5	15	1 - 5	52	2 - 5	88
0 - 6	18	1 - 6	55	2 - 6	91
- 7	21	1 - 7	58		
0 - 8	24	1 - 8	61		
0 - 9	28	1 - 9	65		
0 - 10	31	1 - 10	68		
0 - 11	34	1 - 11	71		
1 - 0	37	2 - 0	73		

DTH 000120482

[illegible] Company — VGM Plant — [illegible] Treatment Log

APPENDIX I

Date ____________

	Pumper/ Loader	Time	Treated Effluent Water (No. 5 — Main Plant Effluent) Flow Rate GPM	Flow Integrator	Temp. °F	pH	Dis. O_2 PPM	Raw Feed pH Before Control	After Control
Days									
Evening									
Nights									

	ASU Feed		Sludge Recycle		Sludge Wasting		Dilution Water	
	Level LIC-702 %	Valve Air Loading PSIG	Pump Pres. PSIG	Flow Rate GPM	Feed Flow Rate GPM	Removal Rate	Flow Rate GPM	Source
Days								
Evening								
Nights								

	Chemical Tank Levels, Ft.-In.					
	Polymer		Phosphoric Acid		Aqua Ammonia	
	T-76	T-76A	T-77	T-77A	T-78	T-78A
Days						
Evening						
Nights						
[illegible]						
Ins						

	Chemical Feed Pumps							Combined Effluent @ T-991			Incinerator Eff. Flow Integr.
	Polymer			Phos. Acid		Ammonia					
	A or B	Feed Rate	Water Rate GPM	A or B	Feed Setting %	A or B	Feed Setting %	Flow Rate GPM x	Temp °F	pH	(No. 6 Sample @ T-990) READING x
Days											
Evening											
Nights											

Electrical Failures ______________________________

____

Condition of Ponds, Clarifier and Thickener ______________________________

____

Remarks – ______________________________

____

____

____

____

[illegible] 10 77

ANALYST ____________

SAMPLE DATE ____________

ANALYSIS DATE ____________

APPENDIX J

CONOCO VCM PLANT
SECONDARY TREATING SYSTEM

PARAMETER IN PPM, UNLESS INDICATED

PARAMETER	(1) FEED SECONDARY	(2) EQUALIZATION OUTLET	(3) CLARIFIER FEED	(4) CLARIFIER OVERFLOW	(5) 201 EFFLUENT
1. COD, TOTAL	______	______	______		______
2. COD, FILTERED	______	______	______	______	
3. BOD TOTAL	______	______		______	______
4. BOD FILTERED	______	______		______	
5. AMMONIA (N)		______	______	______	______
6. TOTAL O-OP$_4$ (As P)		______		______	
7. EDC	______	______		______	
8. 2-CHLORO	______	______		______	
9. CHLORINATED HYDROCARBONS (As EDC)	______	______			______
10. CHLORIDES				______	
11. TSS			______	______	______
12. VSS			______		
13. S.V.I.			______		
14. pH	______	______	______	______	

15. FLOW RATE (GPD) = ____________ lbs/day ____________

16. F/M = ____________

17. k = ____________

18. Copper	______	______		______	

19. Special Samples

20. Comments:

S/S-JAD-[illegible](LCCP)

DTH 000120484

VCM PLANT,
SECONDARY EFFLUENT DISCHARGE ANALYSIS

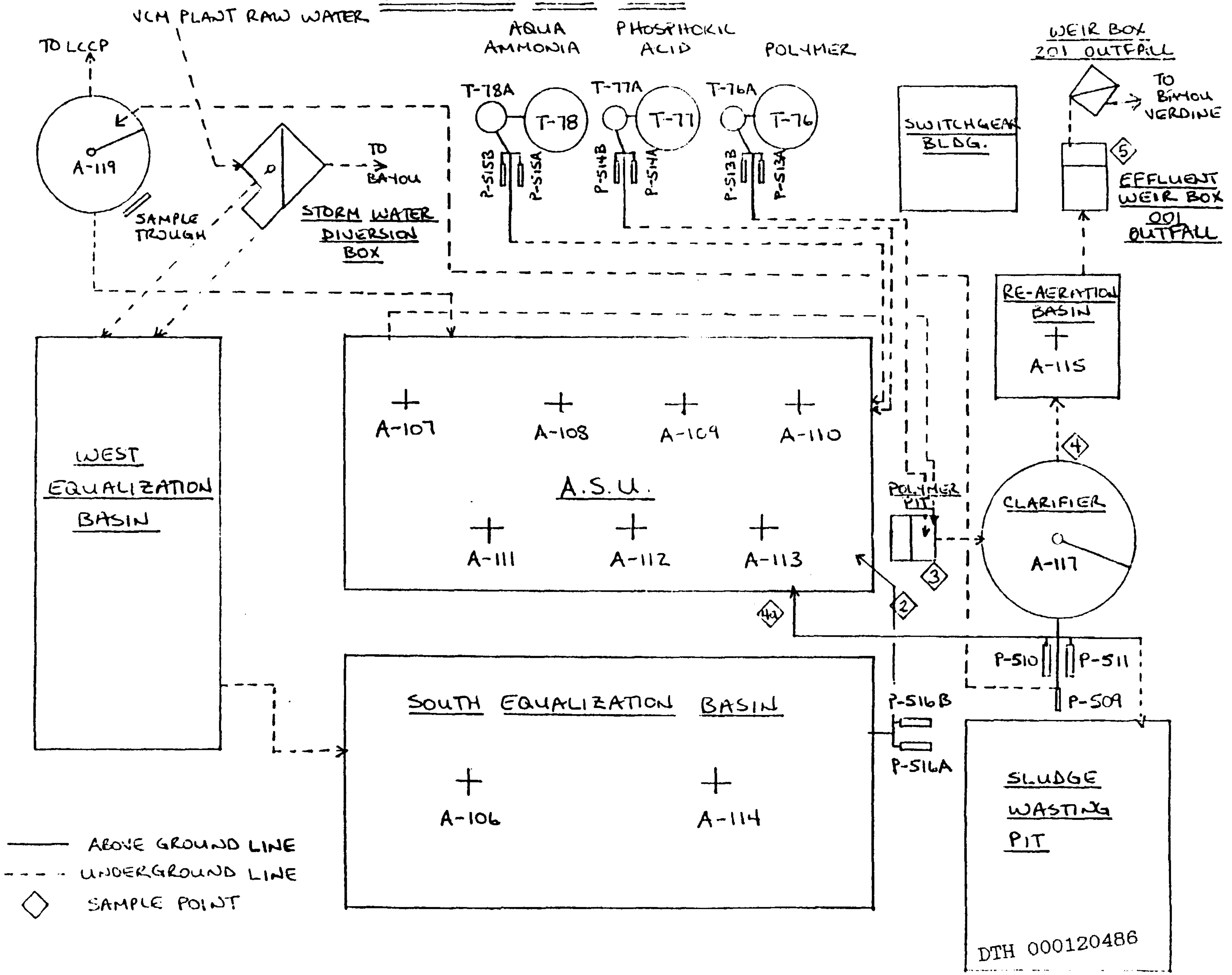
DATE	DISCHARGE POINT - 201						DISCHARGE POINT 101	
	Effluent Flow Rate lbs/day	BOD	COD	Total Suspended Solid	Ammonia -N	Chlorinated Hydrocarbons As EDC	Total Suspended Solid	NPDES DISCHARGE
		Lbs	Lbs	Lbs	Lbs	Lbs	ppm	Limitations effective 12/15/75
		600	4177	558	30	1560	50	Daily Avg.
		1350	9338	1256	68	3375	75	Daily Max.

APPENDIX K

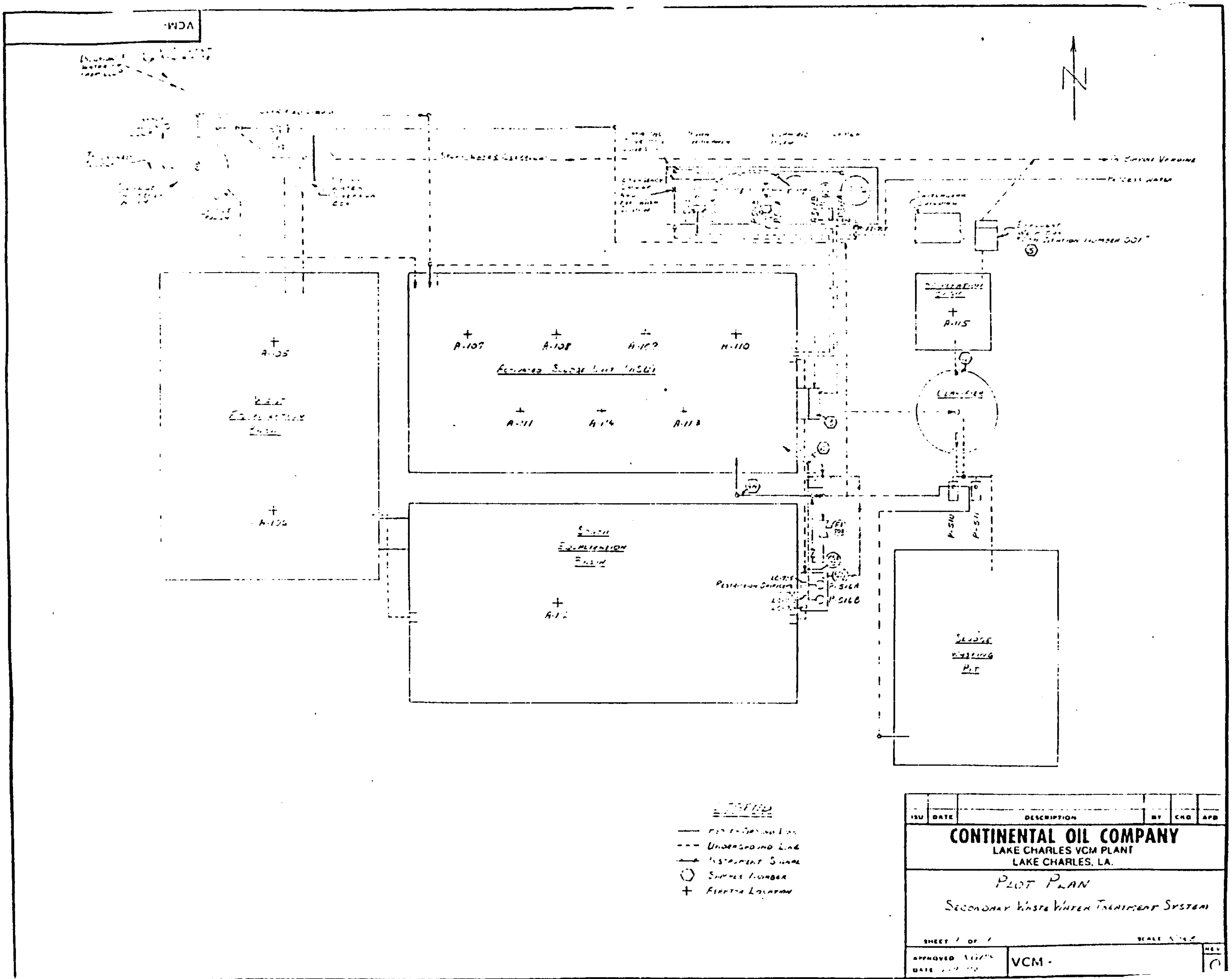
DTH 000120485

APPENDIX L

SECONDARY PLOT PLAN



DTH 000120486



DTH 000120487

HCl NEUTRALIZATION UNIT

LAKE CHARLES VCM PLANT

I. INTRODUCTION

The VCM Vent Gas Incineration Unit was installed to comply with Environmental Protection Agency regulations on VCM emissions. Chlorinated hydrocarbons in the vent streams from the plant are burned at high temperature and long residence time. The HCl resulting from combustion is recovered from the off-gas in an HCl absorber. This creates the problem of acid disposal.

Sales was chosen as the primary means of disposal. A concentration unit has been installed to upgrade the acid strength from the HCl absorber to a marketable level.

The HCl Neutralization unit is required to serve as a backup for the sales alternative. Thus neutralization will be used only when the acid cannot be sold. Neutralization is also needed to handle an emergency acid dump from HCl absorbers C-901 and C-901B. An emergency acid dump occurs when there is a malfunction in the bottom circulation loop of either absorber which causes the liquid level in the absorber bottom to rise and trip the high level alarm and dump valve. Neutralization must always be ready for this dump even if acid is not being intentionally destroyed at the time.

I. INTRODUCTION (continued)

The neutralization unit consists of three main sections. (See Process Flow Diagram). The clam shell system is used to neutralize the aqueous HCl. $CaCO_3$ in the clam shell reacts according to the following reaction:

$$2HCl + CaCO_3 \rightarrow CaCl_2 + H_2O + CO_2$$

Some HCl is stripped from the liquid by the evolved CO_2. The Occupational Safety and Health Administration has set a maximum worker exposure limit for HCl at 5 ppm.

The caustic system is used to trim neutralize clam shell pit effluent. Caustic also reacts with the dissolved CO_2. The two overall reactions are:

$$CO_2 + 2NaOH \rightarrow Na_2CO_3 + H_2O$$

$$HCl + NaOH \rightarrow NaCl + H_2O$$

II. PROCESS DESCRIPTION

A. Clam Shell System

1. Acid Sources

Acid solution flows through the absorber acid dump line to clam shell pit feed box, T-988. The normal source of HCl is product drawoff from either of the two HCl absorbers (C-901 or C-901B). Emergency dump valve lines from the bottom of C-901 and C-901B and a line from the Acid Concentration Unit are also tied into this acid dump line. Vessel drains, sample drains, and area drains in the incinerator process area are tied into the incinerator acid sewer which drains to the existing clam shell pit, T-500.

2. Feed Rate

The design HCl feed rate to the neutralization unit is 4,800 lb/hr dry basis. The normal HCl production rate in the incineration unit is in the range of 2,000-2,000 lb/hr HCl. The HCl concentration in the feed to neutralization is in the range of 10-25 weight percent. The total neutralization feed rate can vary from 20 to 80 GPM depending on the concentration and HCl production rate. During an emergency dump, the feed rate can average as high as 600 GPM for several minutes. For design purposes, it has been assumed that this high rate could be sustained for up to two-three hour and then diminish to 200-400 GPM for an additional 24 hours.

II. PROCESS DESCRIPTION (continued)

A. Clam Shell System (continued)

3. Clam Shell Pits

The acid flows from T-988 to either of the clam shell pits, T-981 and 982. There is a butterfly valve located in the lines feeding and leaving each pit. Consequently, each pit can individually be put on line or removed from service. Two pits are required so that one can be recharged with shell or cleaned out while the other is in use. Each pit holds a one-day supply of shell at an HCl flow rate of 4,800 lb/hr. Therefore, one pit has to be filled each day under maximum operating conditions. For lower HCl rates, the pits will need to be filled less often.

Clam shell contains inerts which accumulate in the pits. The amount of inerts in the shell varies. Regular-washed clam shell contains more inerts than double-washed clam shell because the double-washed shell is more thoroughly cleaned. Limestone contains the same reagent ($CaCO_3$) as clam shell and generally has less inerts. The more inert material in the shell or stone, the more often the pits will need to be cleaned out. With the use of double-washed clam shell and an HCl destruction rate of 4,800 lb/hr (dry basis), each pit has to be cleaned out once per month (i.e., one pit every two weeks). The actual frequency of cleanout depends on the neutralization reagent used and the HCl neutralization rate.

II. PROCESS DESCRIPTION (continued)

A. Clam Shell System (continued)

4. Aerators

Each clam shell pit contains two static aerators (A-982 A, B in T-981, A-983 A, B in T-982) in the outlet section. Blower, BL-982, supplies air to the aerators to mix and strip the liquid before it leaves the pit. This removes carbon dioxide from solution. The partially-neutralized liquid then flows from either clam shell pit to the effluent box, T-989.

5. Shell Pit Bypasses

Precautions have been taken to ensure the clam shell pits will never overflow onto the ground. The wooden underflow baffles in the pits have holes built into them. These holes allow an internal bypass of liquid within the pits. The holes in the baffles are at an elevation above the normal liquid level. If the underflow area of the baffles should become plugged with sludge or if the high flow rates from an emergency dump at an HCl absorber cause the liquid level to rise in the pits, the liquid will bypass through the holes in the baffles.

An external bypass line (Line No. 4) connects T-988 to T-989. This allows acid to bypass the acid pits if both are simultaneously blocked in for some reason. The liquid level in T-988 will rise and overflow to T-989 before the liquid overflows the acid pits. A level alarm (LAH-985) is activated if the external bypass occurs.

II. PROCESS DESCRIPTION (continued)

B. Caustic System

1. Supply System

The purpose of the caustic supply system is to fill caustic supply tank, T-986. Pump P-983 transfers 50 percent caustic from a line off existing storage tank, T-421, to Static Mixer A-981. Water from a 3-inch process water line mixes with the 50 percent caustic in A-981 to produce 20 percent caustic. The flow of 50 percent caustic and process water are each manually controlled by a local flow indicator and globe valve. All of this equipment is located in the area east of T-421 in the main plant tank farm area.

The 20 percent caustic flows from A-981 to Caustic Storage Tank T-986 located in the neutralization process area. T-986 can hold more than a five-day supply of caustic based on a flow rate of 160 GPM and a pH of 2 for the clam shell pit effluent. Normal pH of the shell pit effluent should be in the range of 3-4. T-986 should hold more than a ten-day supply of caustic based on this pH range.

2. Circulation System

Circulation Pump P-982 A or B, supplies 20 percent caustic to the pH control valves at the caustic neutralization facility (T-983, 984, and 985). The caustic is circulated from T-986 back to T-986 through a back pressure controller, PC-981. A

II. PROCESS DESCRIPTION (continued)

B. Caustic System (continued)

2. Circulation System (continued)

supply line for the pH control valves is connected to this loop. The pressure on the upstream side of each valve is head constant by PC-981. The control valves can be fully blocked in without adversely affecting the circulation pumps since the bulk of the flow is normally through PC-981.

3. pH Control System

The pH of the clam shell pit effluent is normally in the range of 3-4 as it enters T-983. A lower pH (0-1) could result from an HCl breakthrough in the shell pits due to low shell inventory or acid by-pass. A feedback pH controller (PHRC-982) controls caustic addition to T-983. The feedback pH signal is meausred in the exit weir of T-983 and controlled at a value of approximately 5.5. Two control valves (PHCV-982 A and B) are required to get the desired rangeability of caustic addition to T-983. Another feedback pH controller (PHRC-983) controls trim caustic addition to T-984. The feedback pH signal is measured in the exit weir of T-984 and controlled at a pH of approximately 7. Only one control valve (PHCV-983) is required. Bypass lines around the pH control valves allow manual addition of caustic to T-983 and T-984.

II. PROCESS DESCRIPTION (continued)

B. Caustic System (continued)

4. Neutralization Sumps

The partially neutralized liquid from the clam shell pit effluent box (T-989) flows into the caustic neutralization facility (T-983, 984, and 985). Agitators are located in T-983 and T-984 (A-984 in T-983 and A-985 in T-984). The agitators provide intense mixing for pH control. T-985 is used as a sump for the scrubber feed pumps (P-981 A and B). The neutralized liquid flows from T-985 to Diversion Box T-987.

II. PROCESS DESCRIPTION (continued)

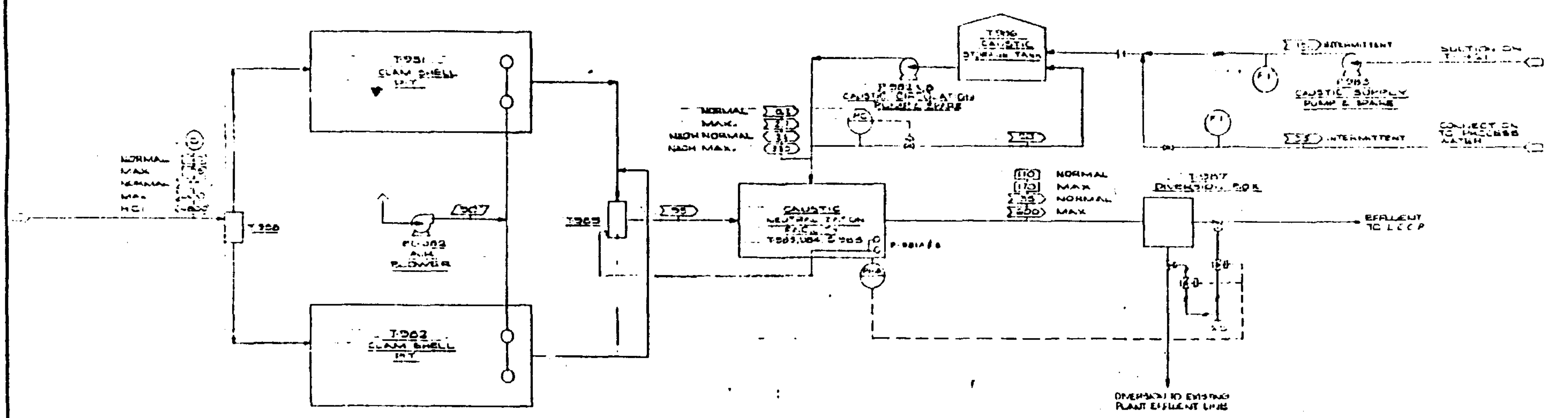
C. Diversion System

Neutralization unit effluent gravity flows from the pump sump in the caustic neutralization facility (T-985) to Diversion Box T-987. There are two lines leaving this box. The neutralization effluent line is pumped to the North Lagoon at the Lake Charles Chemical Plant. The other is a diversion line which ties into a new catch basin in the sewer line to Equalization Basin T-701. There is a control valve located in each of these lines (PHCV-984A in the neutralization effluent line and PHCV-984B in the diversion line).

If the pump to the North Lagoon fails, the incinerator effluent can be allowed to overflow the weir in the diversion box and flow into the polishing pond at the Lake Charles Chemical Plant. If overflowing into the polishing pond is unacceptable, then a temporary pump may be set up to pump the effluent into the North Lagoon at the Chemical Plant.

Only in an emergency situation should the neutralization effluent be diverted to the Equalization Basin, T-701. At no time will the neutralization effluent be allowed to discharge directly to the Bayou Verdine since this may result in an NPDES violation due to a high concentration of solids in this stream.

If the neutralization effluent is diverted to T-701, the main plant control room operator must be notified of the diversion. The problem causing the diversion action should be determined and solved as quickly as possible.



CONFIDENTIAL

LEGEND

- NEW
- PRESSURE, PSIG
- PRESS., IN WATER GAGE
- TEMPERATURE, °F
- FLOW, GPM
- FLOW, LBS/HR
- FLOW, CU FT/MIN

CONTINENTAL OIL COMPANY
ENGINEERING CENTER
PONCA CITY, OKLAHOMA

PROCESS FLOW DIAGRAM
HCl NEUTRALIZATION
LAKE CHARLES VCM PLT

DTH 000120497

SECTION IV

HAZARDOUS WASTE REGULATIONS AND GUIDELINES

SECTION IV

RCRA GUIDELINES

CONOCO

Interoffice Communication

To J. W. Ware, J. R. Holcomb, and P. L. Fetzer

From G. S. Hoenes

Date November 18, 1980

Subject Compliance with RCRA Hazardous Waste Regulations

On February 26 and May 19, 1980, the United States Environmental Protection Agency (EPA) issued the first set of a series of regulations concerning generation, transportation, treatment, storage, disposal and/or reclamation of hazardous wastes. These regulations, mandated by the Resource Conservation and Recovery Act (RCRA), are extremely comprehensive in scope; and as a result, require extensive compliance actions by industry. On November 19, 1980 Conoco did supply the EPA with an interim Hazardous Waste Permit application. Submittal of the permit application will allow Conoco to maintain hazardous waste operations until a final Hazardous Waste Permit is approved by the EPA. Submittal of the permit application will also require that the hazardous wastes generated, treated, or stored at the VCM Plant will need to be closely and accurately managed and that special procedures will need to be followed to assure the minimum amount of hazardous wastes are generated.

Details of the hazardous waste storage and treatment facilities operated at the VCM Plant and the hazardous wastes generated are attached. Also included are special operating procedures for the hazardous waste facilities. These procedures should be incorporated into standard plant operating practices immediately.

The RCRA regulations carry the typical civil and criminal penalties associated with Federal environmetnal regulations, therefore proper hazardous waste management and compliance with all RCRA regulations is essential. Your cooperation in this matter is appreciated. Should you have any questions or comments, please see me.

Greg Hoenes

Greg Hoenes
Process Engineer

is
CC + enc:
JAD-GLF-HJN-MLH-DLD-CWT-PE
JWW(4)-JRH(4)

STORAGE AND TREATMENT FACILITIES

According to RCRA regulations, the plant currently operates or plans to operate 14 hazardous waste treatment or storage facilities. Following is a list of the VCM Plant's storage and treatment facilities considered hazardous by RCRA regulations:

I. Storage - Containers

1) Miscellaneous Hazardous Waste Dumpster (new)
2) Hazardous Waste Drums (new)

II. Storage - Tanks

1) Tars Storage Tank, T-405
2) Wet Crude EDC Tank, T-452

III. Storage - Other

1) Limestone/Clamshell Waste Treatment Pile (new)

IV. Treatment - Surface Impoundments

1) West Equalization Basin
2) South Equalization Basin
3) Activated Sludge Basin
4) Raw Wastewater Pit, T-1
5) Raw Wastewater Pit, T-2
6) Wastewater Neutralization Pit, T-500
7) Incinerator Neutralization Pit, T-981
8) Incinerator Neutralization Pit, T-982
9) Copper Pit

There are two other hazardous waste treatment facilities operated in the plant. The two facilities are the Steam Strippers and the Closed Process Sewer. However, these facilities are exempt from RCRA regulations since they are considered to be "totally enclosed treatment facilities."

Of the 14 hazardous waste storage and treatment facilities which are covered by RCRA regulations, three of the facilities are new and will be implemented prior to November 19, 1980 in order to provide a legitimate and practical way to handle various wastes considered hazardous under RCRA regulations. The three new hazardous waste facilities explained below are:

1) Miscellaneous Hazardous Waste Dumpster
2) Hazardous Waste Drums
3) Limestone/Clamshell Waste Treatment Pile

The Miscellaneous Hazardous Waste Dumpster will be a 4 cu. yd. Browning Ferris Industrial (BFI) dumpster. The dumpster will be located to the north of the Light Ends Column, C-102, area (see the attached plot plan). The dumpster will be clearly marked "Miscellaneous Hazardous Waste Dumpster" and should be used only for hazardous wastes.

In addition to the Miscellaneous Hazardous Waste Dumpster, an area south of the Liquid Chlorine Tank, T-601, (see the attached plot plan) has been designated for the storage of 55-gallon drums containing hazardous waste. The 55-gallon drums, similar to the Miscellaneous Hazardous Waste Dumpster, are to be used for storing miscellaneous hazardous wastes which cannot be handled in a more efficient manner. The drums are to be used only when the dumpster is not available or its use is not practical. For instance, the drums should be used if the volume of the waste exceeds the capacity of the dumpster.

The Limestone/Clamshell Waste Treatment Pile has been developed to allow the limestone/clamshell used in the Wastewater Neutralization Pit, T-500, to be treated thereby rendering the material non-hazardous. The Waste Treatment Pile includes the dirt covered area to the north, east, and west of the Incinerator Neutralization Pits, T-981 and T-982, extending to the VCM Plant boundaries (see the attached plot plan). The waste limestone/clamshell should be spread over the Waste Treatment Pile area and allowed to "weather" thereby removing residual organics before reuse.

No new procedures will be required for the existing hazardous waste treatment and storage facilities. However, manifesting will be required when the facilities are cleared.

HAZARDOUS WASTE

As a result of extensive testing, it has been determined that the VCM Plant generates 26 wastes which are considered hazardous under RCRA regulations and should be handled as such. Following is a list of those wastes.

HAZARDOUS WASTES

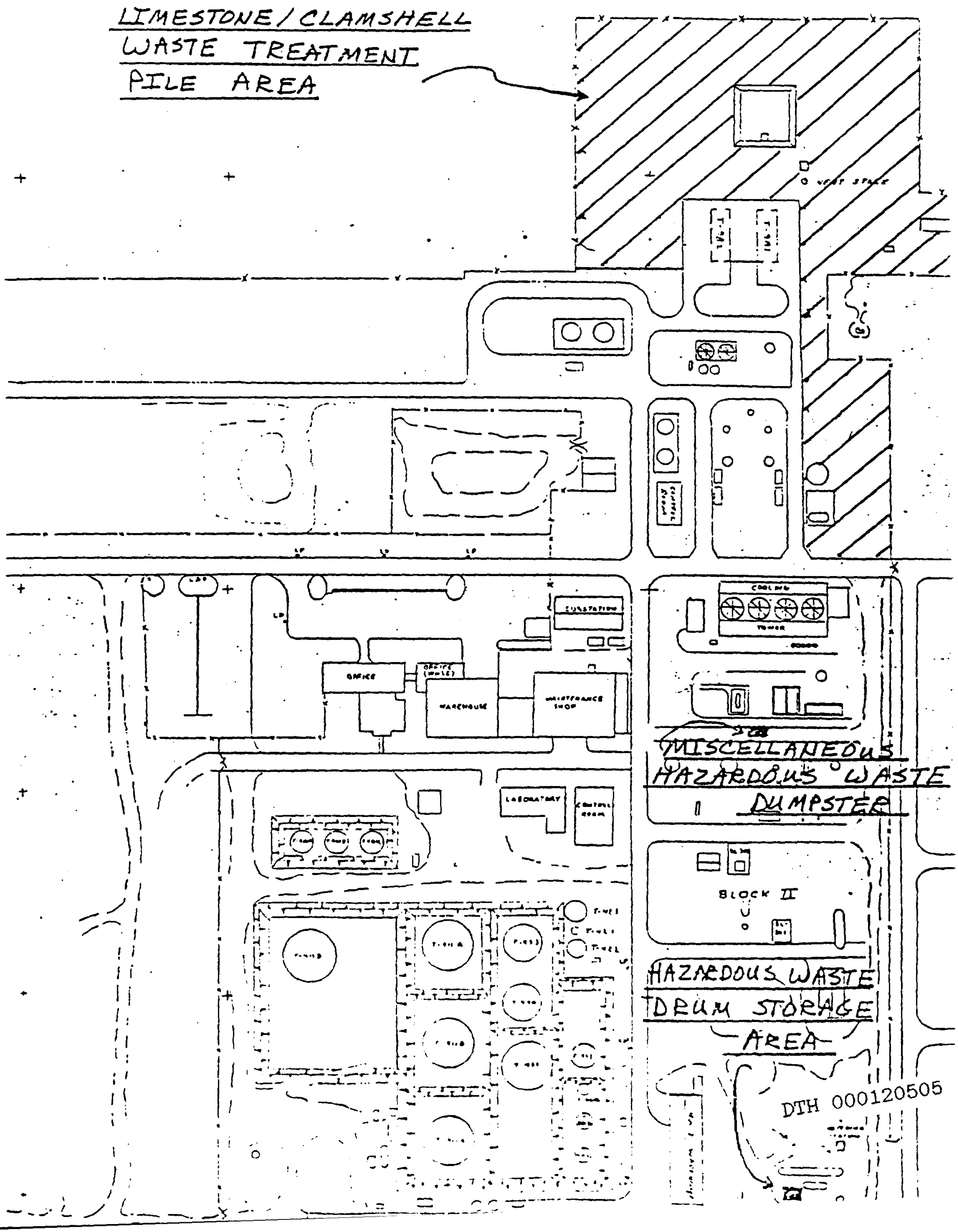
1) Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production (EDC tars).
2) Heavy ends from the distillation of vinyl chloride in vinyl chloride production (VCM tars).
3) Asbestos insulation
4) Vinyl Chloride (VCM)
5) Ethylene Dichloride (EDC)
6) Copper Pit Sludge
7) T-1 Pit Sludge
8) T-2 Pit Sludge
9) VCM Plant Wastewater
10) Incinerator Wastewater
11) Laboratory Hood Charcoal Beds
12) EDC and VCM Filter Cartridges
13) T-500 Pit Limestone
14) Spent Calcium Chloride
15) Laboratory Sample Bottles
16) Laboratory Chemical Reagent Bottles
17) Copper Chloride Catalyst
18) Raschig Rings
19) T-500 Pit Sludge
20) Secondary West Equalization Basin Sludge
21) Secondary South Equalization Basin Sludge
22) Secondary Activated Sludge Unit (A.S.U.) Material
23) T-981 Pit Sludge
24) T-982 Pit Sludge
25) Incinerator Overflow Box Sludge
26) Quench Column Coke

EDC and VCM are included on the list even though they are not generated as wastes. The two substances have been included on the list since spillage of either substance or contact of either substance with another material might result in the generation of a hazardous waste. Materials which absorb VCM or EDC must be considered hazardous if they contact either of the hazardous contaminants. An example of such a contaminated material is EDC contaminated dirt. The dirt should be treated as a hazardous waste and should be stored in either the Miscellaneous Hazardous Waste Dumpster or the 55-gallon Hazardous Waste Drums prior to disposal. Materials such as teflon liners, scrap pipe, etc. which do not absorb EDC or VCM are not considered hazardous if they are rinsed to assure that none of the contaminant remains. RCRA regulations require the material to be rinsed three times with a suitable solvent (water is sufficient for EDC and VCM) to assure the material is decontaminated. Therefore, to reduce the amount of hazardous waste generated at the VCM Plant, materials should be decontaminated whenever possible by triple-rinsing.

The previously listed hazardous wastes generated at the VCM Plant and any additional "contaminated" hazardous wastes are considered hazardous under RCRA regulations and should be handled accordingly. Therefore, manifesting is required for disposal of all of these materials.

The EDC and VCM tars, Copper Pit Sludge, T-1 Pit Sludge, T-2 Pit Sludge and Asbestos Insulation should be disposed of as at present by contractors. The Laboratory Hood Charcoal Beds and EDC and VCM Filter Cartridges and other miscellaneous wastes should be stored in the Miscellaneous Waste Dumpster or 55-gallon Hazardous Waste Drums until a sufficient quantity of waste is collected to warrant disposal or before 90 days have expired. The Incinerator Wastewater and VCM Plant Wastewater are considered hazardous wastes prior to their discharge points and should be treated as such. However, no special procedures for disposal are required since both wastes are handled through a treatment system (already permitted under NPDES). Finally, the limestone/clamshell from the T-500 Pit, as previously mentioned, should be placed in the Waste Treatment Pile and allowed to weather.

VCM PLANT PLOT PLAN: NEW HAZARDOUS WASTE FACILITIES



SECTION IV

HAZARDOUS WASTE
FACILITY INSPECTION PLAN

Hazardous Waste: Facility Inspection Plan

I. General Applicability

RCRA Part 265 Regulations and in accordance with DNR Analytical Operations Procedure Manual require an ongoing inspection program to prevent the release of hazardous wastes to the environment through unplanned releases, equipment failure, or human error. This plan of inspection of hazardous waste storage and treatment facilities is implemented with the primary objective to prevent those releases by locating and eliminating malfunctions, deterioration or operating problems before spills occur. The inspection program is to be a part of the daily routine of monitoring and checks which are normal operating practice so that problem prevention becomes a part of the everyday operations.

II. Facility Standards

A. Container Storage

Containers shall be inspected once weekly to determine that - (1) containers holding hazardous wastes are closed, (2) containers are not leaking or have not deteriorated to the point of being unsafe.

B. Tank - Treatment or Storage of Hazardous Waste

1) Tanks will be inspected daily to determine -

(a) the discharge control equipment is in good working order, (b) the tank is being operated according to design by data gathered from monitoring equipment, (c) the level in the tank, for uncovered, undiked, or otherwise uncontained tanks; provides at least two feet of freeboard.

2) Tanks will be inspected at least once weekly to determine - (a) the tank materials have not significantly corroded and there are no visible leaks, (b) the construction materials of containment structures have not deteriorated or leaked and the area immediately surrounding the structures show no signs of leaks (e.g., wet spots).

C. Surface Impoundments

1) Daily inspection to determine that there is at least two feet of freeboard.

2) Weekly inspection to determine that materials of construction have not leaked, deteriorated or failed.

D. Landfills

This section will be completed and implemented at the time the landfill begins operation, or at the time this information is required for submittal as a part of the second phase of the RCRA permitting process.

E. Chemical, Physical and Bio-Treatment

1) Daily inspections of discharge control and safety equipment (which includes bypass, drainage or pressure relief systems) to determine that such equipment is in working order.

2) Daily monitoring data to ensure proper process operations.

3) Weekly inspections of the equipment of the treatment process to detect corrosion or where applicable, leaks.

4) Weekly inspection of containment structures to detect physical deterioration and possible leakage.

All applicable Facility Inspection Reports are contained in Appendix II for reference.

APPENDIX I

FACILITY INSPECTION PROCEDURES

I. Above Ground Storage Tanks

All above ground storage tanks will be inspected at least once every two years. The vessel will be visually inspected. External thickness measurements will be taken with ultrasonic equipment. An inspection of the foundation and support structures is also to be made.

If the vessel is opened, an internal inspection is to be made. This will include a visual inspection and thickness measurements with ultrasonic equipment if practicable. If corrosion is found, the depth of the pits will be measured and recorded.

II. Buried Piping Installations

Any section of buried line which is uncovered and exposed at any time is to be visually inspected and external thickness measurements taken with ultrasonic equipment.

III. Miscellaneous Process Equipment

All other process equipment requiring inspection, will be inspected on a two year interval. Units will be inspected when down for cleanouts more often than the two year interval. When a vessel shows signs of corrosion, inspection will be made on shorter intervals as determined by the Inspection Department.

IV. Records/Administration

All inspections and records will be performed and recorded in accordance with CONOCO standards and are to be kept for a minimum of 3 years.

Letters detailing inspections will be written and distributed to the appropriate persons for information and/or corrective action.

APPENDIX II

FACILITY INSPECTION REPORTS

VCM PLANT DATE________________

Weekly Hazardous Waste Facility Inspection - Storage Containers

Circle Answer

1) Are there any leaks in the Miscellaneous Hazardous Waste Dumpster? YES NO

2) Are there any leaks in the Hazardous Waste Storage Drum? YES NO

If yes to either, describe action taken to correct. ________________

____

____.

Weekly Hazardous Waste Facility Inspection - Storage or Treatment Tanks

Circle Answer

1) Are there any leaks in T-405? YES NO

2) Are there any leaks in T-452? YES NO

If yes to either, describe action taken to correct. ________________

____

____.

3) Are any of the dikes broken through? YES NO

If yes, describe. ____

____

____.

____
Facility Inspector

Notes

1) This form must be completed once weekly for all hazardous waste storage or treatment facilities and any problems should be reported to the Shift Supervisor immediately.
2) Please return this form in the mail to the Process Superintendent so that it may be placed in the Process Engineering Environmental File.

DTH 000120513

VCM PLANT DATE____________________

Weekly Hazardous Waste Facility Inspection - Surface Impoundments

Are any of the following surface impoundments leaking?

	Circle Answer	
T-1 Pit	YES	NO
T-2 Pit	YES	NO
T-500 Pit	YES	NO
W. Equalization Basin	YES	NO
S. Equalization Basin	YES	NO
A.S.U.	YES	NO

(If any were answered yes, describe action taken to correct).

____

____

____

____

____

Facility Inspector

Notes

1) This form must be completed once weekly.

2) Any problems should be reported to the Shift Supervisor immediately.

3) Please return this form in the mail to the Process Superintendent so that it may be placed in the Process Engineering Environmental File.

VCM PLANT DATE________________

Daily Hazardous Waste Facility Inspection - Surface Impoundments

1) Is there at least 2 feet of freeboard in the following surface impoundments?

	Circle Answer		If No, How Much Freeboard?
T-1 Pit	YES	NO	
T-2 Pit	YES	NO	
T-500 Pit	YES	NO	
W. Equalization Basin	YES	NO	
S. Equalization Basin	YES	NO	
A.S.U.	YES	NO	

2) Is one of the A.S.U. lift pumps, P-516A or P-561B, discharging to the A.S.U.? YES NO

3) Is one of the Sludge Recycle Pumps, P-510 or P-511, discharging to the A.S.U.? YES NO

4) Is the storm water diversion system flow chart operating? YES NO

Daily Hazardous Waste Facility Inspection - Storage or Treatment Tanks

	T-405		T-452	
	Circle Answer		Circle Answer	
1) Are there any leaks in the piping or valves?	YES	NO	YES	NO
2) What is the liquid level in the tank?				
3) What is the pressure in the tank?				
4) What is the temperature in the tank?				

If yes to the first question, describe action taken. ________________________________

____

____
Facility Inspector

Notes

1. This form must be filled out daily and any problems should be reported to the Shift Supervisor immediately.
2. Please return this form in the mail to the Process Superintendent so that it may be placed in the Process Engineering Environmental File.

DTH 000120515

HAZARDOUS SERVICE BLEED VALVE PROGRAM
CONOCO VCM

I. BLEED VALVE PLUGGING PROCEDURE

II. HAZARDOUS SERVICE BLEEDER STANDARD

III. BLEED VALVE INSPECTION PROCEDURE

BLEEDER PLUGGING PROCEDURE

PURPOSE

The intended purpose of this procedure is to establish a criteria for plugging bleeders in plant piping systems and to continually assure that designated bleeders are physically plugged when not in actual use.

SCOPE OF PROCEDURE

This procedure will apply to bleeders in services that contain:

Flammable Hydrocarbon Liquids

Flammable Gases

Ammonia

Chlorine

Products or Intermediates that have Health related Hazards

Hydrogen

Acid & Caustics

Steam

Condensate

For the purpose of this procedure, bleeders are defined as openings in piping for use when draining, washing, injecting, product transferring, or clearing the piping.

PROCEDURE

1. All bleeders in the specified services will have the outlet valve plugged or capped with threaded pipe plugs when not being actually used.

2. All flanged bleeder valves will be capped with blind flanges.

3. Non-threaded adapters for various utility hose fittings will be removed before plugging.

4. To the degree possible, the plugs or caps will be in the block valve body and extension piping will be kept to a minimum.

5. The use of "double block and bleeder" arrangements will not be an acceptable substitute for compliance with this procedure.

6. All bleeders subject to this procedure will be identified with a 1½"x1½" [illegible]

7. At least weekly, the unit Operating Supervisor will have an inspection made of units under this control to determine if this procedure is being followed. The records of these inspections and their results will be available for review.

8. Prior to start-up following a shutdown of any equipment, a specific inspection will be made by operating personnel to assure that bleeders are properly plugged. A notation that this inspection was made is to be made in the units' log book.

RESPONSIBILITY

The carrying out of this procedure is the specific responsibility of operating personnel. Plugs removed by maintenance, contractors, or other service groups are to be replaced by those groups when they complete their work but the operating department will bear the ultimate responsibility to see to it that bleeders are plugged.

HAZARDOUS SERVI... ...EEDER STANDARD
LAKE CHARLE... ...CM PLANT

SERVICE	VALVE USED WAREHOUSE STOCK NO.	VALVE DESCRIPTION
...stic	78-264	Plug valve, 150# R.F. flanged. Ductile iron body, stainless steel plug.
	78-401	Globe valve, 800# screwed. Union bonnet. Carbon Steel.
	78-451	Ball valve, screwed. Carbon steel body. 316SS ball, teflon seals.
...l	78-262	Ball valve, 150# R.F. flanged. Monel body and ball.
	78-266	Plug valve, 150# R.F. flanged. Monel body and plug.
	78-271	Ball valve, 300# R.F. flanged. Stainless steel body and ball.
	78-272	Ball valve, 300# R.F. flanged. Monel body and ball.
...C	78-264	Plug valve, 150# R.F. flanged. Ductile iron body. Stainless steel plug.
	78-401	Globe valve, 800# screwed, union bonnet, carbon steel.
	78-451	Ball valve, screwed. Carbon steel body. 316SS ball. Teflon seals.
...l	78-264	Plug valve, 150# R.F. flanged. Ductile iron body. Stainless steel ball.
	78-273	Plug valve, 300# R.F. flanged. Carbon steel body, stainless steel plug.
...am	78-306	Gate valve, 800# screwed. Welded bonnet. Carbon steel.
	78-401	Globe valve, 800# screwed. Union bonnet. Carbon steel.
	78-240	Gate valve, 300# R.F. flanged. Steel body. 11-13 chrome trim.
	78-246	Gate valve, 600# R.F. flanged. Steel body. Stellite trim.
...densate	Same as steam	Same as steam
...lorine	78-454	Ball valve, screwed. 316 stainless steel body. Modified MRFE seat. Mone... ball. Stem K-Monel.
	78-266	Plug valve, 150# R.F. flanged. Monel body and plug.
	78-401	Globe valve, 800# screwed, union bonnet, carbon steel.
...hylene	Same as Chlorine	Same as Chlorine.
...vy Ends (Tars)	78-264	Plug valve, 150# R.F. flanged. Ductile iron body, stainless steel plug.
	78-401	Glove valve, 800# screwed. Union bonnet, carbon steel.
	78-451	Ball valve, screwed. Carbon steel body, 316SS ball, teflon seals.
...ght Ends	Same as Heavy Ends	Same as Heavy Ends
...phuric Acid	78-261	Ball valve, 150# R.F. flanged. Stainless steel body and ball.
	78-265	Plug valve, 150# R.F. flanged. Stainless steel body and plug.

SERVICE	VALVE USED WAREHOUSE STOCK NO.	VALVE DESCRIPTION
ter Treatment Chemicals	78-451	Ball valve, screwed, carbon steel body, 316SS ball. Teflon seals.
	78-401	Globe valve, 800# screwed, union bonnet. Carbon steel.
	78-452	Ball valve, screwed. Stainless steel body, ball, trim. Teflon seals.
	78-460	Ball valve screwed. Corr-Tech PVDF. Viton "O" rings.
monia	78-401	Globe valve, 800# screwed. Union bonnet. Carbon steel.
	78-264	Plug valve, 150# R.F. flanged. Ductile iron body, stainless steel plug.
	78-451	Ball valve, screwed. Carbon steel body, 31655 ball. Teflon seals.
osphoric Acid	78-460	Ball valve , screwed. Corr-Tech PVDF. Viton "O" rings.
	78-270	Plug valve, 150# R.F. flanged. Steel body, teflon lined body and plug.
	78-269	Ball valve, 150# R.F. flanged. WKM teflon lined, Dynaseal 350.
opylene		
	78-265	Plug valve, 150# R.F. flanged. Stainless steel body and plug.
	78-263	Ball valve, 150# R.F. flanged. 316 stainless steel body and ball.
	78-452	Ball valve, screwed, stainless steel body, ball trim. Teflon seals.

DTH 000120520

LAKE CHARLES VCM PLANT
PLANT BLEED VALVE CHECKOUT PROCEDURE

This procedure will be followed each Saturday, day shift, by the operator responsible for his/her unit on that day.

Bleeders to Be Plugged and Tagged:

Caustic	Steam	Tars	Ammonia
HCl	Condensate	Light Ends	Phosphoric Acid
EDC	Chlorine	Sulfuric Acid	SO_2
VCM	Ethylene	Treatment Chemicals (boiler & cooling water)	Propylene

CheckOut Procedure:

1) The operator responsible for the unit will perform a walkthrough of his/her unit each Saturday on day shift to inspect for unplugged bleeders.

2) Each "yellow tagged" valve should be plugged. If a plug is missing, it should be replaced by the inspector.

3) The survey should also include but not be limited to:
   a) Identification of new bleeders which need to be tagged and plugged.
   b) Identification of old bleeders (missed during the initial phases of this program) which need to be tagged and plugged.

4) Complete weekly inspection report - return to Process Superintendent.

All unplugged bleeders detected during the survey must be plugged. Write a work order to get bleeder repair/revised if it cannot be plugged. Another major step to making this program work is to remember to replace the plug in all bleed valves you have removed for any reason. (ie: hook up a hose; take a sample)

VCM PLANT

Date ____________________

Weekly Hazardous Bleeder Inspection

A bleeder plug and yellow tag tour was made in the following areas:

	Circle Answer	
Block I	YES	NO
Block II	YES	NO
Tank Car Loading Rack	YES	NO
Secondary	YES	NO
Incinerators	YES	NO

If there were any plugs or tags in need of repair, appropriate work orders were written.

YES NO

____
Chief Operator or Shift Supervisor

NOTES:

1. This form must be filled out once weekly (Saturday on dayshift).
2. Any problems (ie: bleeders unplugged or tags missing) corrective action was taken.
3. Please return this form in the mail to the Process Superintendent.

SECTION IV

CONTINGENCY PLAN AND

EMERGENCY PROCEDURES

LAKE CHARLES VCM PLANT

I. GENERAL

The Contingency Plan and Emergency Procedures, as called for under RCRA Part 265, consists of two sections. There are the Disaster Plan, in Section IV, and the Spill Prevention Control and Countermeasure (SPCC) Plant, refer to Section III. Encompassing all unplanned, sudden or non-sudden releases of air or liquid contaminants, these plans are designed to minimize hazard to human health or the environment. This includes both equipment failure or "acts of God." Release of hazardous waste materials would be an incidental portion of an emergency release situation; both plans which make up this Contingency Plan would cover the release of those waste contaminants in an emergency situation. As those facilities are an integral part of the overall facility operation, these plans are designed to cope with emergencies at the VCM Plant, and are not specific to the particular hazardous waste management facilities.

II. EMERGENCY COORDINATOR

The Emergency Coordinator is designated as the Manager of the Lake Charles Chemical Operations. The title of Emergency Coordinator is equivalent to the title of the Disaster Manager, and is named as such in the Disaster Plan. The Emergency Coordinator (Disaster Manager) and alternate designees are delineated in the Disaster group organization table. The Emergency Coordinator (Disaster Manager) for the Lake Charles Chemicals operation is:

J. A. DeBernardi

Home Phone: 625-8202

Work Phone: 491-5063

III. NOTIFICATION OF LOCAL AUTHORITIES

In the event of a release requiring notification of Local Authorities, Conoco will utilize an areawide alerting system, accomplished through a "hotline" telephone system which notifies the Louisiana State Police, the Calcasieu Parish Sheriff, and other local area industries. In addition, an arrangement with the local municipal Fire Departments and other industries will make available outside assistance in the event of an emergency. Procedures for implementation of these systems are contained in the Emergency and Disaster Plan.

IV. MATERIALS RECOVERY

All spilled materials, contaminated soil, or liquids from process or waste treatment, storage or disposal activities will be handled and/or treated as specified in the Spill Prevention Control and Countermeasure Plan.

V. REPORTING

All reports to the EPA, Louisiana authorities, or local officials concerning releases will be filed in a timely manner through the auspices of the Emergency Coordinator.

EMERGENCY AND DISASTER PLAN

VCM PLANT

APRIL -- 1980

Prepared By William V. Henry DATE 4-21-80
W. V. Henry
Safety Director

Approved By J A DeBernardi DATE 4/21/80
J. A. DeBernardi
Plant Manager

EMERGENCY AND DISASTER PLAN

VCM PLANT

CONTENTS

Figures

DTH 000120527

Appendix

CONDENSED

EMERGENCY INSTRUCTIONS

1. In the event of emergency, the Shift Supervisor will be in charge of immediate action and notification of Emergency Services and Disaster Organization.

2. Shift Supervisor will instruct the Laboratory Analyst on duty that "call out" of Disaster Organization members is to be instituted. If, however, the lab analyst is tending to injured personnel, the Shift Supervisor will delegate another employee to "call out" the Disaster Organization.

   The employee should start at the top of the list located on page 27 and notify at least one member by phone indicating to him the general nature of the emergency. That member will then be responsible to notify the remaining members of the Organization by phone.

3. If an electrical power failure occurs, all phones in the plant are wired to automatically become battery operated and serve to provide communications to call for help or assistance, if required. Battery power will be supplied by the Refinery.

4. If emergency backup power from the Refinery should fail, a mechanical latch located on the remote control gate must be unlocked manually to open the gate. See page 12 for the location of the latch and more detailed information.

5. If additional help or evacuation of adjacent areas is necessary contact the Lake Charles Chemical Plant and/or the Mutual Aid Association.

6. If the emergency ambulance or fire truck should be summoned from the Lake Charles Chemical Plant (LCCP) into the VCM plant, the Shift Supervisor or his designee must instruct the LCCP driver what equipment to bring, what gate to enter and provide an employee at the entrance to the gate to direct the LCCP driver to the emergency.

7. Account for employees in plant as soon as possible.

EMERGENCY TELEPHONE NUMBERS

See pages 24, 25, 26 and 27 of this plan.

EMERGENCY AND DISASTER PLAN

VCM PLANT
WESTLAKE, LOUISIANA

I. FOREWORD

Fires, explosions, toxic fume releases, and the forces of nature have all to frequently resulted in heavy loss of life and property and serious interruption to production in chemical manufacturing plants. These experiences emphasize the importance of planning and organizing in advance so there will be an effective means available for handling an actual or potential disaster situation.

A petrochemical plant contains many of the ingredients necessary to create emergency situations. These include highly flammable, as well as highly toxic, materials. Under normal conditions these materials will be contained and controlled. However, due to acts of nature, human error or mechanical failure, emergency situations can, and do, develop. These conditions must be met with a planned and organized approach.

It is the purpose and intent of this plan to define specific areas of responsibility such that if faced with an emergency situation quick, decisive, and appropriate action may be taken with the least possible confusion or delay.

II. WHAT IS AN EMERGENCY

An emergency is considered to be "a condition or situation requiring assistance over and above that which can be supplied by the normal personnel present at the time or which cannot be handled in the normal manner."[1] With respect to disaster planning, an emergency will exist when there is danger to people, property or equipment. Some of the conditions that could create or contribute to such a condition are:

A. Release of toxic or flammable material
B. Fire and explosion
C. Hurricanes
D. Tornados
E. Flood
F. Conditions occurring outside our plant which affect our operation such as a power failure or emergency within an adjacent plant.
G. Bomb Threat

This plan is divided into various parts with each having specified areas of responsibility and each concentrating on reducing or eliminating the problems created by the emergency.

III. OBJECTIVES

The basic objectives of this emergency plan are to:

A. Assure the safety of our employees and the safety and welfare of the general public.
B. Minimize property damage in our plant as well as that of other companies or individuals and provide for the prompt resumption of operations.
C. Satisfy the legitimate concern of our employees, their families and the general public by providing prompt accurate information on the extent and the effects of the emergency.

[1] Manufacturing Chemists Association Safety Guide SG-4

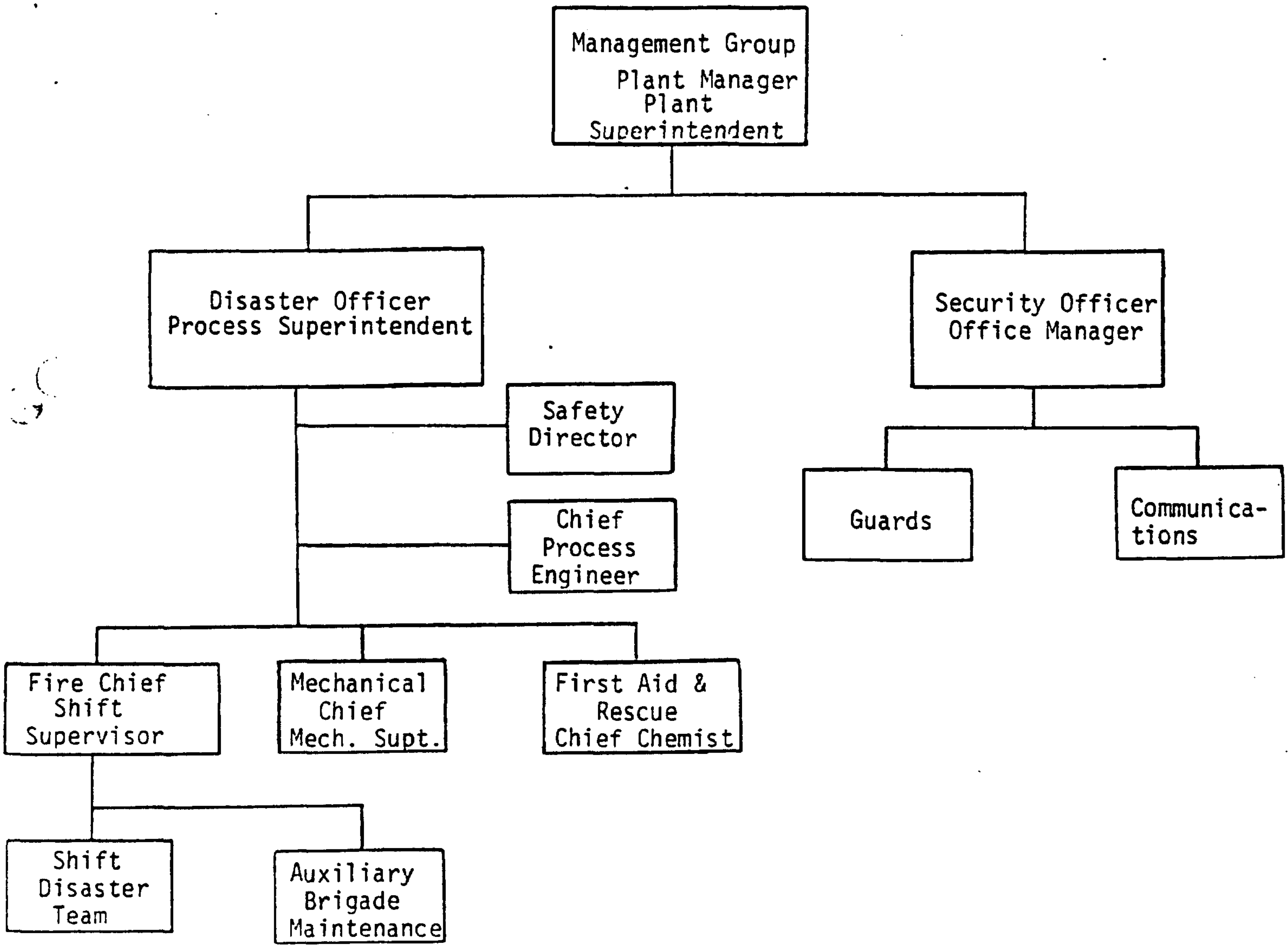
IV. ORGANIZATION STRUCTURE

During an emergency condition, a clearly defined organization will be used. Page 3 defines the structure and job assignments of the organization.

This organization will be headed by the Plant Manager or Plant Superintendent. He will act as the executive head of the Emergency and Disaster Organization and will bear the overall responsibility to see that the objectives of the plan are met. The Plant Manager or Plant Superintendent will monitor all activities being carried out. Members of the Emergency and Disaster Organization will keep him informed of the conditions throughout the emergency.

Organization members will be responsible to carry out those duties as defined in Section V, Emergency Positions.

EMERGENCY AND DISASTER ORGANIZATION STRUCTURE



DTH 000120532

Figure 1

V. EMERGENCY POSITIONS

A. Plant Manager

The Plant Manager and/or Plant Superintendent will be responsible to:

1. Establish leadership over the disaster group and coorindate all activities connected with control of the situation.

2. Maintain close communication with the Disaster Officer.

3. Act as liaison with management of other local plants, keeping them informed of the situation and/or advising them of what effect the emergency could have on their operation.

4. Promptly release factual information to the news media preventing erroneous reports.

5. Notify next of kin in cases of serious or fatal injuries.

6. Assure that corporate management is informed and kept constantly up-to-date on the situation.

7. Determine what information may be given out by the switchboard operator.

B. Disaster Officer

The Process Superintendent will serve as the Disaster Officer. He will report directly to the Plant Manager and will be in overall charge of emergency control activities. He will be assisted in the duty by the Safety Director and the Chief Process Engineer.

Specific Duties of the Disaster Officer Will Be To:

1. Work closely with the Fire Chief in determining the most effective manner in establishing control of the situation.

2. Keep the Plant Manager informed of the situation and the measures being taken to bring it under control.

3. Rely on the advice and help of the Chief Process Engineer and Safety Director.

NOTE: The Safety Director will be involved in actual fire fighting and rescue. The Chief Process Engineer is to be utilized in a technical capacity to reduce or control equipment damage or spread of emergency.

4. Issue instructions for the "call out" of off-duty employees and advise the Security Chief of who is authorized to enter the plant.

DTH 000120533

C. Security Officer

The Security Officer position will be filled by the Office Manager and he will report directly to the Plant Manager. His specific duties are to:

1. Provide for the protection of all plant property and material. Preserve and protect nonreplaceable records. He will procure and assign guards, selected from plant personnel, as needed.

2. Establish a list of all employees or others in the plant and keep this list up-to-date at all times during the emergency. He should work with the Chief Chemist who will be in charge of first aid.

3. Provide for external communications during the emergency. To do this, he may have to call in telephone repair crews or procure radio equipment.

4. Dispatch personnel to the various road blocks so that VCM Plant personnel may be identified and allowed into the area if needed.

5. Authorize legitimate visitors access to the plant after they have been identified. The curious and those having no legitimate business in the plant must be turned away in a firm, tactful manner.

   NOTE: Access of plant personnel will be made upon proper identification using the Continental VCM Plant emergency entrance pass card (see Figure 2). Cards should be carried at all times. Cards will be in effect for one year from the date of issuance.

6. Provide food, water and any other emergency supplies that might be needed during the course of the emergency.

D. Chief Process Engineer

1. The Chief Process Engineer will work with the Disaster Officer and assist him in evaluation of the situation and the planning of action necessary to establish control of the emergency.

2. The Chief Process Engineer will provide any technical information regarding equipment and process that might be necessary. He will keep the Disaster Officer informed of his whereabouts at all times.

3. He will coordinate and assist the Plant Manager and/or Plant Superintendent in his duties, as requested.

E. Safety Director

The Safety Director will assist the Disaster Officer in any way necessary in bringing the situation under control. His primary responsibility is to support any fire fighting operations, toxic materials controls or rescue efforts. He will work closely with the Fire Chief and First Aid Chief.

He will issue the Emergency Entrance Pass Card to all plant (permanent) employees.

EMERGENCY ENTRANCE PASS

CONOCO VCM Plant

Emergency Entrance Pass

Employee______________________________________

Date__________ Approval_____________________________

Figure 2

F. Fire Chief

1. The Shift Supervisor or his designee on duty will act as the Fire Chief. If the Shift Supervisor is injured during the emergency, the chief operator will act as the Fire Chief. He will actually direct the fire brigade and others involved in fire control or other emergency action. He will work closely with the Safety Director in the effective use of manpower and equipment necessary to bring the situation under control.

2.. He must make the immediate decisions regarding emergency action and continue in this capacity until the Disaster Organization can assemble. The Shift Supervisor, acting as the Fire Chief, will initiate notification necessary to put this plan into action

3. In addition, notification of other plants and Mutual Aid will be made by the Shift Supervisor or his designee. This includes the Continental Emergency Center, Lake Charles Chemical Plant and Refinery supervision, PPG Chlorine Control Room and others. A complete listing of emergency notification numbers is located in Section VI, Pages 24 through 27.

4. The specific duties of the Fire Chief in time of emergency are to:

   a. Evaluate the emergency situation and direct the fire brigade to take necessary action to control the problem. (See Disaster Team Section VI, page 14 for specific duties.

   b. Notify the necessary emergency services required to assist in the control of the situation, as required.

   c. Provide rescue support to injured personnel.

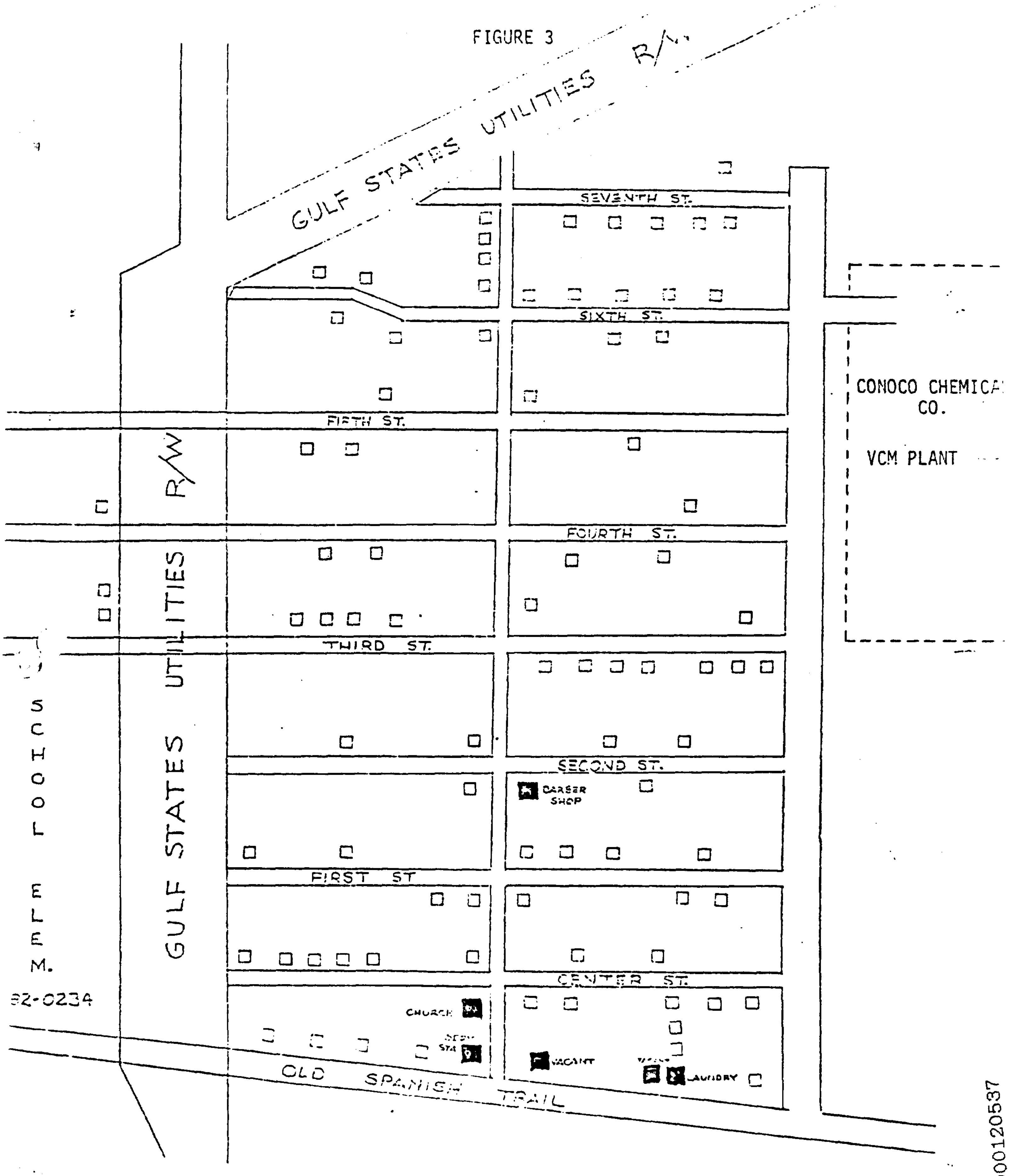
   d. Direct the "calling out" of the Disaster Organization. He will also call out any additional manpower he feels necessary to cope with the situation, including calling out dry chemical truck or Refinery Pumper.

   e. Appoint available personnel to man plant entrance gates until they can be relieved by personnel provided by the Security Officer.

   f. Assume leadership over the Fire Brigade and immediately take action to control the emergency until the Disaster Officer and Safety Director have arrived; at which time he will report to the Disaster Officer.

   g. Take steps to warn adjacent plants and residential areas if they are threatened by explosion or gas release. This may be done through Mutual Aid if time allows. If immediate action is required to evacuate adjacent residential areas, plant personnel should be used until Mutual Aid assistance can be obtained. A plot map of the area west of the plant is provided on Figure 3, page 8 for this purpose should such a situation occur. There is also a battery-powered "bull horn" in the first aid room for use in warning these residential areas. The area north and northeast of the plant (near Houston River Road) may possibly require evacuation if the wind is out of the south or southwest.

FIGURE 3



RESIDENTIAL AREA ADJACENT TO VCM PLANT (WEST)

BUILDINGS SHOWN ARE DWELLINGS UNLESS NOTED

SCALE 1" = 300'

Revised 4/80

DTH 000120537

h. Complete the Fire Report form (see Appendix A) within 48 hours if a fire has occurred in the plant.

G. Mechanical Chief

The Mechanical Superintendent will function as the Mechanical Chief during time of emergency. In this capacity, he will report to the Disaster Officer. He will carry out the following duties:

1. Organize and direct damage control work as directed.

2. Assist the Disaster Officer in any way necessary to bring the situation under control.

3. Organize and direct cleanup and repair crews for the purpose of getting the plant back into production as soon as possible.

4. Take steps necessary to assure adequate transportation facilities are available during and following the emergency.

5. Establish relations with outside utility companies and work closely with them in maintaining service or restoring service as soon as possible.

6. Keep the Disaster Officer informed of his whereabouts at all times.

7. Notify the Security Chief the names of those people in the plant under his direction and of any who have been called out. This is to assure that the Security Officer will be able to maintain an up-to-date personnel list and can arrange for identification of those "called out" at the road blocks.

H. First Aid Chief

The Chief Chemist will serve as the First Aid Chief and will report to the Disaster Officer. He will be responsible to:

1. Render first aid treatment to personnel injured during the emergency. He will utilize his lab technicians and, if necessary, request assistance from the LCCP or Refinery Medical personnel.

2. Arrange for ambulances for transporting the injured. He should use Company equipment but if additional equipment is necessary he should obtain through Mutual Aid.

3. Keep the Plant Manager and Security Officer informed of injuries, including names and estimates of severity.

4. Establish first aid station and facilities west of the main office building or other safe area if the laboratory building is involved in the disaster.

5. Work with rescue squads in transporting injured personnel to ambulances.

DTH 000120538

VI. EMERGENCY PROCEDURES

Emergency procedures defined here are necessary to familarize each employee with the planned steps that must be performed during an emergency. Essentially, the basic steps consist of:

1. Detection and assessment of the emergency.
2. Evacuation of all non-essential personnel
3. Rescue and treatment of injured personnel.
4. Immediate action taken to prevent further damage and/or injury.
5. Notification and request of assistance of other plant personnel and/or other agencies to control the emergency.

A. Detection and Evaluation

1. Employee's responsibility

Each employee is responsible to report any potentially dangerous condition to the Shift Supervisor, for corrective action.
The Shift Supervisor has the responsibility to take whatever action necessary to reduce or eliminate the potential emergency. Plant employees will be called on during an emergency to assist the Shift Supervisor in controlling the situation.

2. Shift Supervisor

The Shift supervisor at the VCM plant will normally be the first individual in authority to recognize the existence of an emergency. He is responsible to evaluate the emergency and direct the actions of others in the plant to rescue injured personnel, take immediate preventive action, and notify other agencies for help to control and eliminate the situation.

3. Emergency signals

a. VCM Plant

1. The VCM plant contains two primary sources of emergency situation' these are, fire and release of toxic material. In order to take care of these two possibilities, two separate alarm signals are used.

2. A fire is signaled by a continuous blast of nitrogen-fed whistle on top of the DeMag building. It is actuated from the panel board. When a fire is discovered, the situation must be communicated to the control room as soon as possible.

3. A toxic gas release is signaled by an oscillating siren, audible throughout the plant. This alarm should be actuated from the control room when an unexpected and massive toxic gas or liquid release occurs.

DTH 000120539

B. VCM Plant Emergency Action

1. General

a. Employees who first detect an emergency condition (i.e. fire, explosion, toxic gas release, etc.) should immediately notify the Shift Supervisor, for corrective action.

b. The fire horn or toxic gas siren will be sounded by the Shift Supervisor or his designee to alert essential personnel to proceed to their emergency stations and non-essential personnel to evacuate the plant immediately.

NOTE: Evacuation should take place immediately, except when the fire horn and gas siren are tested each Friday at 10 am.

c. Should the normal electrical power source fail, emergency power will be furnished through the Lake Charles Refinery. If normal electrical power fails, the remote gate must be manually opened by pulling the level located on the remote gate control box "out" to unhook the latch. (See Figure 4, page 12)

d. In every case, it is imperative that warnings of emergency situations be given as soon as possible and that employees throughout the plant know the meaning of the alarms. It is also necessary that adjacent plants be notified of the situation in order that they may take action to limit the exposure.

e. A fire water curtain located on the north and west sides of the R-201A & cracking furnaces are provided to prevent releases of flammable gases in the process area from reaching the furnace burners. Activation of the curtain can be both manual and automatic. Operation of the curtain is explained on pages 12A and 12B.

C. Duties

1. Shift Supervisor

a. The Shift Supervisor or his designee, recognizing the emergency situation or the probability of one, will immediately issue instructions to his operating personnel of the necessary action they will take in dealing with the problem.

b. The Shift Supervisor will make a list (written) of all Operations personnel in the plant and account for them.

c. The Shift Supervisor or his designee will be responsible to sound the fire horn or toxic gas siren and direct the evacuation of all injured personnel and non-essential personnel to a designated safe area.

d. The Disaster Organization should be notified immediately to assist in providing necessary support.

e. Other agencies should be notified for help if required (see pages 24-29)

2. Laboratory Analysts Duties

   a. The lab analyst on duty shall be responsible first to rescue and/or treat the injured. Refer to paragraph D, page 15 for instructions relative to the first aid station during an emergency.

   b. If time permits, the lab analyst will be instructed by the Shift Supervisor that "call-out" of the Disaster Organization is required. The lab analyst will start at the top of the emergency call list and notify at least one (1) member of the Disaster Organization.

REMOTE GATE MECHANICAL LATCH LOCATION

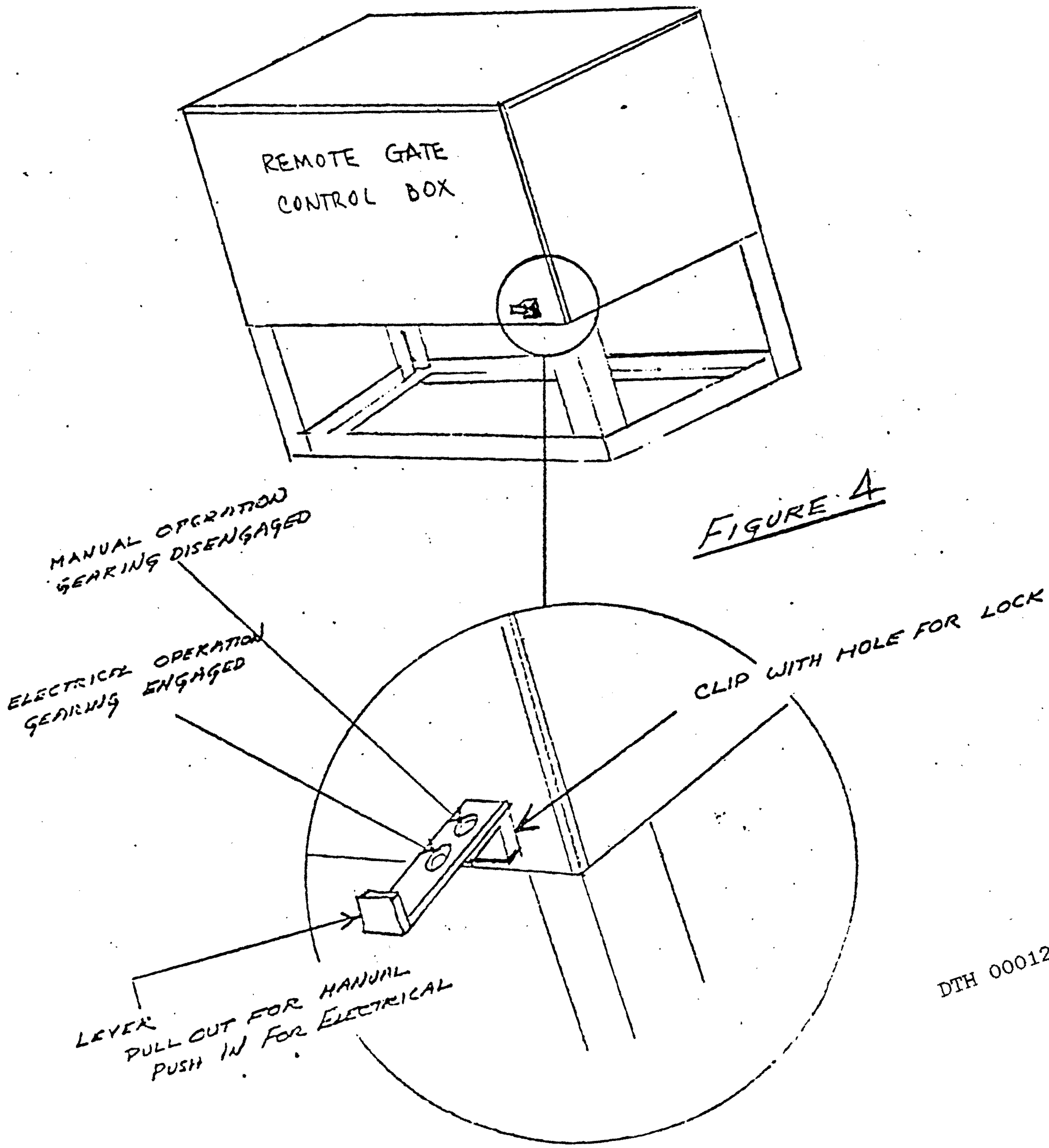


FIGURE 4

DTH 000120542

FIGURE 4-A

R-201 A & B WATER CURTAIN ACTIVATION PROCEDURE

I. Description

The water curtain north and west of cracking furnaces R-201A and R-201B is designed to prevent releases of flammable gases in the process area from reaching the furnace burners. The water spray creates an air pumping (down-draft) action that forces vapor away from the furnaces.

Water is supplied to the curtain through a deluge valve that can be activated both manually and automatically. The valve is normally held in a closed position by water pressure on top of the diaphragm. The water is supplied through a restriction orifice from a tap below the deluge block valve. Releasing water pressure on the deluge valve diaphragm opens the valve and supplies water to the curtain.

Panel mounted trips release air loading on the deluge pilot valve, which will then open and release water pressure on the deluge valve diaphragm. The local manual trip is a ½" ball valve located at the deluge valve which, when opened, will activate the curtain.

II. Panel Mounted Trips

1. Automatic

The J & W gas detectors in the propylene and quench column areas will automatically activate the water curtain at 50% L.E.L. (Lower Explosive Limit). At 50% L.E.L., a 3-way solenoid valve is activated that releases air pressure to the ½" deluge pilot valve. Pressing the "test" button on the above two detectors will also activate the curtain.

2. Manual

The panel mounted trip when switched to the on position also activates the curtain by releasing air pressure on the deluge pilot valve. The switch is located by the VCM sphere deluge system trips.

III. Local Manual Trip

The curtain may also be activated by opening a ½" ball valve located directly above the deluge valve. Opening this valve releases water pressure on the deluge valve diaphragm.

IV. Freeze Protection

The deluge valve and associated ½" tubing will be steam traced and insulated. During freezing weather, the drain valve at the deluge valve discharge should be opened slightly. This will allow the header to drain, but will not significantly reduce water supply to the curtain should it be activated.

DTH 000120543

R-201 A&B WATER CURTAIN ACTIVATION P&I

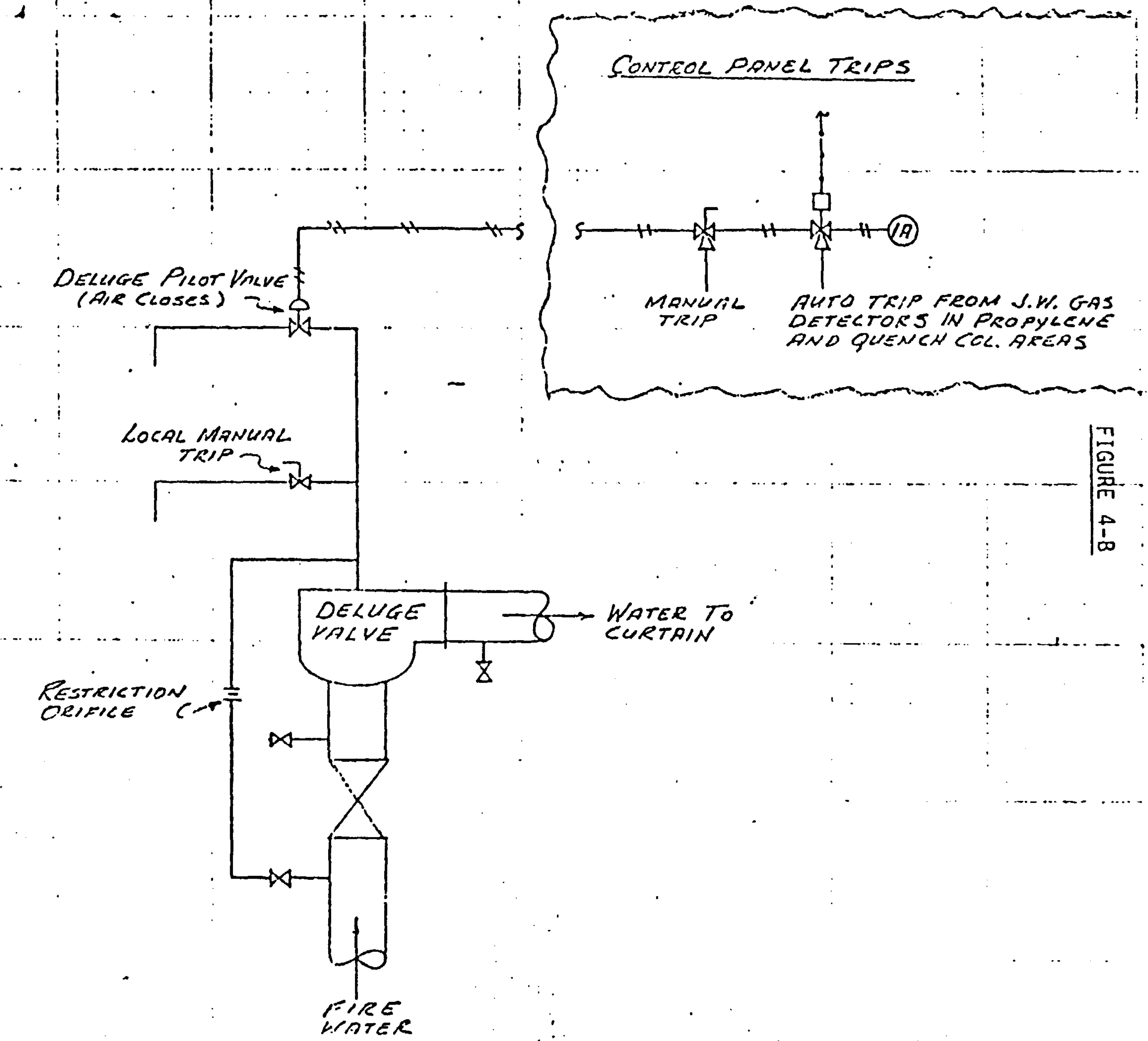


FIGURE 4-B

J.R. 4/76

That Disaster Organization member will then be required to notify the remaining members of the Organization by phone. The member should indicate to each other member contacted the general nature of the emergency and inform them that the Disaster Plan is to be put into action. Mutual Aid assistance and other emergency assistanc shall be requested only by direction of the Shift Supervisor, Disaste Control Officer, Plant Manager or Plant Superintendent.

c. If the lab analyst cannot perform the "call out" duties described above the Shift Supervisor will designate another employee to perform these duties.

3. Disaster Team

a. An emergency fire brigade is organized on each of the operating shifts. This same brigade shall act as the primary team to control or otherwise eliminate all emergencies that arise in the plant.

b. In order to assure that critical duties are carried out in a timely manner, each operator shall have a specific function to perform, if required, during the emergency. The following duties are providec as guidance but the Shift Supervisor's instructions shall take precedence. THE FUNCTIONS HEREIN SHALL BE KNOWN BY THE EMPLOYEE.

1) Loading rack - Pumper/Loader - upon instruction of the Shift Supervisor close all shutoff valves or feed lines supplying flammable and/or toxic materials into the plant; assist lab analyst to rescue any injured personnel and transport them to the first aid room/station for treatment; assure proper acid suits or fire protection equipment provided.

2) Off-sites Pumper/Loader - assure that the fire water and electric power necessary to fight the emergency is provided to the proper plant location and with sufficient fire water pressure and gpm; upon instruction of the Shift Supervisor activate and cut off deluge systems; assure dike drains are closed, as required. (See figure 5 page 14 for Fire Water System Layout.)

NOTE: Each Pumper/Loader should know the other Pumper/Loader's function during an emergency.

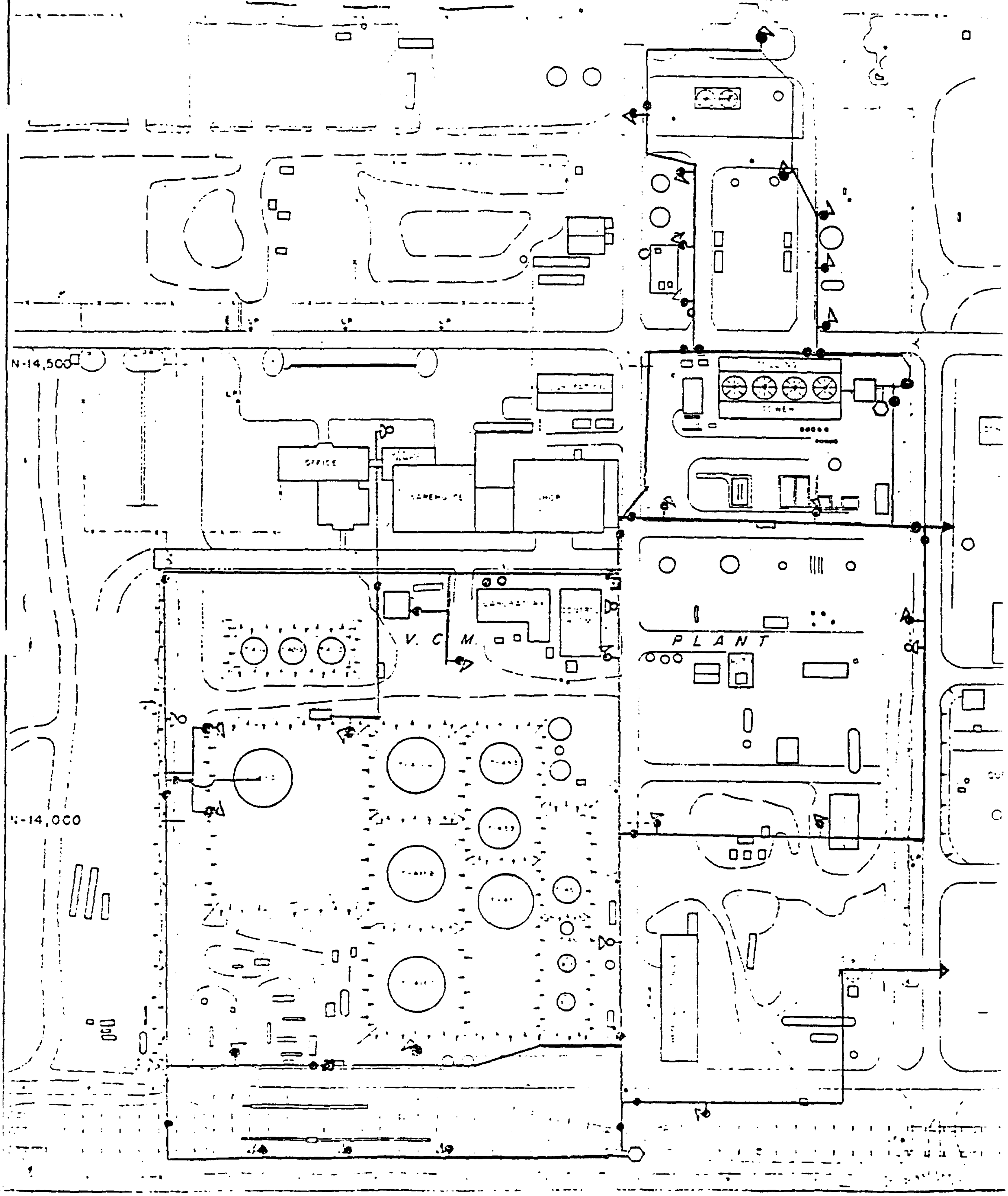
3) Two outside operators - man the fire water monitors and trip the furnace fire water curtain, as required, to disperse a flammable vapor cloud away from any heat and/or ignition sources; when outside help arrives, assist in locating and directing other fire fighting equipment, as required to disperse the toxic gas; assure all non-essential personnel have evacuated the area.

4) Boardman-shutdown equipment as necessary to prevent continued release of flammable or toxic gases or liquids.

5) Chief/Breaker Operator - be knowledgeable in the functions of a, b, c and d above.

DTH 000120545

FIRE WATER SYSTEM



Revised 4/80

DTH 000120546

c. Disaster team responsible to stop and/or control the emergency will be required to don the proper respiratory and/or protection equipment and clothing prior to attempting to control the emergency in accordance with paragraph H.

D. VCM Plant Rescue and Treatment of Injured

1. The plant first aid room located in the lab building will serve as the first aid treatment area of injured personnel. If the safety of this building is threatened by the emergency, a first aid station will be established in a safe area away from the disaster, preferrably at the northwest corner of the plant.

2. The lab analyst on duty will be primarily responsible to perform the rescue and first aid treatment of the injured.

3. The LCCP and/or Refinery Medical personnel may be requested to assist. Other plant personnel may also be called on to assist in transporting injured employees, etc.

4. Ambulances and other transportation arrangements for the injured may be made through the LCCP and/or Refinery Medical. The lab analyst shall be responsible to initially notify these plants.

E. Emergency Phone Operation

All plant phones on the Centrex system can be operated should the primary electrical power supply fail. Battery power is supplied by the Refinery automatically for 24 hours. After this time Refinery generators will supply power to continue the phone operation.

DTH 000120547

F. Chemical Plant Ambulance & Fire Truck Assistance

1. When calling for an ambulance or fire truck, please state what type equipment is needed (i.e. pumper, more oxygen supply, etc.)

2. Tell the LCCP driver of the vehicle exactly what gate you want him to use to enter the plant (north, south or main entrance.)

3. Have someone meet the LCCP driver at the respective gate (be prepared to unlock it if necessary) and direct the driver to the scene of the accident, fire, etc.

NOTE: Don't expect the driver to find his way alone. He has been instructed to stop at the gate until a VCM employee instructs him where to go.

G. VCM Plant Evacuation Non-Essential Personnel

1. Personnel not part of the Disaster Team (i.e. maintenance, office and warehouse) will immediately evacuate the operating area should the toxic gas release siren be blown or instructed to do so over the gia-tronics system.

2. Wind direction at the time will determine the evacuation routes. Evacuation route should be at right angles from the direction of the wind or crosswind. Use the wind socks provided atop the columns and storage tanks to determine the wind direction.

3. Assembly points will be the main entrance gate on the public road or the secondary waste area entrance gate on the Trousdale road extension, depending on the wind direction.

CAUTION: DO NOT LEAVE THE PLANT AREA. It is important that a headcount be taken as soon as possible. This is necessary to assure all personnel are accounted for.

4. Certain trained personnel may be requested by the Shift Supervisor or the Disaster Control Officer to assist in one or more of the functions described in para. C. 3, page 13.

5. During the day shift, each maintenance supervisor will account for each of his men and make a list (written) to be passed on to the Mechanical Superintendent who, in turn, will notify the Shift Supervisor or Disaster Control Officer.

6. The Shift Supervisor, Disaster Control Officer, Plant Manager & Plant Superintendent must be notified immediately of any persons that cannot be accounted for.

Residential Evacuation

Should the need arise to warn local residential areas near the plant to evacuate, plant personnel not directly attempting to control the emergency situation should begin notifying the local residents. A "bull horn" is available in the First Aid Room for this purpose until Mutual Aid and law enforcement authorities arrive. (See Figure 6 page 21 for residential area map.) The Shift Supervisor, Disaster Control Officer, Plant Manager and/or Plant Superintendent shall notify such personnel to assist in the residential evacuation.

H. VCM Plant Emergency Personnel Protection

1. An emergency involving a fire, explosion or toxic gas release may require some of the Disaster Team personnel to don the appropriate personnel protective equipment and clothing to handle the situation.

2. Appropriate personnel protection shall consist of, but not be limited to, the following:

Table 1

Protective Equipment/ Clothing Description	Toxic Gas Release	Fire/Explosion
a. Slicker Suit or Tyvek Coveralls	X	
b. Rubber Boots/Gloves	X	
c. Scott Air-Pak	X See A below	X See A below
d. Type C Air Respirator & auxiliary air supply	X See B below	
e. Acid suit & Scott Air-Pak	X See C below	X See C below
f. Fire Boots & Bunker Coat		X See D below
g. Proximity Suits		X See E below

CAUTION: The above personnel protective equipment/clothing recommended may not be adequate for certain types of emergencies for which the equipment is not designed. Good judgement shall be used where other protection should be used in place of or in addition to the personnel protection recommended here.

NOTE A: Should be used when exposed to toxic gases such as CO, HCl, Chlorine, Ammonia. VCM, EDC, light ends and tars involving environments (atmospheres) immediately dangerous to life.

NOTE B: May be used when working in toxic atmospheres not exceeding 3600 ppm of VCM provided adequate supply and length of air hoses are provided.

NOTE C: Should be worn where toxic or harmful gases or liquid can be absorbed through the skin causing irritation or 2nd degree chemical burns. Normally worn with Scott Air - Pak if oxygen deficient atmospheres are suspected.

NOTE D: Should be used when fire fighting within 200-500 ft. of a fire and slicker suit, etc. is not adequate protection.

NOTE E: Should be used when entry into an area on fire is required

3. Sufficient number of Scott Air Paks are provided in the control room for each Operations' employee. In addition, two air paks are located in (a) the acid suit room of the No. 2 warehouse & (b) west end of the VCM loading rack, (c) near the chlorine loading rack, (d) south end of the main office building and (e) laboratory. Four additional Scott Air Paks are located in warehouse #1. There are three spare air cylinders in the control room plus a refilling station on the east outside wall of the control room.

4. Coveralls, rubber boots and gloves and type C air respirators are already provided to operations personnel. Additional equipment can be obtained from the NO. 1 warehouse.

5. Proximity suits, bunker coats, fire boots, gloves and fire helmets are located in the portable building north of maintenance building.

6. The acid suits are located in the No. 2 warehouse, west side of the building and inside the incinerator control room.

I. All Clear Notification & Requirements - VCM Plant

1. The Shift Supervisor, Disaster Control Officer, Plant Manager and/or Plant Superintendent will notify the plant employees when it is safe to return back to their normal duties.

2. Employees will be notified to return to work when the fire is extinguished and/or toxic gas concentrations have been reduced below the TLV and/or the proper respiratory protection is worn.

3. Plant emergency reporting requirements under the OSHA standards shall be completed by the Safety Department.

J. Emergency Assistance

This paragraph of the plan provides the current instructions and telephone number listings to notify the necessary agencies discussed in paragraph C. 1-e, page 11 of this plan.

1. Southwest Louisiana Mutual Association Radio Instructions

a. Purpose of Mutual Aid

The local Mutual Aid Association is composed of the various industrial plants and municipal departments. Its function is designed to make available outside assistance in the event of an emergency. The association will provide equipment and an experienced operator only. This organization will not furnish active fire fighting manpower.

b. Mutual Aid Radio

In the event of a disaster occurring within the plant, assistance from the Mutual Aid Association may be obtained by calling the Lake Charles Fire Department which serves as the Mutual Aid communications center. A Mutual Aid radio in the main office building will be used for this. In case of power failure this radio will be out of service. In such cases, the Lake Charles Fire Department (Mutual Aid Center) should be notified by phone (436-3347 or 433-4633).

The Mutual Aid radio is a fixed frequency, 10-watt transmitter and receiver for use strictly in emergency situations. The radio transmits directly to the Dispatcher of the Lake Charles Fire Department, who will act as coordinator of all emergency aid.

Operation of the unit is under license through the Lake Charles Fire Department and by FCC regulations. It must not be used except for emergencies.

c. Use of Radio

The Lake Charles Fire Department will receive any incoming calls. In order to use the radio, depress the key switch to talk and release it to listen. The radio should be manned until the emergency is over.

The following information should be provided to the Lake Charles Fire Department when requesting Mutual Aid assistance:

(1) Location--CONOCO VCM Plant, Zone 28
(2) Nature of disaster (fire-gas-injuries) & whether blue or yellow alert.
(3) Type of equipment
(4) Areas to be evacuated (if needed)
(5) Whether or not road blocks should be set up
(6) Identity of person calling (only Shift Supervisor or Disaster Officer may call Mutual Aid).

The Mutual Aid Association has established several disaster control signals. These are for use to make radio or telephone communication simple and easily understood. Some of the more common codes and what they mean are:

20	Escaping gas
30	Fire
40	Explosion
50	Ambulance needed
60	General Emergency
71	Set Road Blocks

There is a system of Mutual Aid alerts designed to handle potential disaster situations.

1 A BLUE ALERT indicates a particular zone is in trouble but should be able to handle the situation using their own facilities and that no outside equipment is needed at the time.

2 A YELLOW ALERT indicates that it is anticipated that outside help will be needed shortly and that equipment is to stand by.

The VCM Plant is located in Zone 28, as indicated above. Road block points are on Old Spanish Trail at Trousdale Road and at Michigan Street. A plot is included in Figure 6.

NOTE: Any equipment or material going into the VCM Plant on a Mutual Aid basis comes under the command of the Disaster Officer.

2. CHLOREP - Chlorine Emergency Support

PPG Industries is available to provide emergency support to the VCM Plant in case of Chlorine emergencies. This team is composed of trained personnel affiliated with the Chlorine Institute, Inc. and possess the necessary equipment ot stop or otherwise control the spill, leakage or spread of Chlorine from tank cars, tank trucks and vessels. They are on call 24 hours/day and will respond to Chlorine emergencies upon our request. Their telephone numbers are located on page 20.

3. Emergency Telephone Numbers

See pages 31, 32 and 33 for these listings.

Revised 4/80

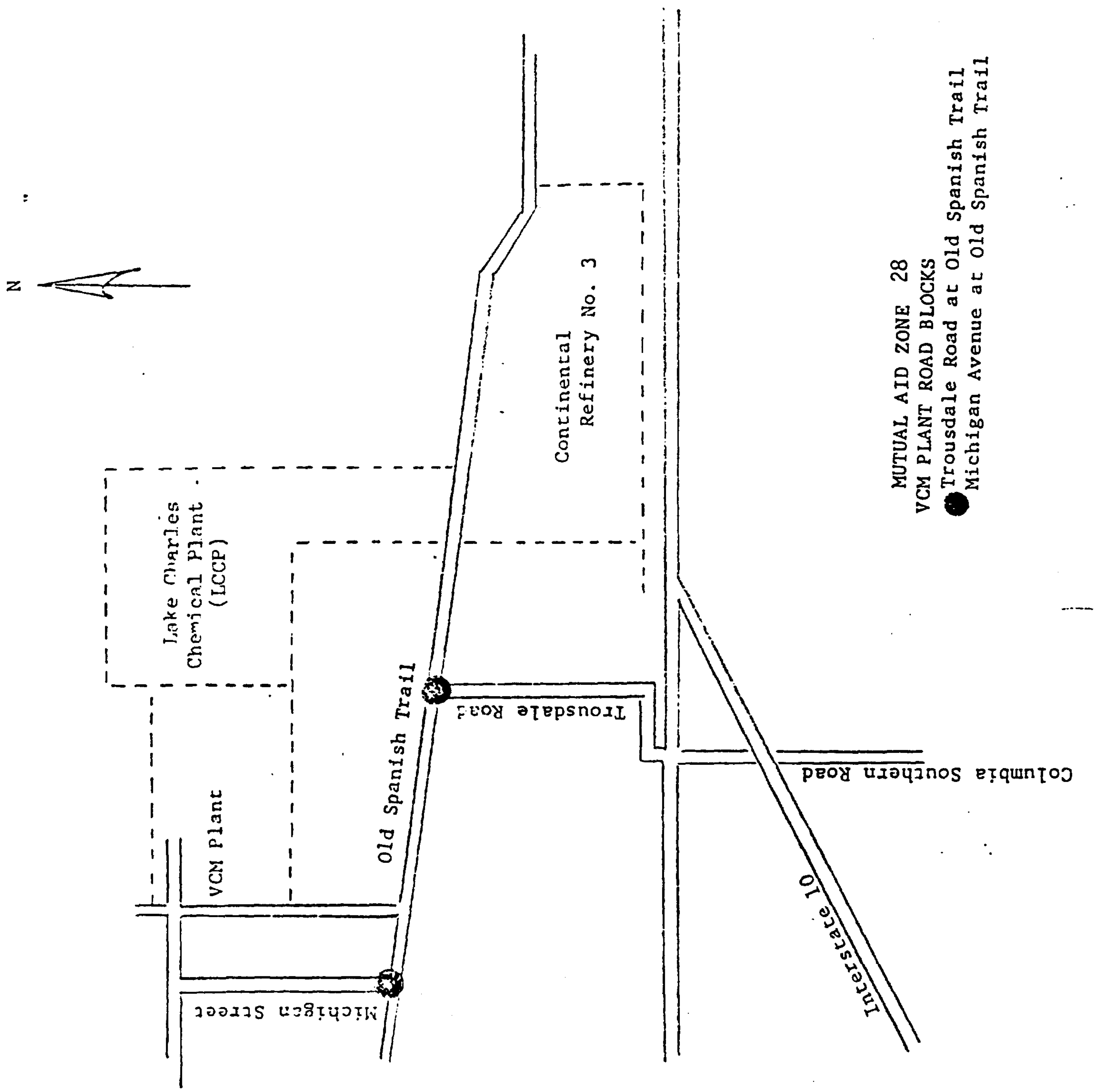


FIGURE 6

DTH 000120553

K. EMERGENCY NOTIFICATION - VCM PLANT - TOXIC GAS RELEASES

In 1979, the Louisiana Legislature enacted a law that affects plants and industrial facilities engaged in the manufacture, storage or use of toxic gases. The law requires that each facility must formalize a plan for reporting the release of any toxic gas inside their plant which may affect the general public. The law further requires that the plan is to be put into effect should such a release occur.

The law becomes effective on December 8, 1979 and a formal plan must be submitted to both local and state officials by that date. Violation of the provision of this act can carry a fine of up to $25,000.00.

What is to be Reported

The law simply states that notification to "proper public safety authorities" must be made when a toxic substance is released "in sufficient concentrations to cause death or serious bodily harm to persons outside the facility." In addition, the act defines toxic substance as "those substances which are gases under ambient temperature and atmospheric pressure and are enumerated in code of Federal Regulations, Title 40."

As it applies to the VCM Plant, the following materials are subject to the notification requirements of this law.

1) Hydrogen Chloride or HCl (also includes decomposition products burning Vinyl Chloride or Ethylene Dichloride)

2) Vinyl Chloride (VCM)

3) Chlorine

4) Flammable Gas - ethylene, ethane, propylene or others in large quantities. Although not necessarily considered toxic, sizable vapor clouds of these gases could be considered a threat to the general public.

5) Sulphur Dioxide

6) Ammonia

Plant Notification Plan

The required notification under this law will be based, in part, on the plant's existing Emergency and Disaster Plan. Actual notification will utilize a special telephone network which functions as a "hot line" type communication system to several locations at once. A single call over this system will serve to alert numerous pre-selected locations of the emergency.

The "hot line" notification telephone is located in the LCCP Main Guard House. The guard on duty will be the person designated to notify the "out of plant" locations by using this phone.

In all cases, it is the responsibility of the Shift Supervisor to specifically instruct the guard to notify "out of plant" locations. Under no circumstances is the guard to initiate a toxic gas release report over the system without specific instructions to do so. In addition to the Shift Supervisor, the following plant personnel are also authorized to instruct the guard to notify "out of plant" locations of a toxic gas release.

1) Plant Manager

2) Plant Superintendent

3) Safety Director

4) Process Superintendent

Information to be Reported

It is the responsibility of the Shift Supervisor, or other authorized personnel, to furnish specific information regarding the release to the guard on duty. The information necessary must include the following:

1) Type of gas or gases if mixed

2) Direction of travel (downwind direction)

3) Judgement of severity

4) Expected duration of emergency situation

5) Suggested action on part of general public

Although not specifically required by the law, the following is also to be furnished to the guard:

6) Report that the emergency situation is passed.

The guard may be contacted by the emergency phone (5777), regular phone (5450), or the mutual aid radio in the front office.

Item five above is advisory in nature and should be kept as brief as possible. Im most cases the suggested action will probably involve evacuation of the downwind area. Item three also requires a judgement on the part of those who initiate an alert. This can best be accomplished by classifying the threat to the general public as either low or high.

Telephone Notification System

CONOCO Chemicals is participating with Olin Corporation and PPG Industries in an area wide alerting system. Each of the three can use the system to notify interested governmental agencies and industrial facilities of an emergency situation in their plant. We will receive warnings from PPG and Olin over the same phone.

At the present time, the alerting telephone system is connected to the following:

Louisiana State Police (Troop D)	
Calcasieu Parish Sheriff	
City of Westlake	
City of Sulphur	
CONOCO Refinery	
CONOCO VCM	(receive only)
Certain-Teed	
Jupiter Chemicals	
Liquid Air	
Olin Corp.	(send and receive)
PPG Industries	(send and receive)
CONOCO Chemicals(LCCP)	(send and receive)

Except for the three member companies, those connected to the system can receive only.

Testing of the system will be done on a routine basis by the three sponsoring companies.

In-Plant Action

In addition to warning the general public and adjacent industry when we have a release, the plant must also be alerted to a release either inside or outside the plant. This is accomplished by sounding the toxic gas siren or fire horn. (Detailed information can be given, if necessary, on the Gai-Tronics--plant communication system). The in-plant system for accomplishing this is in effect and is detailed in the Emergency and Disaster Manual.

Since we are required to notify agencies and facilities outside the plant only when a release travels outside of plant property, there will be situations where only in-plant personnel need to be alerted.

LCCP Guard Action

The guard on duty at the LCCP Main Gate will be responsible for actual use of the "hot line" alerting phone to notify outside facilities and agencies. He will report the information given to him by the Shift Supervisor in the order listed on the form provided. Under no circumstances is the guard to add information or speculate on the seriousness of the release. No information beyond that provided to him by the Shift Supervisor is to be given out.

After recording the release information on the form, the LCCP guard is to call the LCCP Laboratory Shift Supervisor and inform him of the emergency. The LCCP guar is then to make the call on the "hot line" to outside locations.

The message of the alert is to be given over the telephone at least three (3) times to assure that each location has been answered. The guard is to record those locations who received the alert.

(Remember, if we call the LCCP Main Gate Guard for a toxic release that will get out of the CONOCO Chemicals Complex boundaries, the "hot line" in our control room will also ring.)

Immediately after completing the call to the LCCP Guard, who will complete the notification over the "hot line" the personnel on the "Emergency Call-Out List - Group I" are to be notified.

The CONOCO VCM plant will participate with the Chemical Plant (LCCP) in the outside notification system. The Shift Supervisor or other authorized personnel in the VCM plant will notify the LCCP guard of reportable releases that occur in our plant. The person making the call will inform the guard on duty if the emergency will effect the Chemical (LCCP) Plant alone or if it will effect locations outside the CONOCO Chemicals Complex. If outside areas are involved, the information will be filled in on the form and the "hot line" used to alert surrounding areas. If the LCCP has a toxic gas release that only involves their plant as well as the VCM Plant, the LCCP Lab Supervisor will notify the VCM plant by calling the main control room.

When the LCCP Guard is informed by the Shift Supervisor that the emergency release is under control, a second call over the "hot line" phone is to be made. This will be to inform the locations that the threat of toxic gas no longer exists.

During an emergency release situation, no one is authorized to give out information to anyone over the normal phone system. Calls from individuals or the news media should be responded to by saying the "specific emergency information has already been transmitted to public safety authorities and that additional information will be made available to them should the situation change."

Follow-Up

Following any emergency, it is important that a complete follow-up review is conducted. It can be anticipated that further questions from the news media will be received and that statements to them will have to be made. In these cases, it is important that the basic facts and other details of an emergency be accurate and that they be made available as soon as possible.

Also it must be recognized that following any releases that have threatened the general public, numerous public inquiries for information will be recieved. In all cases, these will be handled by the Plant Manager or his alternate. Assistance in dealing with these inquiries from "experts" in medical treatment, pollution, legal, and public relations will be requested through the Manager or his alternate.

DTH 000120558

CONOCO CHEMICALS/OLIN/PPG EMERGENCY TELEPHONE ALERT SYSTEM

PROCEDURE

1) CONOCO Chemicals (LCCP), Olin and PPG will test the system as per Test Log (Attached).

2) CONOCO Chemicals, Olin and PPG will alert appropriate participants in the system when a vapor release occurs in the respective plants which is expected to go beyond that plant's perimeter and could adversely affect persons in the community.

   The following information will be given to participants by CONOCO Chemicals (LCCP), Olin or PPG's Main Gate Security Guard:

   Location of vapor release (CONOCO Chemicals, Olin or PPG)
   Type of gas or gases released
   Direction of travel of gas
   Severity and expected duration of gas emission
   Other information as is available
   All Clear message when emergency is over

3) System Participants Should:

   Record emergency information in Log.
   Activate appropriate emergency plans.

4) Below is a suggested sample log which could be used by system "receivers" of emergency messages from CONOCO Chemicals, Olin and PPG.

VAPOR RELEASE INFORMATION LOG

Location of Vapor Release________________ Time____________ Date____________

Type of Gas or Gases Released ________________________________

Wind Direction of Travel of Gas Release ________________________________

Wind Speed________________

Severity and Expected Duration of Gas Emission ________________________

Other Information (as is available)________________________________

All Clear Message when Emergency is Over - TIME________________________

ALL CLEAR NOTICE GIVEN BY SECURITY GUARD

________________________ DTH 000120559

NAME AND LOCATION

NOTE: "RECEIVER" - The above information will be given slowly by the message "initiators" Security Guard and repeated three times only. "Receivers" telephone receivers should be picked up immediately and the message logged. DO NOT STOP THE INITIATOR, ASK QUESTIONS OR INTERFERE WITH

DAILY EQUIPMEN EST LOG

CONOCO CHEMICALS/OLIN/PPG EMERGENCY TELEPHONE ALERT SYSTEM

NSTRUCTIONS

) Olin to test system each Monday, Thursday and Sunday
) PPG to test system each Tuesday and Friday.
) CONOCO Chemicals to test system each Wednesday and Saturday.
) Test will be performed at 12:00 Noon. The guard will state his name and company and "This is a test of the Emergency Telephone Alert System". He will repeat it twice and then call roll.
) CONOCO VCM Plant receiver will be asked to acknowledge by company name and record on log below.
) If no confirmation is acknowledged, then the guard will call by telephone, the number 491-5070 and advise them to contact South Central Bell Telephone Company to check their receiver. If no answer, he will then notify the Plant Safety Director.
) The test of system will not be repeated.
) Immediately report any system malfunction to the Safety Director.

	OLIN DATE	PPG DATE	CONOCO DATE	OLIN DATE	PPG DATE	CONOCO DATE	OLIN DATE	OLIN DATE	PPG DATE	CONOCO DATE	OLIN DATE	PPG DATE	CONOCO DATE	OLIN DATE
	MON.	TUE.	WED.	THUR.	FRI.	SAT.	SUN.	MON.	TUE.	WED.	THUR.	FRI.	SAT.	SUN.
NOCO-VCM PLANT 491-5070														

	OLIN DATE	PPG DATE	CONOCO DATE	OLIN DATE	PPG DATE	CONOCO DATE	OLIN DATE	OLIN DATE	PPG DATE	CONOCO DATE	OLIN DATE	PPG DATE	CONOCO DATE	OLIN DATE
	MON.	TUE.	WED.	THUR.	FRI.	SAT.	SUN.	MON.	TUE.	WED.	THUR.	FRI.	SAT.	SUN.
CO-VCM PLANT 491-5070														

E: (✓) IF ACKNOWLEDGED (X) IF NO TEST CALL WAS RECEIVED (T) IF NOTIFIED BY BUSINESS TELEPHONE

E: SEND THIS SHEET TO THE SAFETY DIRECTOR WHEN IT IS COMPLETELY FILLED.

DTH 000120560

L. Emergency Public Relations

During or after a disaster or serious accident, we must keep in mind that the Company has an obligation to provide prompt and factual information to the public through the news media. This section of the Disaster Plan is directed toward fulfilling this obligation effectively while protecting the Company's public image at the same time.

Press releases will normally be provided through Public Relations office for the Lake Charles area. The Plant Manager, or in his absence the Plant Superintendent will notify the Public Relations office as soon as practical following the emergency to provide them with the necessary information. The Public Relations representative can be contacted by phone, shown on page 27.

Where the Public Relations office representative cannot be contacted the Plant Manager, or in his absence the Plant Superintendent is the only individual authorized to speak for the Company during or after an emergency situation. Under no circumstances should any other unauthorized employee provide information to the news media, unless directed to do so by the Plant Manager and then only if the information is a written statement issued by the Plant Manager, or in his absence the Plant Superintendent.

In case of a fatality or serious injury, under no circumstances are names to be released to news media before next of kin have been properly notified. In the case of serious injury or fatality, the nearest kin will be notified in person.

The following guidelines should be used in providing information to the Conoco Public Relations representative or news releases during emergencies.

(1) Report all available facts concerning the situation.

(2) Do not give out unconfirmed information.

(3) Make arrangements for photographs if safety and security is assured. Remember that newsmen on Company property are our responsibility and must be protected at all times.

(4) News media will usually want certain information. Some of this can be developed prior to an emergency such as general information about the plant. In addition, they will want to know:

What happened? (Cause, if known, time, units involved)
Injuries? (Nature and extent, names, ages, addresses, job titles, disposition of injured. REMEMBER before injury lists are given out, next of kin must have been notified and extent of injuries should not be guessed at.)

Damage? (Amount of equipment or property involved, estimate of damage; i.e., light, moderate, extensive) Do not speculate on dollar amount of loss.

Remedy? (What are we doing to correct the situation, outside companies helping through Mutual Aid).

A fact sheet is included as a part of this plan, (Appendix B) giving pertinent details regarding the CONOCO Chemicals Co. VCM Plant, such as:

Capacity
Number of employees
Type and size of unit
Products made and uses
Raw materials
Storage capacity

DTH 000120562

EMERGENCY TELEPHONE NUMBERS

	Day or Night	
Medical, Ambulance & Fire		
*L.C. Chemical Plant	5777 or 491-5345	
*L.C. Chemical Plant Guardhouse	5450 or 491-5450	
CONOCO Refinery	5333	
Emergency Assistance		
Mutual Aid	433-4633 or 436-3347	Radio or 433-4633 or 436-3347
Chlorine Emergency CHLOREP Team-PPG	**Direct Line or 491-4500	**Direct Line or 491-4500

Emergency Notification, Toxic Gas Release & Personnel Evacuation

*L.C. Chemical Plant Guardhouse 5777 or 491-5450

Mutual Aid Radio or 433-4633 or 436-3347

*Services available will be supplied under the general agreement stated in Appendix C of this plan.

**Direct line from control room only

NOTE: Dial the extension number only for phone numbers within the Lake Charles Centrex system.

Call made from outside the Centrex system dial 491 then the extension.

ADDITIONAL EMERGENCY TELEPHONE NUMBERS

Medical	Office/Day	Page Boy	Home/Night
Gordon Monroe, R.N., L.C. Chemical Plant	5497/5498	61-483	855-4258
Margie Black, R.N., CONOCO Refinery	5362/5364		625-3038
Dr. F. W. Bennerscheidt (Call No. 123)	439-0808		477-0237
Dr. E. W. Nagem (Call No. 72)	478-2784		477-2801
Doctor's Answering Service			439-3333
Eye			
Dr. W. Mixon	625-3130		433-5344
The Eye Clinic, Drs. Blocker, Archer & Emerson	478-3810		439-3333
Orthepedic			
Dr. E. Campbell	433-3647		436-5152
Dr. E. W. Phillips	433-3647		477-7437
Dr. N. P. Morin	433-0311		436-0556
Ear, Nose and Throat			
Dr. C. R. Karam	478-3520		477-5585
Dr. W. K. Cutrer	478-2888		477-1526
Dermatologist			
Dr. M. Kent	478-7456		478-8583
Dr. J. Stubblefield	478-5250		436-1369
Hospitals			
St. Patricks	436-2511		436-2511
Lake Charles Memorial	478-1310		478-1310
West Calcasieu-Cameron	527-7035		527-7035

Dept. of Labor

U.S. Department of Labor
Occupational Safety & Health Admin.
2156 Wooddale Blvd.
Hoover Annex, Suite 200
Baton Rouge, LA 70806

OR

Dept. of Labor, Region VI
Occupational Safety & Health Admin.
555 Griffin Square - Room 602
Dallas, Texas 75202
(214) 749-2477, 78, 79

DTH 000120564

ADDITIONAL EMERGENCY TELEPHONE NUMBERS

Raw Materials	Day	Page Boy	Night
PPG Industries Chlorine Control	**Direct Line		**Direct Line
LCCP (Ethylene Control Room)	**Direct Line		**Direct Line
Other Agencies			
LCCP Shift Supervisor	491-5357/5421 or 5357/5421	61-459	Same
RFY. Shift Supervisor	5307 or 491-5307	61-431	Same
L.C. Fire Department	433-4633/436-3347		Radio or 433-4633
Gulf States Utilities	436-4351		433-4645
Law Enforcement			
LCCP Guard Gate	5450 or 491-5450		Same
CONOCO Refinery Security	5333 or 491-5333		Same
Calcasieu Parish Sheriff Dept.	433-7372		433-7372
Louisiana State Police	436-2505		436-2505
FBI	433-6353		433-6353
Coast Guard	433-3765		(713) 971-2261 Capt. of Port)
News Media			
Newspapers:			
Lake Charles American Press	439-2781		-
Beaumont Enterprise	436-3681		-
Westlaker	436-0583		-
Radio Stations			
KAOK	436-7541		-
KLOU	436-7277		-
KIKS	527-5202		-
KLCL	433-1641		-
KNSW-FM	527-5202		-
Television Station			
KPLC	439-9071		
KAOK	436-7541		

** Direct line from the control room only

Revised 6/78

DTH 000120565

EMERGENCY CALLOUT LIST

Group I (Disaster Organization Members)

Name	Position	Office	Page Boy	Home
Mike Ashby	Process Supt.	5036	61-496	625-4832
J. W. Ware	Plant Supt.	5065	61-490	855-9208
J. A. DeBernardi	Plant Manager	5063		625-8202
J. R. Holcomb	Mechanical Supt.	5040	61-499	855-7952
R. Bryan	Chief Process Engineer	5062		855-6400
J. H. Brunson	Office Manager	5061		436-5384
P. L. Fetzer	Chief Chemist	5067		477-3957

Group II (Plant Supervisory Personnel)

To be called out at instruction of Shift Supervisor on duty and/or the Disaster Control Organization.

C. H. Kroske	Shift Supervisor (A)	5071		436-8287
Clarence Landon	Shift Supervisor (B)	5071		436-4783
Charlie Buller	Shift Supervisor (C)	5071		436-2581
Ken Cash	Shift Supervisor (D)	5071		433-2524
H. O. Adkison	Mech. Maint. Supvr.	5048	61-494	625-4935
C. R. Heddins	Inst. Maint. Supvr.	5044	61-498	527-8551

Group III (Corporate Management Personnel)

To be notified by either Management Group Memeber.

R. T. Ferrell	Manager, L. C. Operations	5341		
R. D. Gamblin	Manager of Manufacturing	(713)531-3460		
R. E. Lemkuhl	Vice Pre., Operations	(713)531-3580		(713)780-1270
J. D. Burns	Executive Vice President	(713)531-3590		
R. W. Gerwig	President, Conoco Chemicals	(203)329-3731		
C. H. Klunick	Corp. Safety Director	(713)965-5336		(713)664-2552
C. Whetstone	Medical Director	75-412-2235		(405)762-5824
J. A. Begley	Insurance	75-412-9818		(405)762-114[illegible]
E. L. Lively	Public Relations	5270		478-1682
Mike Reynolds	Communications	75-2806		(713)781-3254

Insurance Representative (Local)

Hartford Insurance	Lake Charles, La.	(318)478-6600
Travelers Insurance	Lafayette, La.	(318)232-8910
Oil Insurance Association	Dallas, Tx.	(214)526-7219

DTH 000120566

VIII. Bomb Threat Procedure

In a bomb threat the caller is usually attempting to shake up the plant personnel. Seldom is the caller serious. However, should the plant get a call of this nature, attempt the following:

1) Try to involve the caller in a prolonged conversation during which time you attempt to:

   a) Activate the call-out plan
   b) Conduct a security check of the plant
   c) Notify the telephone company (so they can trace the call) and the sheriff's department for assistance.
   d) Attempt to establish the location of the caller by background sounds, music, road noise, etc.
   e) Use the following checklist as needed:

Telephone bomb threat checklist

Instructions: Listen. Do not interrupt the caller except to ask:

When will it go off? Certain Hour________ Time Remaining________

Where is it planted? Building________ Area________

What does it look like?

What floor is it on?

Did Caller appear familiar with plant or building by his description of the bomb location?

Name________ Time of Call Date

Action To Take Immediately After Call

1. Notify your supervisor. Talk to no one other than instructed by your supervisor.
2. Write the message in it's entirety as received from the informant:

____

Caller: SEX: __Male __Female APPROX. AGE: Years__

Origin of Call:
__Local __Long Distance __Booth __Internal (from within bldg.?)

VOICE CHARACTERISTICS	SPEECH	LANGUAGE
__Loud __Soft	__Fast __Slow	__Excellent __Good
__High Pitch __Deep	__Distinct __Distorted	__Fair __Poor
__Raspy __Pleasant	__Stutter __Nasal	__Foul
__Intoxicated _____ (other)	__Slurred _____ (other)	_____ (other)
		__Use of certain words or phrases

ACCENT	MANNER	BACKGROUND NOISES
__Local __Not Local	__Calm __Angry	__Office Machines __Traffic
__Foreign __Regional	__Rational __Irrational	__Factory Machines __Trains
__Race __Other	__Coherent __Incoherent	__Bedlam __Voices
Explain	__Deliberate __Emotional	__Animals __Music
	__Righteous __Laughing	__Quiet __Party
		__Airplanes __Atmosphere

VIII. HURRICANE PROCEDURE

A. PURPOSE--This procedure provides a guide for the orderly preparation for and recovery from a hurricane.

B. DEFINITIONS

1. Hurricane Season--The hurricane season is generally recognized to be between June 1 and November 30.

2. Hurricane Arrival--Time when winds reach 73 M.P.H.

C. PREPARATION

1. Pre-Hurricane Season

a. Operations--The Process Superintendent is to maintain the operations area in the best practical state to withstand a hurricane.

Specifically, all building doors, windows where applicable, and ventilation openings should be kept in proper order.

Assistance is to be requested from the Mechanical Superintendent as needed.

b. Maintenance and Outside Areas--The Mechanical Superintendent will see that proper preparations are made in the shop, warehouses, office buildings, and outside areas. All scrap material should be secured where practical. Location of all loose equipment and supplies, such as small buildings, barrels, trash containers, etc. are to be noted.

c. Major Construction Area--If construction is in progress, the Project Manager and Project Engineer will be responsible for coordination of contractor preparation. It is to be emphasized to the contractor that protection of existing plants is of prime importance.

2. Hurricane Threat

a. General--When a hurricane actually threatens the Lake Charles area, the Process Superintendent and Mechanical Superintendent will survey their area of responsibility and determine necessary action.

b. Sequence of Timing and Action

Phase I

Time--First notification of hurricane or storm for Lake Charles Area.

Action--

1. Process Superintendent to have operators secure loose materials in the operating area.

2. A check of all safety lighting, emergency, and fire fighting equipment will be made to insure proper operation.

3. The Mechanical Superintendent will survey his area and have loose material moved or secured as needed.

4. The Process Superintendent and Mechanical Superintendent will review the hurricane prodedure with their personnel.

3. Hurricane Hit Probable

a. Planned and orderly action will be taken to place the plant in a safe and secure condition.

b. Sequence and Timing of Action

Phase II

Time--24 Hours before hurricane arrival.

Action--

1. Complete securing operations on all loose equipment buildings, etc.

2. All tank cars to be coupled together and brakes applied.

3. Establish and maintain most stable plant operating conditions.

4. Establish liquid level in any vessels subject to floating off their foundations (add water, if necessary).

Phase III (NOTE: To be determined by the Plant Manager)

Time--12-16 Hours before hurricane arrival.

Action--

1. Office Manager to arrange for food supplies and water for standby personnel.

2. Operations to begin an orderly shutdown.

Phase IV

Time--4 hours before hurricane arrival.

Action--

1. All but designated personnel to leave the plant.

D. COORDINATION AND COMMUNICATIONS

1. Coordination--The following representatives participate in the coordination of the preparation, shutdown, cleanup and startup:
   Plant Manager
   Plant Superintendent
   Safety Director
   Office Manager
   Mechanical Superintendent
   Process Superintendent
   Chief Process Engineer
   Project Engineer (Major construction projects)

   The decisions and timing of the various phases will be based on:

   a. The plans of outside sources of raw materials and utilities where they affect our operations.

   b. Analysis of the information accumulated by the weather collection on matters not affected by outside supplies.

   It will be the responsibility of the Process Superintendent to act as liaison for shutdown and startup. It is important that close communication be maintained, both internally and externally, to insure orderly shutdown and startup of all plants involved.

2. Weather Communications--In order to keep the coordination representatives informed of the hurricane danger, a weather collection center will be established. The Office Manager will assign someone from his department the responsibility of compiling and distributing weather forecasts and hurricane tracking charts.

3. Standby Crew--Should the plant be shut down and secured, a standby crew will be maintained in the plant during the actual hurricane. The crew will consist of the following:

   Process Superintendent
   Mechanical Superintendent
   Shift Supervisor (1)
   Operator (1)
   Maintenance Supervisor (1)

4. Public Statements--Any public statements concerning decisions affecting the plant or employees will be issued by the Plant Manager.

E. PLANT STARTUP

1. Damage Survey--As soon as the storm subsides, an evaluation of the damage will be made. Action will be taken to put the plant back on stream.

2. Personnel Reporting

   a. After the storm has passed, all employees are expected to report back to the plant according to their regular schedule, unless specifically notifed.

   b. The Office Manager will assist in setting up communication facilities to contact off-shift employees.

   c. If possible, the Plant Manager will issue a statement to the local broadcasting stations concerning the resumption of operations. (This may not be possible due to damage to telephone and power systems).

3. Coordination

   Coordination of the startup and shutdown will be handled by the same personnel.

F. GENERAL INFORMATION AND PRECAUTIONS

1. General

   a. The time at which precautions are taken will generally be left up to the supervisor of the area. The supervisor should take care to allow sufficient time to complete the precautions. The speed and course of the hurricane could change so as to allow less time than anticipated.

   b. Safety and fire protection equipment will be kept in operation throughout the hurricane.

   c. The fire water loop fed from our cooling tower is tied in with the Ethylene Plant loop. The fire water pump on our loop is electric driven and that at the Ethylene Plant is steam turbine driven. A diesel driven water pump in the LCCP waste treatment pond can also be used in case of both power and steam failure.

   e. Other Continental Plants will be shut down also and will have standby personnel available. Fire brigade procedures will not be affected.

   f. The Continental "in-plant" telephone system is backed up by battery and generator, so should be continuously available.

2. Operating Area

   a. Secure all loose material.
   b. Secure all loose barrels.
   c. Secure all valve chains.
   d. Establish levels in storage tanks.
   e. Isolate equipment.
   f. Couple and lock brakes on tank cars.

3. Offices

   a. Secure all doors and windows.
   b. Place all valuable records above floor level if flooding is expected.

4. Laboratory

   a. Remove all bottles and reagents from precarious positions and place in a secure location.
   b. Move all testing equipment from doors and secure doors.
   c. Lay down and secure all bottles outside building.
   d. Shut off all utilities possible at block valves and main breakers.
   e. Remove all glassware possible to storage area.
   f. Do away with all VCM samples in the laboratory.

5. Maintenance Shop

   a. Secure all light weight loose spare equipment, vessels, pipe construction materials.
   b. Relocate any material which can be damaged by water.
   c. All welding machines, water blasters, vacuum cleaners, scaffolding, ladders, tarpaulins, and other portable maintenance equipment should be stored inside a building.
   d. See that all tools and spare part cabinets, bins, and shelves inside the building are adequately anchored or secured by lashing to the building.
   e. Close off all possible utilities at main block valves and breakers.
   f. Close all doors and secure.

6. Other

   a. Trucks and vehicles should be parked at the gate so there is less likelihood of them being blocked in case total evacuation becomes necessary.
   b. There is a direct line between our control room and the chlorine control room at PPG. This should be used for coordination with PPG.

IX. DISASTER READINESS

It is essential that a plan of this type be continually evaluated to assure that it is kept up-to-date as conditions and circumstances change. After the preparation of a disaster plan and the setting up of the organizaton are complete, a training program must be instituted to include every employee, at least to the degree necessary to insure that they will function as planned under emergency situations.

In addition, protective equipment and the tools with which to control an emergency situation must be maintained continuously.

It is the responsibility of the Safety Director to continually appraise the effectiveness of this disaster plan and, with approval, make changes necessary for increased reliability. Semiannually members of the Disaster Organization will meet periodically to review the plan and make changes as necessary. The Safety Director will assume the responsibility of seeing that these meetings are held and that the recommended changes are incorporated into the plan as soon as possible.

The Safety Director will be responsible for the following areas of preparedness:

A. Work with each department head in training and educating personnel in the functions of the plan and in employee acceptance.

B. Organize and regularly train an emergency fire brigade in fire control methods and in emergency action.

C. See that all plant employees are exposed to basic fire fighting techniques pertaining to the use of extinguishers, emergency alarm systems and evacuation procedures.

D. Assure that sufficient fire fighting equipment and emergency devices are provided and that this equipment is maintained in operable condition at all times.

E. Maintain the Company's active participation in the area Mutual Aid Association.

F. Following a disaster, work with department heads in restoring safe conditions throughout the plant. He is also to see that emergency equipment is restored and make a detailed study, working with the Disaster Organization, of the causes, action taken, and any recommendations arising out of the emergency.

APPENDIX A

CONOCO CHEMICALS CO.

Fire Incident Report

This form is to be used to report all unplanned fires which occur within the VCM Plant. Report must be completed within 48 hours.

Date and Time of Fire ____________________, at __________ a.m. / p.m.

Shift Foreman on Duty ____________________

Description of situation at time of fire ____________________

____

____

____

Equipment Involved ____________________

____

____

How fire was controlled ____________________

____

Damage resulting from fire ____________________

____

Cause of fire ____________________

____

Have all extinguishers and other fire fighting equipment been put back in service?

_______ Yes _______ No

____________________ DATE OF REPORT

____________________ Person making report

APPENDIX B

CONOCO CHEMICALS CO., division of CONOCO INC.

VCM PLANT

The CONOCO, Inc VCM (Vinyl Chloride Monomer) Plant was constructed by The Ralph M. Parsons Company in 1967 at a cost of approximately $20 million. The plant was designed by Stauffer Chemical Company, the process licensor. At the time of startup in 1968, the plant was the largest single-train vinyl chloride plant in the world; with an annual capacity of 600 million pounds per year.

The primary product of the plant is vinyl chloride monomer which is the basic raw material in the production of vinyl plastics (polyvinyl chloride). Shipments from the plant are by rail car and ships.

An intermediate product, EDC (1,2 dichloroethane), is also sold and is shipped by rail, truck and ship. EDC is used as a solvent, as an additive in antiknock products, and as an intermediate in the production of vinyl chloride.

The basic raw materials used in the plant are ethylene and chlorine. These are supplied by the adjacent CONOCO Inc. Ethylene Plant and the local PPG Industries Plant respectively. Electricity is supplied by Gulf States Utilities. Steam comes from adjoining CONOCO, Inc. facilities.

The VCM Plant is a part of CONOCO Chemicals Co. a division of CONOCO, Inc. with headquarters in Houston, Texas. The unit employs 8 operating personnel plus one or more laboratory technicians per shift. Additionally, 70 persons are employed in maintenance, clerical, engineering, warehouse and supervisory positions.

APPENDIX C

TO: J. A. DeBernardi

DATE: June 8, 1976

SUBJECT: VCM PLANT EMERGENCIES

The following are guidelines for handling VCM Plant emergencies which require calling in help from either the Lake Charles Chemical Plant or the Refinery.

1. In the event that emergency equipment is needed, dial 5777 to get the Chemical Plant fire trucks and/or ambulance. Give the nature of the emergency, equipment desired, location of gate that the equipment should report to, and the caller's name. VCM Plant personnel will meet the driver of the equipment requested to direct him inside the plant.

2. The Lake Charles Chemical Plant has the following vehicles:

   a. A 2,000-lb. dry chemical truck which will be manned by one lab analyst.

   b. A 1,000 gpm pumper truck with hose and nozzles manned by a second lab analyst.

   c. An industrial ambulance manned by 2 men. Under certain situations, VCM personnel may have to assist to make up the two man team.

3. If additional equipment is still needed, the Refinery Fire Department can be called out by dialing 5333 and repeating the information as given to the Chemical Plant Fire Department.

4. The VCM Plant will have to provide manpower to operate hose lines since only one man/vehicle will be sent.

William V. Henry
W. V. Henry
Safety Director
VCM Plant

Sidney F. Pitts
Sidney F. Pitts
Safety Director
Lake Charles Chemical Plant

Revised: 6/78

DTH 000120576

SECTION IV

MANIFEST SYSTEM

CONOCO

Interoffice Communication

To Distribution

From J. A. DeBernardi

Date November 17, 1980

Subject Manifest System - Hazardous Waste Disposal

As you are aware, the Federal and State Governments have put laws into effect regulating the disposal of waste materials defined as hazardous under these laws. In order to comply with the laws, the VCM Plant established a manifesting system late in 1979. Revisions and additions to the laws since that time now require an update of our system. This letter refers to heavy-ends (tars) disposal paperwork specifically.

Our objective in updating our disposal paperwork system is to reduce the paperwork in the system to one form which satisfies Federal and State disposal laws as well as Department of Transportation (DOT) laws. The attached specimen copy of the waste manifest for heavy-ends leaving our plant for delivery to PPG accomplishes this task.

The following information outlines how the manifest for heavy-ends shipments to PPG is to be used. Other shipments to hazardous wastes will be handled in a similar manner.

General Information

1. Pre-typed manifests will be available for heavy-ends shipments in the Chief Operator's office located in the EDC/VCM area controlroom.

2. Each manifest is pre-numbered and all must be accounted for. If for some reason an error is made in filling out the manifest, it should be voided and sent to the Office Manager.

3. All required signatures and dates must be filled in on the manifest. Complete signature is required--not initials.

4. The manifest must be kept with the load while it is in transit to satisy DOT regulations related to bills-of-lading.

Filling Out Manifest

3. Generator Information Section

The VCM Plant is responsible for filling out this section of the manifest. The Shift Supervisor, or in his absence, the Chief Operator will sign and date the manifest in this section.

4. Transporter Information Section

   It is the responsibility of the Surface Transportation Department driver to complete this section. The driver should sign and date this section in the areas provided. Date and pick-up time must also be filled in by the driver.

   The Transportation Department driver will also certify the trailer being proper for the movement of heavy-ends to PPG by signing the form in the bottom section on the "Transporter Signature" line. This certification must be signed before the truck leaves the VCM Plant.

5. Disposer Information Section

   It is the responsibility of the person at PPG receiving the heavy-ends shipment at their plant to complete this section. PPG will sign and date this section. Also, the Transportation driver will note date and time of delivery at PPG in Section 4 when he arrives at PPG.

Paperwork Distribution

1. After signatures, dates, and pick-up information are completed in the Generator and Transporter Sections, and the certification on the bottom section of the form are signed off, the "Goldenrod" copy should be removed from the packet. The "Goldenrod" copy should be sent to the Office Manager using the plant mail system. The remaining copies in the packet should be given to the Transportation driver to be kept with the load on its trip to PPG.

2. On arrival at PPG the driver will obtain the disposer signature and date for the Disposer Section of the manifest. The driver will also fill in the delivery date and time in the Transporter Section on arrival at PPG.

1. MANIFEST NUMBER
0038

STATE OF LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
HAZARDOUS WASTE MANAGEMENT

For Dept. Use
Index # ______
Date ______

2. WASTE INFORMATION:

HM	SHIPPING DESCRIPTION	HAZARD CLASS	WASTE NUMBER	WEIGHT (TONS)	PACKAGING QTY	PACKAGING TYPE
RQ	Combustible Liquid, NOS	Combustible	State No.	23	1	T/T
	Ethylene Dichloride	Liquid	514-30			
	(Placarded Combustible)					
	(Heavy Ends EDC/VCM)					

GENERATOR EPA I.D. Number ______
3. GENERATOR INFORMATION: Identification Number: GD-514 Telephone: 318/491-5437
NAME OF COMPANY: Conoco Chemicals Company, Division of Conoco Inc.
ADDRESS: P. O. Box 605, Westlake, LA ZIP: 70669
SHIPPING LOCATION: VCM Plant, VCM Plant Road, Westlake, LA
CERTIFICATION: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, and the Louisiana Department of Natural Resources, and the EPA.

______ Generator Signature ______ Date

TRANSPORTER EPA I.D. Number TXD 096030697
4. TRANSPORTATION INFORMATION: Identification Number: ______ Telephone: 318/491-5265
NAME OF COMPANY: Conoco Inc. Surface Transportation Department
DATE OF PICK UP: ______ TIME: ______
DATE OF DELIVERY: ______ TIME: ______
CERTIFICATION: This is to certify that the above-named materials were picked up at the date and time above, that the above named materials were delivered without incident to the disposer at the date and time above, and that to the best of the transporter's knowledge, his portion of the manifest is accurately and correctly filled out.

______ Transporter Signature ______ Date

DISPOSER EPA I.D. Number LAD 008086506
5. DISPOSER INFORMATION: Identification Number: GD-508 Telephone: 318/491-4500
NAME OF COMPANY: PPG Industries, Inc. Chemicals Division
LOCATION WHERE SHIPMENT RECEIVED: Columbia Southern Road, Westlake, LA
CERTIFICATION: This is to certify acceptance of the hazardous waste, that the waste has been or will be disposed of in accordance with Department of Natural Resources relations, and that to the best of the disposer's knowledge, his portion is accurately and correctly filled out.

______ Disposer Signature ______ Date

6. EMERGENCY INFORMATION:
Immediate Response Information: Contains combustible hydrocarbons. Contain spills. Keep out of sewers, drains, ditches, and waterways Telephone: 318/491-5070
Special Handling Instructions: Keep ignition sources away from spill. Control fire with water fog, dry chemical, or foam.
Comments: Wash areas of skin contact thoroughly. Contaminated clothing must be washed before reuse. Report an emergency situation to the above 24-hr. number immediately.

Carrier hereby certifies that the cargo tank used for this shipment is a proper container for the commodity loaded therein, and complies with Department of Transportation specifications.

Transporter Signature: ______

Note: If for any reason the disposer does not accept shipment, the transporter must return the shipment to the point of origin.

DTH 000120580

CPC-227

DISTRIBUTION: White Originator, Green Transporter, Canary Disposer, Pink State, Goldenrod File

The driver will then remove the "Pink" page from the packet and deliver it to the Transportation Department office. The driver will remove the "yellow" page from the packet and give it to the person receiving the load at PPG. The driver will return the "Green" and "White" copy to the Shift Supervisor when he returns to the VCM Plant to pick up a second load or leave the trailer in the plant.

3. The Shift Supervisor will send the "Green" and "White" copy of the manifest to the Office Manager in the same manner as was done with the "Goldenrod" copy.

Any questions related to this sytem should be directed to the Process Superintendent, Operations Engineer, or Plant Manager.

J. A. DeBernardi

is

Distribution
Marion Palmore - Surface Transporation, Lake Charles
Arlen Greathouse - PPG Industries, Lake Charles
HJN-JWW-CWT-JHB-CB-KCC-CHL-CHK-GLF-GSH

TABLE I

WASTE DESCRIPTION LIST

VCM PLANT

EXAMPLE NUMBER	ID NUMBER	DESCRIPTION
1	V-100	Bauxite Drying Agent
4	V-101	Bio-Solids
5	514-16	Alumina Catalyst R-305
6	514-17	Hydrogenation Catalyst
2	514-13	Copper Catalyst
3	514-14	EDC Tank Bottoms
7	514-25	Copper Pit Ppt.
8		T-1 East Pit Sludge
9		Miscellaneous Dumpster Solids
10	514-26	Asbestos
11	514-24	Equalization Basin Sludge
12	514-33	T-2 Pit Sludge
13	514-31	EDC Coke Sludge

CONOCO

Interoffice Communication

To Distribution

From S. W. Sommer

Date March 3, 1982

Subject Chain of Custody Record for Samples of Hazardous Materials - Procedure for Use

Whenever small-quantity samples of hazardous materials from the plant are transported or disposed of outside of the plant, chain of custody records must be kept. The attached form must be used when a hazardous material sample is given for transport or disposal. Samples of hazardous materials sent to other Conoco locations for analysis are not required to be accompanied by a Chain of Custody record.

The Chain of Custody Record is a form for manifesting samples (a record of shipping and disposal) and is used in lieu of a regular hazardous waste manifest. Should there be an accident as a result of or involving the sample, the Chain of Custody form will be used to answer questions of liability. Any hazardous waste shipped or given to a disposer must have a Chain of Custody form provided. Chain of Custody forms can be obtained from the plant Process Engineering Environmental Coordinator.

The procedure for completing a Chain of Custody record is outlined below:

1) Section 1 should be completed by the VCM Plant employee who is providing the sample to be transported or disposed.

   a. Sample Description - enter a description of the sample to be transported, indication of major components, sample size, physical state, number of containers, etc.

      For example:

      "Activated carbon, slightly moist with chlorinated hydrocarbons. Seven 1-pint polyethylene containers."

   b. LA. I.D. Number - obtain the proper Louisiana Manifest I.D. number from the environmental coordinator and enter the number on this line. See attached table for common I.D. numbers.

   c. Date of Transfer - enter the date on which the sample will be transferred.

   d. Enter your name, signature, and date in the spaces provided.

2) Section 2 of the form should be completed by the transporter, e.g., UPS, BFI, Acme Truck Lines, etc. before he leaves the plant.

   a. The transporter should enter his name and company in the spaces provided.

   b. Reason For Accepting Custody - transporter should enter reason for accepting custody of sample; e.g., deliver for analysis, deliver for reclamation, deliver for recycle, disposal, etc.

   c. Final Disposition of Sample - enter "Transfer" if sample is to be delivered to a third party, and enter name and address of third party. Enter "Disposal" if transporter is to dispose of sample, and enter name and address of disposer and location to be disposed.

   d. Transporter must sign and date Section 2 in the spaces provided.

NOTE: Before the transporter leaves the plant, take the Chain of Custody form, check for accuracy, and return a copy to the Process Engineering Environmental Coordinator. We must have a copy of the form before the transporter leaves.

3) Section 3 of the form should be completed by the party who accepts the sample from the transporter. Section 3 should be completed in the same manner as Section 2.

4) After disposal of the sample, whether the disposer is the party in Section 2 or in Section 3, a copy of the completed Chain of Custody Record must be returned to the Director of Environmental Control (Mike Hayes) at the address at the bottom of the Chain of Custody Record form. Be sure the transporter understands this policy before he leaves the plant. Mike Hayes will return a completed copy of the Chain of Custody Record to the plant.

This procedure must be followed each time a hazardous waste sample is transported from the VCM Plant. If you have any questions or comments, please contact me at 5058.

Scott W. Sommer

Scott W. Sommer
Process Engineer

br
Distribution
JAD-JWW-RB-MLA(5)-SRA-JRH(4)-MGH-PLF-DLD-GSH-JGC-VMF-PDD-MWC-MJM-SJR

CHAIN OF CUSTODY RECORD

HAZARDOUS MATERIALS SAMPLE

1. NAME OF UNIT CONOCO Chemicals VCM Plant Westlake, Louisiana

SAMPLE DESCRIPTION ______

LA. I.D. NUMBER ______ DATE OF TRANSFER ______

EMPLOYEE PROVIDING SAMPLE ______

SIGNATURE ______ DATE ______

2. PERSON ASSUMING RESPONSIBILITY ______

ORGANIZATION ______

REASON FOR ACCEPTING CUSTODY ______

FINAL DISPOSITION OF SAMPLE (TRANSFER OR DISPOSAL) ______

SIGNATURE ______ DATE ______

3. PERSON ASSUMING RESPONSIBILITY ______

ORGANIZATION ______

REASON FOR ACCEPTING CUSTODY ______

FINAL DISPOSITION OF SAMPLE (TRANSFER OR DISPOSAL) ______

SIGNATURE ______ DATE ______

4. UPON DISPOSAL OF SAMPLE, PLEASE RETURN CHAIN OF CUSTODY RECORD TO:

Director, Environmental Control
Conoco Chemicals
Lake Charles Chemical Plant
P. O. Box 727
Westlake, LA 70669

DTH 000120585

COMMON MAINFEST NUMBERS

Miscellaneous Solids	514-02
Copper Catalyst	514-13
EDC Tank Bottoms	514-14
Alumina Catalyst	514-16
Hydrogenation Catalyst	514-17
Equalization Basin Sludge	514-24
Copper Pit Precipitate	514-25
Asbestos Insulation	514-26
Tars Solids	514-27
Heavy Ends - VCM/EDC	514-30
EDC Coke Residue	514-31
T-2 Pit Solids	514-33
Bauxite	V-100

CONOCO

Interoffice Communication

To Distribution

From M. G. Hayes

Date February 6, 1981

Subject TRANSPORTATION AND DISPOSAL OF HAZARDOUS WASTES
APPROVED CONTRACTORS

Attached is an update of Louisiana and EPA Identification numbers for the transporters and disposers used by Conoco Chemicals Corporation. Haulers which are not on this list must be approved through established criteria prior to their hauling wastes from the plant. If you have a contractor which you wish to add to the list, please let me know.

The listing for Conoco Transportation applies only to the Transportation Department, not to equipment, such as vacuum trucks or lugger trucks which are the property of the Chemical Plant.

Please attach the list to the Manifest Example package so that all ID numbers are handy.

If you have any questions, please let me know.

Mike Hayes

M. G. Hayes

co

Attachment

cc: HJH RDG RHG DKW GGD WAM PLJ LL RLP JRR SFP GLS BRF RW DWF TSR MR
JADEB JW GLF JHB CT (VCM)
MP (Conoco Transp.)

		STATE ID NO.	EPA ID NO.
1.	Conoco Chemicals (LCCP & VCM)	GD-514	LAD086478047
2.	Conoco Transportation Dept.	585-H	TXD096030697
3.	BFI Transportation Division	278-H	LAT230012999
	BFI Disposal (HN) Division	D-529	LAD000618256
4.	Hydro Services	2171-H	TXD026856021
5.	Hydro Tech	280-H	NYD063650873
6.	Serv-Tech	549-H	LAD098873961
7.	Chemical Waste Management		
	Transportation Department	507-H	LAD000777201
	Disposal Department	DT-507	Same As Above
8.	Universal Engineering	GT-554	LAD065100547

SECTION IV

SUPERFUND REPORTING

Superfund Law and Reportable Incidents

The "Comprehensive Environmental Response, Compensation and Liability Act of 1980", commonly known as the "Superfund" regulations, was passed and became effective on December 11, 1980. According to these regulations, the VCM Plant must notify the National Response Center at 800-424-8802 whenever there is an unpermitted release of a reportable quantity of a hazardous substance into any media-air, water, or land. A "release" is defined to mean any "spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment". Incidents which result in a sudden, accidental, or episodic release must be reported to the National Response Center. Notification of the National Response Center is not required for routine, continuous, or intermittent releases. "Hazardous substances" include those substances listed in the Resource Conservation and Recovery Act (RCRA) regulations, the Clean Water Act (CWA), and the Toxic Substances Control Act (TSCA). A list of the "reportable quantities" of hazardous substances released in a 24-hour period is contained in the Superfund regulations.

The "reportable quantities" according to the Superfund regulations which concern the VCM Plant are:

Material	Quantity (Lbs/24 Hrs)
1) Ethylene Dichloride (EDC)	5000
2) Vinyl Chloride (VCM)	1
3) Carbon Tetrachloride (CCl_4)	5000
4) Chloroform ($CHCl_3$)	5000
5) Ethyl Chloride (EtCl)	1

Applying the above definitions to practical application in the plant environment means there is almost a limitless number of possible sources for reportable Superfund incidents. Some of the possible sources for unpermitted releases (and therefore potential reportable Superfund incidents) are pipeline leaks, rupture disc releases, relief valve discharges, heat exchanger leaks, tank spills, incinerator bypasses, leaking pumps and flanges, and leaking columns and vessels. These sources can be grouped into four main categories: leaks, relief valve discharges, rupture disc releases, and incinerator bypasses.

The reporting requirements listed in the Superfund regulations state that releases that are "sudden, accidental, or episodic" require immediate notification to the National Response Center. However, it is also stated that releases that are "routine, anticipated releases from facilities or vessels which are incidental to normal business operations" are not required to be reported.

Of the four categories of possible sources, incinerator bypasses are considered routine releases. Incinerator bypasses are expected to occur from time to time. The incinerator was designed with a control system that allows for bypasses to prevent the equipment from overpressure and from flowrates above design capacity. These occurrences are incidental to normal plant operation.

The categories of relief valve discharges and rupture disc releases, however, are not considered routine occurrences. These releases occur during upset conditions in the plant (i.e., overpressure, plugged equipment, misaligned valves, etc.) and are therefore considered "sudden, accidental, or episodic".

The category of leaks has to be broken down further before being designated as routine or non-routine releases depending on the source of the leak. In the daily operation of a chemical plant, leaks will develop in the equipment (i.e., a leak caused by corrosion in a vessel, a loose flange, a leaking seal on a pump, etc.). These leaks are not unexpected; the leaks are repaired and the operation of the plant continues as usual (i.e., they are incidental to normal plant operation).

However, it is conceivable that leaks could develop from accidental or episodic conditions in the plant such as a worker rupturing some pipeline or a forklift being backed into a vessel and puncturing it. This type of release would have to be considered non-routine and therefore reportable.

Table I outlines the VCM Plant's current reporting policies. Potential Superfund release examples are given in Table II, and heat exchangers in the VCM Plant which possess the potential for reportable Superfund leaks are given in Table III.

TABLE I. CURRENT REPORTING POLICY

Source	Superfund	NESHAP (within 10 days)	NESHAP (Semi-annual Repor
Leaks (1)			
routine			
>1 lb. VCM	x		
>5000 lb. EDC	X		
<1 lb. VCM	Not reported to any Federal agency		
non-routine			
>1 lb. VCM	x		
>5000 lb. EDC	x		
<1 lb. VCM	Not reported to any Federal agency		
Relief Valves			
in vinyl chloride service			
>1 lb. VCM	x	x	
>5000 lb. EDC	x		
<1 lb. VCM		x	
not in vinyl chloride service (and greater than 10 ppm VCM)			
>1 lb. VCM	x		(2)
>5000 lb. EDC	x		
<1 lb. VCM	Not reported to any Federal agency		
not in vinyl chloride service (and less than 10 ppm VCM)			
>1 lb. VCM	x		
>5000 lb. EDC	x		
<1 lb. VCM	Not reported to any Federal agency		
Rupture Discs			
>1 lb. VCM	x		x(3)
>5000 lb. EDC	x		
<1 lb. VCM	Not reported to any Federal agency		
Incinerator Bypasses			
>1 lb. VCM	(4)		x
>5000 lb. EDC	(4)		
<1 lb. VCM			x

(1) We do not distinguish in reporting requirements between routine and non-routine releases at this time.

(2) The following statement was made in the NESHAP semi-annual report of 9-15-81: "Relief valve discharges that were not in vinyl chloride service but released over 10 ppm vinyl chloride are not considered reportable incidents and are not included in this report".

(3) Rupture disc releases will be reported in future NESHAP semi-annual reports as stated in the phone conversation to the National Response Center on 11-4-81. This release, however, falls under the same category as that described in footnote (2).

(4) Currently, we consider an incinerator bypass a routine occurrence and do not report the bypass under Superfund. (A bypass of 12 seconds would release >1 lb. VCM. However, to release >5000 lbs. of EDC, the bypass would have to be 2 weeks long.)

TABLE II. POTENTIAL SUPERFUND EXAMPLES

Source/Description	Detection	Typical Range of Possible Amount Discharged (lbs.)	Final Disposition
LEAKS - ROUTINE			
Heat exchanger tube leak in Quench Col. Condenser, H-202, due to corrosion of the tubes. (Note: there are 16 heat exchangers in the plant, all with potential for Superfund releases)	Daily lab samples of the cooling water	1,000-5,000	Atmosphere at the cooling tower and to the secondary from the cooling tower blowdown.
Pump seal leak on Quench Col. Reflux Pump, P-202, due to corrosion of the seal (Note: there are 46 pumps in the plant.)	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Pump seal leak on Vinyl Col. Feed Pump, P-203, due to wear and weathering of the seal (Note: 46 pumps)	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Pump seal leak on Vinyl Col. Reflux Pump, P-204, due to misaligned valve causing the pump to dead head and burst the seal (Note: 46 pumps)	Visual, smell, or fixed point monitor detection.	50-100	Atmosphere or washed to the secondary.
Flange leak on line between the Vinyl Col., C-203, and the Vinyl Col. Condensers, H-207, due to vibrations in the pipe which loosen the flange. (Note: there are thousands of flanges in the plant.)	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Flange leak on line between Vinyl Col. Accumulator, S-203, and Vinyl Col. Reflux Pump, P-204, due to a corroded gasket (Note: thousands of flanges)	Visual, smell or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Flange leak on line between the Caustic Decanter, S-206, and the Flake Caustic Dryer, S-207, due to wear and weathering on the gasket (Note: thousands of flanges.)	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Valve leak on block valve on the discharge of the Vinyl Col. Reflux Pump, P-204, due to corrosion of the packing on the stem of the valve. (Note: thousands of valves in the plant).	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.

DTH 000120594

Source/Description	Detection	Typical Range of Possible Amount Discharged (lbs.)	Final Disposition
Pipeline leak on the line between the Vinyl Col. Reflux pump, P-204, and the Caustic Decanter, S-206, due to internal or external corrosion of the metal (Note: there are thousands of feet of pipe in the plant)	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Vessel leak on the Vinyl Col. Accumulator, S-209, due to internal or external corrosion of the metal(Note: there are 37 vessels in the plant with Superfund potential.)	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Col. leak on the Vinyl Col., C-203, due to internal or external corrosion of the metal (Note: there are 9 columns in the plant.)	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Leak at the head of the Vinyl Col. Condenser, H-207, due to expansion and contraction of the metal from heating and cooling. (Note: there are 16 heat exchangers.)	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Leak from a flexible hose due to wear and age of the hose.	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Leak at the bottom of the EDC Storage Tank, T-451, due to corrosion.	Visual, smell, or fixed point monitor detection.	10-1000	Soaked into the ground.
LEAKS - NON ROUTINE			
Leak in pipeline due to a heavy object falling from one of the distillation towers.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere or washed to the secondary.
Cracked and leaking vessel due to the ball on a crane swinging and hitting a vessel.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere or washed to the secondary.
Vessel leaking because of an explosion that blows the top of the vessel off.	Visual, smell, or fixed point monitor detection.	10-10,000	Atmosphere or washed to the secondary.
Hose leaking because it disconnected while loading a tank car due to operator error or a bad hose.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere or washed to the secondary.

DTH 000120595

S rce/Description	Detection	Typical Range of Possible Amount Discharged (lbs.)	Final Disposition
CM Caustic Dryer, S-207, valve left open to the vacuum unit (supersucker) during recharging.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere or washed to the secondary.
Overfilling a tank car or tank due to operator error.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere or washed to the secondary.
Bleed valve (sample point) left open due to operator error.	Visual, smell, or fixed point monitor detection.	15-50	Atmosphere or washed to the secondary.
Punctured and leaking vessel due to backing a forklift into the vessel.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere or washed to the secondary.
RELIEF VALVE DISCHARGES			
Note: There are 108 relief valves in the plant with the potential for Superfund releases.			
Relief valve discharges due to overpressure in the system d ng an upset in the plant or during start-up and shut-down of the plant.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere
Relief valve discharges due to equipment obstructed downstream of the relief valve (for example, a plugged sparger in the Flake Caustic Dryer, S-207)	Visual, smell or fixed point monitor detection.	10-1000	Atmosphere
Relief valve discharges due to equipment blocked in downstream of the relief valve (for example, a misaligned valve.)	Visual, smell, or	10-1000	Atmosphere
Relief valve discharges due to the VCM Col. pressure controller, PRC-206, malfunctioning causing the Caustic Decanter, S-206, to overpressure.	Visual, smell or fixed point monitor detection.	10-1000	Atmosphere
Relief valve discharges due to the Vinyl Col. Reflux pump, P-204 tripping out causing backed up flows and increased pr sure in the Vinyl Col., C-203.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere
Relief valve discharges due to loss of cooling water to the Vinyl Col. Condenser, H-207, causing the Vinyl Col., C-203, to overheat and overpressure.	Visual, smell or fixed point monitor detection.	10-1000	Atmosphere

DTH 000120596

rce/Description	Detection	Typical Range of Possible Amount Discharged (lbs.)	Final Disposition
elief valve discharges due to mechanical failure of the relief valve.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere

RUPTURE DISC RELEASES

Note: There are 113 rupture discs in the plant. Most of the rupture discs are under relief valves. If the rupture disc releases due to some overpressure condition, the relief valve will almost always release also. In this instance, the rupture disc would be a reportable release. However, if the rupture disc releases and the relief valve does not release, it is not a reportable release. There are rupture discs in the plant which serve as the only pressure relieving device on a piece of equipment. In this instance, any release (due to overpressure or premature failure) would be a reportable release.

Rupture disc releases due to overpressure in the system during an upset in the plant or during startup and shutd of the plant.	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere
pture disc releases due to equipment blocked in downstream of the rupture disc (for example a misaligned valve.)	Visual, smell, or fixed point monitor detection.	10-1000	Atmosphere
Rupture disc releasing due to the teflon lining collapsing in the exit line of the Oxy Reactors, R-301, 2, 3.	Visual, smell, or fixed point monoitor detection.	10-1000	Atmosphere
Rupture disc releasing due to the VCM Tar Stills Reflux pump, P-206, tripping out causing backed up flows and increased pressure in Tar Still Reflux Col., C-204.	Visual, smell or fixed point monitor detection.	10-1000	Atmosphere
Rupture disc releasing due to loss of cooling water to the Quench Col., Condenser, H-202, causing the Quench Col., C-201, to overheat and overpressure.	Visual, smell or fixed point monitor detection.	10-1000	Atmosphere
Ru ure disc releases due to in rnal or external corrosion the rupture disc.	Visual, smell or fixed point monitor detection.	10-1000	Atmosphere
Rupture disc releases due to mechanical failure of the rupture disc due to a manufac-	Visual, smell or fixed point monitor	10-1000	Atmosphere

DTH 000120597

Source/Description	Detection	Typical Range of Possible Amount Discharged (lbs.)	Final Disposition
INCINERATOR BY-PASSES			
Incinerator by-pass due to high pressure in the vent header from a surge of vents or upset conditions in the plant.	The by-pass alarm will sound.	1-10,000	Atmosphere
Incinerator by-pass due to a flame failure in one of the burners.	The by-pass alarm will sound.	1-10,000	Atmosphere
Incinerator by-pass due to venting the Flake Caustic Dryer, S-207, too fast while recharging.	The by-pass alarm will sound.	1-10,000	Atmosphere
Incinerator by-pass due to a slug of O_2 in the Cl_2 from PPG causing R-101 vents to surge.	The by-pass alarm will sound.	1-10,000	Atmosphere
Incinerator by-pass due to a power failure.	The by-pass alarm will sound.	1-10,000	Atmosphere
Incinerator by-pass due to a high level in the Vent Recovery Tank, T-490, from the vents while loading tank cars.	The by-pass alarm will sound.	1-10,000	Atmosphere
Incinerator by-pass due to low combustion in the burners caused by a low air flow.	The by-pass alarm will sound.	1-10,000	Atmosphere

DTH 000120598

TABLE III

VCM PLANT HEAT EXCHANGERS WHICH POSSESS POTENTIAL FOR REPORTABLE SUPERFUND LEAKS

	Exchangers	Hazardous Material	Design Process Operating Pressure (PSIG)	Design Cooling Water Operating Pressure (PSIG)	Design Cooling Water Flow Rate (Lbs/Hr)	24-Hour Reportable Quantity Concentrat (PPM)
1)	Reactor Cooler, H-101	EDC	50	50	3,860,000	53.9
2)	L.E. Column Condenser, H-106	EDC CCl_4 $CHCl_3$ EtCl	45	50	2,400,000	86.8 86.8 86.8 0.017
3)	H.E. Column Condenser, H-109	EDC	45	50	2,680,000	77.7
4)	EDC Product Cooler, H-110 A&B	EDC	45	50	525,000	396.8
5)	Quench Column Condenser, H-202 A&B	EDC VCM	105	50	2,640,000	78.9 0.016
6)	VCM Column Condenser, H-207 A&B	VCM	100	50	2,646,000	0.016
7)	EDC Cooler, H-209	EDC	100	50	600,000	347.2
8)	Reactor Effluent Precooler, H-302	EDC	61	50	309,000	674.2
9)	Primary Product Condensers, H-303 A,B,C	EDC	60	50	2,145,000(1)	97.1(1)
10)	Finishing Reactor Effluent Condenser, H-305	EDC	56	50	245,000	850.3

Notes:

(1) Quantity per each exchanger.

CONOCO

Interoffice Communication

To B. I. Raffle - Houston

From S. W. Sommer

Date May 13, 1982

Subject Reportable Superfund Incidents Regarding Vinyl Chloride Emissions

On April 20, 1982, a meeting between personnel from the VCM Plant and the Legal Department was held at the VCM Plant in Westlake. The NESHAP Regulations, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund laws), and vinyl chloride emissions were discussed and the following conclusions were made:

1) The VCM Plant considers all vinyl chloride (VCM) releases over 1.0 lb. which are subject to NESHAP regulations as being federally permitted releases, and therefore, not reportable under the Superfund Laws.

2) The Legal Department will draft a letter which will state our interpretation of the Superfund and NESHAP regulations and will forward the letter to Region VI of the EPA.

3) The Legal Department will draft a letter (similar to the one to be sent to the EPA) for internal use by Conoco personnel regarding which VCM releases will be considered to be reportable under Superfund and which VCM releases will be considered to be federally permitted (subject to NESHAP regulations).

Below is a summary of the possible sources of VCM emissions of greater than 1.0 lb. with a justification as to why or why not the VCM Plant believes the emission would be reportable under Superfund. Emission sources at the VCM Plant can be grouped into four main categories: leaks, relief valve discharges, rupture disk releases, and incinerator by-passes and other vents.

LEAKS

Leaks must be categorized further into episodic or accidental leaks and leaks resulting from the normal operation of the plant. Episodic or accidental leaks would include leaks resulting from objects falling on pipelines, rupturing lines with a forklift, explosions, puncturing of vessels, tank spills, etc. These leaks would be reported under Superfund because they are not incidental to normal plant operation and are not subject to NESHAP regulations.

Flange leaks, valve leaks, pump seal leaks, leaks due to normal metal corrosion in pipes and vessels, and leaks in hoses due to wear all result from normal plant operation, are not episodic, and are not unexpected. More importantly, these VCM emissions are all detected by the VCM Plant's Leak Detection and

Elimination program and are therefore subject to NESHAP regulations and are not reportable under Superfund.

Leaks in heat exchanger tubes may allow VCM to be emitted into the plant's cooling water system and into the atmosphere via the cooling tower. Leaks of this nature are detected by routine sampling of the cooling water of exchangers in VCM service. Although this sampling is not written in our Leak Detection and Elimination Plan, the plant considers the cooling water sampling as part of the Plan. Under this premise, leaks in heat exchanger tubes are considered to be subject to NESHAP regulations and will be reported accordingly. An opinion is requested from the Legal Department as to whether or not our Leak Detection and Elimination Plan must be formally revised and submitted to the EPA to include cooling water sampling as a part of the Plan.

RV Discharges

Discharges from relief valves which are on vessels that are "in vinyl chloride service" (contacting a fluid which is at least 10% VCM) are not Superfund reportable discharges because these releases are reported to the EPA under NESHAP. For example, a release of 100 lbs. of vinyl chloride from the relief valve on the Vinyl Purification Column C-203 would not be reported under Superfund because such a release would be subject to the NESHAP regulations. However, releases from relief valves on vessels not in vinyl chloride service are reportable under Superfund if more than 1 lb. of vinyl chloride is emitted since NESHAP does not cover these relief valves.

Rupture Disk Releases

The VCM Plant has many rupture disks which provide overpressure protection to vessels. All of the rupture disks in the plant are in one of three configurations.

1) All rupture disks which are in VCM service are located under relief valves. In an overpressure situation, it is likely that both the rupture disk and the relief valve will release. VCM will be released to the atmosphere only if both the rupture disk and relief valve release. Any discharge in this manner will not be reportable under Superfund because relief valve discharges are subject to the NESHAP regulations and are reported to the EPA under NESHAP. If the rupture disk fails but the relief valve does not release, no VCM will be discharged to the atmosphere and the rupture disk failure is not reportable under NESHAP nor Superfund.

2) On vessels which are not in VCM service and which have rupture disks and relief valves in combination, VCM can be released to the atmosphere only if the rupture disk breaks and the relief valve opens. If this occurs and more than 1.0 lb. of VCM is released to the atmosphere, the release is reportable under Superfund since relief valves on vessels not in VCM service are not subject to the NESHAP regulations.

3) There are some rupture disks in the plant which serve as the only pressure relieving device on a piece of equipment, all of which are not in VCM service. In this instance, any release of VCM greater than 1.0 lb. due to overpressure or premature failure would be a reportable release.

Incinerator By-passes and Other Vents

Incinerator by-passes are considered non-reportable releases since they are reported under NESHAP. Previously, these were considered to be non-reportable because by-passes were expected to occur from time to time during normal plant operation. The incinerator was designed with a control system that allows by-passes to occur to prevent the equipment from overpressure conditions. Presently, incinerator by-passes are reported to the EPA under NESHAP and are therefore considered to be covered under NESHAP regulations. It is for this reason that incinerator by-passes are not considered reportable releases under Superfund.

There are other control system vents and manual vents which could result in a VCM release of greater than 1.0 lb. These vents are on equipment which is not in VCM service; therefore, releases from these vents in excess of 1.0 lb. of VCM would not be covered by NESHAP. These vents would be reported to Superfund.

Table I attached summarizes the releases that the VCM Plant considers reportable and non-reportable. If you have any questions or comments, please call me at ETN 640-5058.

Scott W. Sommer

Scott W. Sommer
Process Engineer

br
cc:
JAD-JWW-MGH-RB-PLF-DLD-JCL-DDE-CAG-JJH-CRH

TABLE I

POSSIBLE VCM RELEASES OF GREATER THAN 1.0 LB.

Source Description	Superfund Action	Justification
1a. Accidental Line Ruptures Tank Spills Explosions Operator Errors Tank Punctures	Reportable	Not routine releases; episodic in nature.
1b. Flange Leaks Valve Leaks Pump Seal Leaks Leaks from Corrosion in Pipes or Tanks Hose Leaks Heat Exchanger Head Leaks	Non-Reportable	Leaks caused by normal wear and corrosion during normal plant operation. These leaks are subject to NESHAP regulations as part of leak detection program. (CFR 61.65(b)(8)).
1c. Heat Exchanger Tube Leaks	Non-Reportable	This type of leak is detected by routine sampling of the exchanger cooli water which is regarded to be part of the leak detection program. (CFR 61.65(b)(8)).
2a. Relief Valves in VCM Service	Non -Reportable	These releases are covered by NESHAP regulations. These are reported to the EPA under NESHAP within 10 days of occurrence.(CFR 61.65(a)).
2b. Relief Valves not in VCM Service	Reportable	These releases are not covered by NESHAP regulations.
3. Rupture Disk Releases (not in VCM service and no relief valve in combination)	Reportable	These are sudden, episodic releases and are not covered by NESHAP.
4a. Incinerator By-passes	Non-Reportable	Routine releases from normal plant operation. Reported to EPA in semi-annual report. (CFR 61.70 (c)(1)).
4b. Manual Vents Other Control System Vents	Reportable	These vents are on equipment not in VCM service. Therefore, the release are not covered by NESHAP.

DTH 000120603

CONOCO

RB

Interoffice Communication

To Distribution

From S. W. Sommer

Date March 30, 1982

Subject VCM Plant Policy for Removal, Handling, Storage, and Disposal of Asbestos

Attached are the updated guidelines for the removal, handling, storage, and disposal of asbestos at the VCM Plant. These guidelines are in accordance with OSHA and NESHAP regulations concerning asbestos.

The only major change which has been made from existing asbestos procedures is that the plant will notify the Louisiana Department of Natural Resources and the Environmental Protection Agency (Region VI) of all scheduled and anticipated asbestos removal operations, in accordance with the attached guidelines.

This procedure will be included as part of the VCM Plant Environmental Information Manual.

Scott W. Sommer

Scott W. Sommer
Process Engineer

br
Distribution
JAD-JWW-RB-JRH(4)-MLA(5)-SRA-PLF-MGH-DLD-PE

TABLE OF CONTENTS

APPENDICES

CONOCO CHEMICALS VCM PLANT

Removal, Handling, Storage and Disposal of Asbestos

Introduction

Asbestos is a fibrous material derived from naturally occurring mineral silicates. The fibers are non-combustible, high in tensile strength, good thermal and electrical insulators, and resistant to most solvents.

In the plant, asbestos material is used in heat-resistant insulation, cements, fireproofing and hot pipe coverings. Asbestos waste is generated by the removal of insulation from equipment and piping, Haveg materials, asbestos gaskets, etc.

Removal of insulation containing asbestos is regulated by both the Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA). Work practices during removal and disposal are covered by EPA regulations (see APPENDIX A), and worker protection is covered by OSHA regulations (see APPENDIX B).

Any insulation or/and fireproofing material suspected to contain asbestos should be analyzed for positive identification by the VCM Plant laboratory. If the asbestos content is less than 1% dry weight the material can be disposed of via normal solid waste disposal methods. If greater than 1% the following procedure should be used.

Written Notification to Governmental Agencies

The following items will be prepared by the Process Engineer with the Environmental area of responsibility:

a) Conoco VCM Plant shall notify the Environmental Protection Agency, Air Facilities Branch, Region VI, of a scheduled removal of asbestos material greater than 260 feet of pipe insulation or 160 square feet of flat insulation at least 10 days prior to commencement of removal. See APPENDIX C - "Asbestos Removal Notification" for a typical notification letter.

b) The VCM Plant should notify the EPA on January 1 of each year of anticipated removal operations of less than 260 feet of pipe insulation or 160 square feet of flat insulation. This letter should include all anticipated minor removals throughout the year. See APPENDIX D - "Annual Notification of Asbestos Removal" for a typical notification letter.

c) A report will be submitted to the State of Louisiana Department of Natural Resources, Hazardous Waste Management Division, at least 10 days prior to disposal. A copy of the report must be sent to the US EPA, Air Facilities Branch. See APPENDIX E for a sample letter.

d) No hazardous waste will be shipped without a manifest prepared by the Process Engineer with the Environmental area of responsibility and signed by the appropriate plant personnel. See APPENDIX F for a sample of a manifest prepared for asbestos disposal.

Plant Pre-removal Procedure

The following procedures shall be followed by persons who are involved in the removal or stripping of asbestos material:

1) Notify the Safety Director in advance, extension 5039 (PB 61-491).

2) Obtain a completed work permit from Shift Supervisor for the Safety Director's approval.

3) Discuss with the Safety Director method of asbestos removal, use of required safety equipment, and use of any monitoring device.

4) Minimum safety equipment required for asbestos removal:

    a) Particulate respirator or dust mask approved for asbestos use.

    b) Disposable coveralls, head covers, and gloves.

    c) Eye protection, hard hat, and boots.

Note

The Shift Supervisor will be in charge during the Safety Director's absence.

Removal and Handling

Asbestos material should be handled in wet state, whenever practicable, to prevent the emission of asbestos fibers to the atmosphere.

Dry Removal

Dry removal of friable (easily crumbled or pulverized) asbestos material is not recommended, but may be necessary in instances of unavoidable damage through the wet removal techniques. Because this material may result in heavy contamination, it requires specific EPA approval. As a rule, asbestos should never be removed dry.

Wet Removal

Wet removal of asbestos is based upon the ability of water to lower the friability of the wetted material and the movement of the released fibers. Water or wetting agent will render the material less friable and more cohesive, thus reducing airborne asbestos. Fibers that are released will fall rapidly if wet.

Wet Removal Procedures

1) Isolate the work area to prevent contamination and fiber dispersal to other areas during stripping. Cover equipment and other items with polyethylene sheets if necessary to prevent them from getting wet.

2) Isolate the work area with flags or rope and display caution signs at all entrances or passageways. Example:

ASBESTOS DUST HAZARD AVOID BREATHING DUST WEAR ASSIGNED PROTECTIVE EQUIPMENT DO NOT REMAIN IN AREA UNLESS YOUR WORK REQUIRES IT BREATHING OF ASBESTOS DUST MAY BE HAZARDOUD TO YOUR HEALTH

3) Wet insulation. Re-spray as required if dust occurs during removal of the material.

4) Use wetting agent if water run-off poses a safety and cleanup problem, and during the winter.

5) Remove asbestos material in small sections with two-person teams, on scaffolding platform if needed. Never drop asbestos material to the ground. Transfer the material into 6-mil pre-labelled asbestos bags prior to starting the next section.

The asbestos disposal bags should bear the following label:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID BREATHING DUST
BREATHING ASBESTOS DUST MAY
CAUSE SERIOUS BODILY HARM

6) Clean up debris and other fallen material by wetting before placing in pre-labelled asbestos bag. Brooms or airhoses are never to be used in cleanup operations.

7) Keep the collected materials wet and sealed in bags during the entire operation.

8) When removal work is completed, notify the Safety Director for:

   a) Post-removal inspection and monitoring.
   b) Personnel decontamination procedures.

9) Inspect the work area visually to insure adequate and complete removal of asbestos fibers. Additional cleanup and inspection should be conducted after 24 hours. Any settled fiber should be wetted before placing in pre-labelled asbestos bags.

Storage and Disposal

1) All asbestos material, scrap, debris, containers and asbestos-contaminated clothing should be collected in pre-labelled asbestos bags, adequately wetted and sealed. See "Wet Removal Procedure," item 5 for bag labelling requirements.

2) Sealed bags containing asbestos material will be temporarily located in the Hazardous Waste Area south of the chlorine compressor building until disposed of.

3) All asbestos bags should be tagged indicating the weight (or volume) of each bag and the date of removal.

4) The asbestos bags, with the properly completed mainfest, should be given to the designated EPA- approved disposer for final disposal.

Subpart B—National Emission Standard for Asbestos

§ 61.20 Applicability.

The provisions of this subpart are applicable to those sources specified in § 61.22.

§ 61.21 Definitions.

Terms used in this subpart are defined in the act, in subpart A of this part, or in this section as follows:

(a) "Asbestos" means actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite.

(b) "Asbestos material" means asbestos or any material containing asbestos.

(c) "Particulate asbestos material" means finely divided particles of asbestos material.

(d) "Asbestos tailings" means any solid waste product of asbestos mining or milling operations which contains asbestos.

(e) "Outside air" means the air outside buildings and structures.

(f) "Visible emissions" means any emissions which are visually detectable without the aid of instruments and which contain particulate asbestos material.

(g) "Asbestos mill" means any facility engaged in the conversion or any intermediate step in the conversion of asbestos ore into commercial asbestos. Outside storage of asbestos materials is not considered a part of such facility.

(h) "Commercial asbestos" means any variety of asbestos which is produced by [illegible]cting asbestos from asbestos ore.

[illegible] "Manufacturing" means the com[illegible]ning of commercial asbestos, or in the [illegible]ase of woven friction products the combining of textiles containing commercial asbestos with any other material(s), including commercial asbestos, and the processing of this combination into a product as specified in § 61.22(c).

(j) "Demolition" means the wrecking or taking out of any load-supporting structural member and any related removing or stripping of friable asbestos materials.

(k) "Friable asbestos material" means any material that contains more than 1 percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.

(l) "Control device asbestos waste" means any asbestos-containing waste material that is collected in a pollution control device.

(m) "Renovation" means the removing or stripping of friable asbestos materials used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member. Operations in which load-supporting structural members are wrecked or taken out are excluded.

[Paragraph (m) revised by 43 FR 26373, June 19, 1978]

(n) "Planned renovation" means a renovation operation, or a number of [illegible] operations, in which the amount [illegible] the asbestos material that will be [illegible]oved or stripped within a given pe[illegible] of time can be predicted. Operations that are individually non-scheduled are included, provided a number of such operations can be predicted to occur during a given period of time based on operating experience.

(o) "Emergency renovation" means a renovation operation that results from a sudden, unexpected event, and is not a planned renovation. Operations necessitated by non-routine failures of equipment are included.

(p) "Adequately wetted" means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

(q) "Removing" means taking out friable asbestos materials used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member from any building, structure, facility, or installation.

(r) "Stripping" means taking off friable asbestos materials from any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member.

[Paragraph (q) and (r) revised by 43 FR 26373, June 19, 1978]

(s) "Fabricating" means any processing of a manufactured product containing commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of buildings, structures, facilities or installations.

(t) "Inactive waste disposal site" means any disposal site or portion thereof where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.

(u) "Active waste disposal site" means any disposal site other than an inactive site.

(v) "Roadways" means surfaces on which motor vehicles travel including, but not limited to, highways, roads, streets, parking areas, and driveways.

(w) "Asbestos-containing waste material" means any waste which contains commercial asbestos and is generated by a source subject to the provisions of this subpart, including asbestos mill tailings, control device asbestos waste, friable asbestos waste material, and bags or containers that previously contained commercial asbestos.

[40 FR 48292, October 14, 1975]

(x) "Structural member" means any load-supporting member, such as beams and load-supporting walls; or any nonload-supporting member, such as ceilings and non-load-supporting walls.

[42 FR 12127, March 2, 1977]

§ 61.22 Emission standard.

(a) Asbestos mills: There shall be no visible emissions to the outside air from any asbestos mill except as provided in paragraph (f) of this section.

[39 FR 15936, May 3, 1974]

(b) Roadways: The surfacing of roadways with asbestos tailings or with asbestos-containing waste that is generated by any source subject to paragraphs (c), (d), (e) or (h), of this section is prohibited, except for temporary roadways on an area of asbestos ore deposits. The deposition of asbestos tailings or asbestos-containing waste on roadways covered with snow or ice is considered "surfacing."

(c) Manufacturing: There shall be no visible emissions to the outside air, except as provided in paragraph (f) of this section, from any of the following operations if they use commercial asbestos or from any building or structure in which such operations are conducted.

[40 FR 48292, October 14, 1975]

(1) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

(2) The manufacture of cement products.

(3) The manufacture of fireproofing and insulating materials.

(4) The manufacture of friction products.

(5) The manufacture of paper, millboard, and felt.

(6) The manufacture of floor tile.

(7) The manufacture of paints, coatings, caulks, adhesives, sealants.

(8) The manufacture of plastics and rubber materials.

(9) The manufacture of chlorine.

(10) The manufacture of shotgun shells.

(11) The manufacture of asphalt concrete.

(d) *Demolition and renovation.* The requirements of this paragraph shall apply to any owner or operator of a demolition or renovation operation who intends to demolish any institutional, commercial, or industrial building (including apartment buildings having more than four dwelling units), structure, facility, installation, or portion thereof which contains any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member that is covered or coated with friable asbestos materials, except as provided in paragraph (d)(1) of this section; or who intends to renovate any institutional, commercial, or industrial building, structure, facility, installation, or portion thereof where more than 80 meters (ca. 260 feet) of pipe covered or coated with friable asbestos materials are stripped or removed, or more than 15 square meters, (ca. 160 square feet) of friable asbestos materials used to cover or coat any duct, boiler, tank, reactor, turbine, furnace, or structural member are stripped or removed.

(1) (i) The owner or operator of a demolition operation is exempted from the requirements of this paragraph: *Provided,* (A) The amount of friable asbestos materials in the building or portion thereof to be demolished is less than 80 meters (ca. 260 feet) used on pipes, and less than 15 square meters (ca. 160 square feet) used on any duct, boiler, tank, reactor, turbine, furnace, or structural member, and (B) the notification requirements of paragraph (d)(1)(ii) are met.

(ii) Written notification shall be postmarked or delivered to the Administrator at least 20 days prior to com-

DTH 000120610

mencement of demolition and shall include the information required by paragraph (d)(2) of this section, with the exception of the information required by paragraphs (d)(2) (iii), (vi), (vii), (viii), and (ix) of this section, and shall state the measured or estimated amount of friable asbestos materials which is present. Techniques of estimation shall be explained.

[Paragraph (d) revised by 43 FR 26374, June 19, 1978]

(2) Written notice of intention to demolish or renovate shall be provided to the Administrator by the owner or operator of the demolition or renovation operation. Such notice shall be postmarked or delivered to the Administrator at least 10 days prior to commencement of demolition, or as early as possible prior to commencement of emergency demolition subject to paragraph (d)(6) of this section, and as early as possible prior to commencement of renovation. Such notice shall include the following information:

(i) Name of owner or operator.

(ii) Address of owner or operator.

(iii) Description of the building, structure, facility, or installation to be demolished or renovated, including the size, age, and prior use of the structure, and the approximate amount of friable asbestos materials present.

[Paragraph (iii) revised by 43 FR 26374, June 19, 1978]

(iv) Address or location of the building, structure, facility, or installation.

(v) Scheduled starting and completion dates of demolition or renovation.

(vi) Nature of planned demolition or renovation and method(s) to be employed.

(vii) Procedures to be employed to meet the requirements of this paragraph and paragraph (j) of this section.

(viii) The name and address or location of the waste disposal site where the friable asbestos waste will be deposited.

(ix) Name, title, and authority of the State or local governmental representative who has ordered a demolition which is subject to paragraph (d)(6) of this section.

(3)(i) For purposes of determining whether a planned renovating operation constitutes a renovation within the meaning of this paragraph, the amount of friable asbestos material to be removed or stripped shall be:

(A) For planned renovating operations involving individually non-scheduled operations, the additive amount of friable asbestos material that can be predicted will be removed or stripped at a source over the maximum period of time for which a prediction can be made. The period shall be not less than 30 days and not longer than one year.

(B) For each planned renovating operation not covered by paragraph (d)(3)(i)(A), the total amount of friable asbestos material that can be predicted will be removed or stripped at a source.

(ii) For purposes of determining whether an emergency renovating operation constitutes a renovation within the meaning of this paragraph, the amount of friable asbestos material to be removed or stripped shall be the total amount of friable asbestos material that will be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.

(4) The following procedures shall be used to prevent emissions of particulate asbestos material to outside air:

(i) Friable asbestos materials, used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member, shall be removed from any building, structure, facility or installation subject to this paragraph. Such removal shall occur before wrecking or dismantling of any portion of such building, structure, facility, or installation that would break up the friable asbestos materials and before wrecking or dismantling of any other portion of such building, structure, facility, or installation, that would preclude access to such materials for subsequent removal. Removal of friable asbestos materials used on any pipe, duct, or structural member which are encased in concrete or other similar structural material is not required prior to demolition, but such materials shall be adequately wetted whenever exposed during demolition.

(ii) Friable asbestos materials used on pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members shall be adequately wetted during stripping, except as provided in paragraphs (d)(4)(iv), (d)(4)(vi), or (d)(vii) of this section.

(iii) Pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members that are covered or coated with friable asbestos materials may be taken out of any building, structure, facility, or installation subject to this paragraph as units or in sections provided the friable asbestos materials exposed during cutting or disjoining are adequately wetted during the cutting or disjoining operation. Such units shall not be dropped or thrown to the ground, but shall be carefully lowered to ground level.

(iv) The stripping of friable asbestos materials used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member that has been removed as a unit or in sections as provided in paragraph (d)(4)(iii) of this section shall be performed in accordance with paragraph (d)(4)(ii) of this section. Rather than comply with the wetting requirement, a local exhaust ventilation and collection system may be used to prevent emissions to the outside air. Such local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping of friable asbestos materials. There shall be no visible emissions to the outside air from such local exhaust ventilation and collection systems except as provided in paragraph (f) of this section.

[4(i)–(iv) revised by 43 FR 26374, June 19, 1978]

(v) All friable asbestos materials that have been removed or stripped shall be adequately wetted to ensure that such materials remain wet during all remaining stages of demolition or renovation and related handling operations. Such materials shall not be dropped or thrown to the ground or a lower floor. Such materials that have been removed or stripped more than 50 feet above ground level, except those materials removed as units or in sections, shall be transported to the ground via dust-tight chutes or containers.

(vi) Except as specified below, the wetting requirements of this paragraph are suspended when the temperature at the point of wetting is below 0°C (32°F). When friable asbestos materials are not wetted due to freezing temperatures, such materials on pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members shall, to the maximum extent possible, be removed as units or in sections prior to wrecking. In no case shall the requirements of paragraphs (d)(4)(iv) or (d)(4)(v) be suspended due to freezing temperatures.

(vii) For renovation operations, local exhaust ventilation and collection systems may be used, instead of wetting as specified in paragraph (d)(4)(ii), to prevent emissions of particulate asbestos material to outside air when damage to equipment resulting from the wetting would be unavoidable. Upon request and supply of adequate information, the Administrator will determine whether damage to equipment resulting from wetting to comply with the provisions of this paragraph would be unavoidable. Such local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping and removal of friable asbestos material. There shall be no visible emissions to the outside air from such local exhaust ventilation and collection systems, except as provided in paragraph (f) of this section.

(5) Sources subject to this paragraph are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

(6) The demolition of a building, structure, facility, or installation, pursuant to an order of an authorized representative of a State or local governmental agency, issued because that building is structurally unsound and in danger of imminent collapse is exempt from all but the following requirements of paragraph (d) of this section:

(i) The notification requirements specified by paragraph (d)(2) of this section;

(ii) The requirements on stripping of friable asbestos materials from previously removed units or sections as specified in paragraph (d)(4)(iv) of this section;

(iii) The wetting, as specified by paragraph (d)(4)(v) of this section, of friable asbestos materials that have been removed or stripped;

(iv) The portion of the structure being demolished that contains friable asbestos materials shall be adequately wetted during the wrecking operation.

[39 FR 15936, May 3, 1974; 40 FR 48292, October 14, 1975]

(e) *Spraying.* There shall be no visible emissions to the outside air from the spray-on application of materials containing more than 1 percent asbes-

[Sec. 61.22(e)]

tos, on a dry weight basis, used on equipment and machinery, except as provided in paragraph (f) of this section. Materials sprayed on buildings, structures, structural members, pipes, and conduits shall contain less than 1 percent asbestos on a dry weight basis.

[Paragraph (e) revised by 43 FR 26374, June 19, 1978]

(1) Sources subject to this paragraph are exempt from the requirements of § 61.05(a), § 61.07, and § 61.09.

(2) Any owner or operator who intends to spray asbestos materials which contain more than 1 percent asbestos on a dry weight basis on equipment and machinery shall report such intention to the Administrator at least 20 days prior to the commencement of the spraying operation. Such report shall include the following information:

(i) Name of owner or operator.

(ii) Address of owner or operator.

(iii) Location of spraying operation.

(iv) Procedures to be followed to meet the requirements of this paragraph.

(3) The spray-on application of materials in which the asbestos fibers are encapsulated with a bituminous or resinous binder during spraying and which are not friable after drying is exempted from the requirements of paragraphs (e) and (e)(2) of this section.

[Paragraphs (2) and (3) revised by 43 FR [illegible], June 19, 1978]

(f) Rather than meet the no-visible-emission requirements as specified by paragraphs (a), (c), (d), (e), (h), (j), and (k) of this section, an owner or operator may elect to use the methods specified by § 61.23 to clean emissions containing particulate asbestos material before such emissions escape to, or are vented to, the outside air.

(g) Where the presence of uncombined water is the sole reason for failure to meet the no-visible-emission requirement of paragraphs (a), (c), (d), (e), (h), (j), or (k) of this section, such failure shall not be a violation of such emission requirements.

(h) Fabricating: There shall be no visible emissions to the outside air, except as provided in paragraph (f) of this section, from any of the following operations if they use commercial asbestos or from any building or structure in which such operations are conducted.

(1) The fabrication of cement building products.

(2) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

(3) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture; bulkheads, partitions and ceilings for marine construction; and flow control devices for the molten metal industry.

(i) Insulating: Molded insulating materials which are friable and wet-applied insulating materials which are friable after drying, installed after the effective date of these regulations, shall contain no commercial asbestos. The provisions of this paragraph do not apply to insulating materials which are spray applied; such materials are regulated under § 61.22(e).

(j) Waste disposal for manufacturing, fabricating, demolition, renovation and spraying operations: The owner or operator of any source covered under the provisions of paragraphs (c), (d), (e), or (h) of this section shall meet the following standards:

(1) There shall be no visible emissions to the outside air, except as provided in paragraph (j)(3) of this section, during the collection; processing, including incineration; packaging; transporting; or deposition of any asbestos-containing waste material which is generated by such source.

(2) All asbestos-containing waste material shall be deposited at waste disposal sites which are operated in accordance with the provisions of § 61.25.

(3) Rather than meet the requirement of paragraph (j)(1) of this section, an owner or operator may elect to use either of the disposal methods specified under (j)(3)(i) and (ii) of this section, or an alternative disposal method which has received prior approval by the Administrator:

(i) Treatment of asbestos-containing waste material with water:

(A) Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material shall be adequately wetted. There shall be no visible emissions to the outside air from the collection, mixing and wetting operations, except as provided in paragraph (f) of this section.

(B) After wetting, all asbestos-containing waste material shall be sealed into leak-tight containers while wet, and such containers shall be deposited at waste disposal sites which are operated in accordance with the provisions of § 61.25.

(C) The containers specified under paragraph (j)(3)(i)(B) of this section shall be labeled with a warning label that states:

CAUTION
Contains Asbestos
Avoid Opening or Breaking Container
Breathing Asbestos is Hazardous
to Your Health

Alternatively, warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.93a(g)(2)(ii) may be used.

(ii) Processing of asbestos-containing waste material into non-friable forms:

(A) All asbestos-containing waste material shall be formed into non-friable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with the provisions of § 61.25.

(B) There shall be no visible emissions to the outside air from the collection and processing of asbestos-containing waste material, except as specified in paragraph (f) of this section.

(4) For the purposes of this paragraph (j), the term all asbestos-containing waste material as applied to demolition and renovation operations covered by paragraph (d) of this section includes only friable asbestos waste and control device asbestos waste.

(k) Waste disposal for asbestos mills: The owner or operator of any source covered under the provisions of paragraph (a) of this section shall meet the following standard:

(1) There shall be no visible emissions to the outside air, except as provided in paragraph (k)(3) of this section, during the collection, processing, packaging, transporting or deposition of any asbestos-containing waste material which is generated by such source.

(2) All asbestos-containing waste material shall be deposited at waste disposal sites which are operated in accordance with the provisions of § 61.25.

(3) Rather than meet the requirement of paragraph (k)(1) of this section, an owner or operator may elect to meet the following requirements in paragraphs (k)(3) (i) and (ii), or use an alternative disposal method which has received prior approval by the Administrator:

(i) There shall be no visible emissions to the outside air from the transfer of control device asbestos waste to the tailings conveyor, except as provided in paragraph (f) of this section. Such waste shall be subsequently processed either as specified in paragraph (k)(3)(ii) of this section or as specified in paragraph (j)(3) of this section.

(ii) All asbestos-containing waste material shall be adequately mixed, with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, prior to deposition at a waste disposal site. Such agent shall be used as recommended for the particular dust by the manufacturer of the agent. There shall be no discharge of visible emissions to the outside air from the wetting operation except as specified in paragraph (f) of this section. Wetting may be suspended when the ambient temperature at the waste disposal site is less than −9.5°C (ca. 15°F). The ambient air temperature shall be determined by an appropriate measurement method with an accuracy of ±1°C (±2°F) and recorded at least at hourly intervals during the period that the operation of the wetting system is suspended. Records of

DTH 000120612

such temperature measurements shall be retained at the source for a minimum of two years and made available for inspection by the Administrator.

(l) The owner of any inactive waste disposal site, which was operated by sources covered under § 61.22 (a), (c) or (h) and where asbestos-containing waste material produced by such sources was deposited, shall meet the following standards:

(1) There shall be no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph, except as provided in paragraph (l)(5) of this section.

(2) Warning signs shall be displayed at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited, at intervals of 100 m (ca. 330 ft) or less, except as specified in paragraph (l)(4) of this section. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this paragraph shall conform to the requirements of 20" x 14" upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	1" Sans Serif, Gothic or Block
Do Not Create Dust	¾" Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health	14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the two lines.

(3) The perimeter of the site shall be fenced in a manner adequate to deter access by the general public, except as specified in paragraph (l)(4) of this section.

(4) Warning signs and fencing are not required where the requirements of paragraphs (l)(5) (i) or (ii) of this section are met, or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access to the general public.

(5) Rather than meet the requirement of paragraph (l)(1) of this section, an owner may elect to meet the requirements of this paragraph or may use an alternative control method for emissions from inactive waste disposal sites which has received prior approval by the Administrator.

(i) The asbestos-containing waste material shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material, and a cover of vegetation shall be grown and maintained on the area adequate to prevent exposure of the asbestos-containing waste material; or

(ii) The asbestos-containing waste material shall be covered with at least 60 centimeters (ca. 2 feet) of compacted non-asbestos-containing material and maintained to prevent exposure of the asbestos-containing waste; or

(iii) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion shall be applied. Such agent shall be used as recommended for the particular asbestos tailings by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

[40 FR 48292, October 14, 1975]

§ 61.23 Air-cleaning.

If air-cleaning is elected, as permitted by §§ 61.22(f) and 61.22(d)(4)(iv), the requirements of this section must be met.

[40 FR 48292, October 14, 1975]

(a) Fabric filter collection devices must be used, except as noted in paragraphs (b) and (c) of this section. Such devices must be operated at a pressure drop of no more than 4 inches water gage, as measured across the filter fabric. The airflow permeability, as determined by ASTM method D737-69, must not exceed 30 ft³/min/ft² for woven fabrics or 35 ft³/min/ft² for felted fabrics, except that 40 ft³/min/ft² for woven and 45 ft³/min/ft² for felted fabrics is allowed for filtering air from asbestos ore dryers. Each square yard of felted fabric must weigh at least 14 ounces and be at least one-sixteenth inch thick throughout. Synthetic fabrics must not contain fill yarn other than that which is spun.

(b) If the use of fabric filters creates a fire or explosion hazard, the administrator may authorize the use of wet collectors designed to operate with a unit contacting energy of at least 40 inches water gage pressure.

(c) The administrator may authorize the use of filtering equipment other than that described in paragraphs (a) and (b) of this section if the owner or operator demonstrates to the satisfaction of the administrator that the filtering of particulate asbestos material is equivalent to that of the described equipment.

(d) All air-cleaning equipment authorized by this section must be properly installed, used, operated, and maintained. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

§ 61.24 Reporting.

The owner or operator of any existing source to which this subpart is applicable shall, within 90 days after the effective date, provide the following information to the administrator:

(a) A description of the emission control equipment used for each process;

(b) If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gage.

(1) If the fabric filter device utilizes a woven fabric, the airflow permeability in ft³/min/ft²; and, if the fabric is synthetic, indicate whether the fill yarn is spun or not spun.

(2) If the fabric filter device utilizes a felted fabric, the density in oz/yd², the minimum thickness in inches, and the airflow permeability in ft³/min/ft².

(c) For sources subject to §§ 61.22(j) and 61.22(k):

(1) A brief description of each process that generates asbestos-containing waste material.

(2) The average weight of asbestos-containing waste material disposed of, measured in kg/day.

(3) The emission control methods used in all stages of waste disposal.

(4) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(d) For sources subject to § 61.22(l):

(1) A brief description of the site.

(2) The method or methods used to comply with the standard, or alternative procedures to be used.

(e) Such information shall accompany the information required by § 61.10. The information described in this section shall be reported using the format of Appendix A of this part.

[40 FR 48292, October 14, 1975]

§ 61.25 Waste disposal sites.

In order to be an acceptable site for disposal of asbestos-containing waste material under § 61.22 (j) and (k), an active waste disposal site shall meet the requirements of this section.

(a) There shall be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, except as provided in paragraph (e) of this section.

(b) Warning signs shall be displayed at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited, at intervals of 100 m (ca. 330 ft) or less except as specified in paragraph (d) of this section. Signs shall be posted in such

DTH 000120613

a manner and location that a person may easily read the legend. The warning signs required by this paragraph shall conform to the requirements of 20" x 14" upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

LEGEND

ASBESTOS WASTE DISPOSAL SITE

Do Not Create Dust

Breathing Asbestos
Is Hazardous to Your Health

Notation

1" Sans Serif, Gothic or Block

3/4" Sans Serif, Gothic or Block

14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the two lines.

(c) The perimeter of the disposal site shall be fenced in order to adequately deter access to the general public except as specified in paragraph (d) of this section.

(d) Warning signs and fencing are not required where the requirements of paragraph (e)(1) of this section are met, or where a natural barrier adequately deters access to the general public. Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access to the general public.

(e) Rather than meet the requirement of paragraph (a) of this section, an owner or operator may elect to meet the requirements of paragraph (e)(1) or (e)(2) of this section, or may use an alternative control method for emissions from active waste disposal sites which has received prior approval by the Administrator.

(1) At the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material.

(2) At the end of each operating day, or at least once every 24-hour period while the disposal site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion. Such agent shall be used as recommended for the particular dust by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

[40 FR 48292, October 14, 1975]

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414))

Subpart C—National Emission Standard for Beryllium

§ 61.30 Applicability.

The provisions of this subpart are applicable to the following stationary sources:

(a) Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste.

(b) Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight.

§ 61.31 Definitions.

Terms used in this subpart are defined in the act, in subpart A of this part, or in this section as follows:

(a) "Beryllium" means the element beryllium. Where weights or concentrations are specified, such weights or concentrations apply to beryllium only, excluding the weight or concentration of any associated elements.

(b) "Extraction plant" means a facility chemically processing beryllium ore to beryllium metal, alloy, or oxide, or performing any of the intermediate steps in these processes.

(c) "Beryllium ore" means any naturally occurring material mined or gathered for its beryllium content.

(d) "Machine shop" means a facility performing cutting, grinding, turning, honing, milling, deburring, lapping, electrochemical machining, etching, or other similar operations.

(e) "Ceramic plant" means a manufacturing plant producing ceramic items.

(f) "Foundry" means a facility engaged in the melting or casting of beryllium metal or alloy.

(g) "Beryllium-containing waste" means material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this subpart.

(h) "Incinerator" means any furnace used in the process of burning waste for the primary purpose of reducing the volume of the waste by removing combustible matter.

(i) "Propellant" means a fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.

(j) "Beryllium alloy" means any metal to which beryllium has been added in order to increase its beryllium content and which contains more than 0.1 percent beryllium by weight.

(k) "Propellant plant" means any facility engaged in the mixing, casting, or machining of propellant.

§ 61.32 Emission standard.

(a) Emissions to the atmosphere from stationary sources subject to the provisions of this subpart shall not exceed 10 grams of beryllium over a 24-hour period, except as provided in paragraph (b) of this section.

(b) Rather than meet the requirement of paragraph (a) of this section, an owner or operator may request approval from the Administrator to meet an ambient concentration limit on beryllium in the vicinity of the stationary source of 0.01 $\mu g/m^3$, averaged over a 30-day period.

(1) Approval of such requests may be granted by the Administrator provided that:

(i) At least 3 years of data is available which in the judgment of the Administrator demonstrates that the future ambient concentrations of beryllium in the vicinity of the stationary source will not exceed 0.01 $\mu g/m^3$, averaged over a 30-day period. Such 3-year period shall be the 3 years ending 30 days before the effective date of this standard.

(ii) The owner or operator requests such approval in writing within 30 days after the effective date of this standard.

(iii) The owner or operator submits a report to the Administrator within 45 days after the effective date of this standard which report includes the following information:

(a) Description of sampling method including the method and frequency of calibration.

(b) Method of sample analysis.

(c) Averaging technique for determining 30-day average concentrations.

(d) Number, identity, and location (address, coordinates, or distance and heading from plant) of sampling sites.

(e) Ground elevations and height above ground of sampling inlets.

(f) Plant and sampling area plots showing emission points and sampling sites. Topographic features significantly affecting dispersion including plant building heights and locations shall be included.

(g) Information necessary for estimating dispersion including stack height, inside diameter, exit gas temperature, exit velocity or flow rate, and beryllium concentration.

(h) A description of data and procedures (methods or models) used to de-

DTH 000120614

APPENDIX B

OCCUPATIONAL SAFETY AND HEALTH STANDARDS
SUBPART Z—TOXIC AND HAZARDOUS SUBSTANCES

(Excerpts from Code of Federal Regulations, Title 29, Chapter XVII, Section 1910.93 of Subpart G redesignated as 1910.1000 at 40 FR 23072, May 28, 1975; amended at 41 FR 11505, March 19, 1976; 41 FR 35184, August 20, 1976; 41 FR 46784, October 22, 1976; 42 FR 3304, January 18, 1977 (Corrections); 43 FR 2586, January 17, 1978; 43 FR 5963, February 10, 1978; 43 FR 11527, March 17, 1978; 43 FR 13563, March 31, 1978; 43 FR 19584, May 5, 1978; 43 FR 27962, June 1978; 43 FR 28472, June 30, 1978; 43 FR 45762, October 3, 1978; 43 FR 49726, October 24, 1978; 43 FR 51759, November 7, 1978; 43 FR 52952, November 14, 1978; 43 FR 57601, December 8, 1978; 44 FR 5446, January 25, 1979; 44 FR 14554, March 13, 1979; 44 FR 50338, August 28, 1979; 44 FR 60980, October 23, 1979; 44 FR 68827, November 30, 1979 (Corrections); 45 FR 35212, May 23, 1980; 45 FR 54333, August 15, 1980 (Corrections); 46 FR 6134, January 21, 1981)

Editor's Note: The effective date of the Jan. 21, 1981, amendments to section 1910.1025 was extended from Feb. 20, 1981, to March 30, 1981, in the Feb. 6 Federal Register in accordance with President Reagan's Directive.

Subpart Z—Toxic and Hazardous Substances

Sec.:
1910.1000 Air Contaminants.
1910.1001 Asbestos
1910.1002 Coal tar pitch volatiles; interpretation of term.
1910.1003 4-Nitrobiphenyl.
1910.1004 alpha-Naphthylamine.
1910.1005 4,4'—Methylene bis (2-chloroaniline). [Deleted]
1910.1006 Methyl chloromethyl ether.
1910.1007 3,3'—Dichlorobenzidine (and its salts)
1910.1008 bis-Chloromethyl ether.
1910.1009 beta-Naphthylamine.
1910.1010 Benzidine
1910.1011 4-Aminodiphenyl.
1910.1012 Ethyleneimine.
1910.1013 beta-Propiolactone.
1910.1014 2-Acetylaminofluorene.
1910.1015 4-Dimethylaminoazobenzene.
1910.1016 N-Nitrosodimethylamine.
1910.1017 Vinyl chloride.
1910.1018 Inorganic arsenic.
1910.1025 Lead.
1910.1028 Benzene.
1910.1029 Coke oven emissions.
1910.1043 Cotton dust. [Omitted]
1910.1044 1,2-dibromo-3-chloropropane.
1910.1045 Acrylonitrile.
1910.1046 Exposure to cotton dust in cotton gins [Omitted]
1910.1499 Source of standards.
1910.1500 Standards organizations.

§ 1910.1000 Air contaminants.

An employee's exposure to any material listed in table Z-1, Z-2 or Z-3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section.

(a) Table Z-1:

(1) *Materials with names preceded by "C"—Ceiling Values.* An employee's exposure to any material in table Z-1, the name of which is preceded by a "C" (e.g., C Boron trifluoride), shall at no time exceed the ceiling value given for that material in the table.

(2) *Other materials—8-hour time weighted averages.* An employee's exposure to any material in table Z-1, the name of which is not preceded by "C", in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average given for that material in the table.

(b) Table Z-2:

(1) *8-hour time weighted averages.* An employee's exposure to any material listed in table Z-2, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that material in the table.

(2) *Acceptable ceiling concentrations.* An employee's exposure to a material listed in table Z-2, shall not exceed at any time during an 8-hour shift the acceptable ceiling concentration limit given for the material in the table, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed in the column under "acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift".

(3) *Example.* During an 8-hour work shift, an employee may be exposed to a concentration of Benzene above 25 p.p.m. (but never above 50 p.p.m.) only for a maximum period of 10 minutes. Such exposure must be compensated by exposures to concentrations less than 10 p.p.m. so that the cumulative exposure for the entire 8-hour work shift does not exceed a weighted average of 10 p.p.m.

(c) Table Z-3: An employee's exposure to any material listed in table Z-3, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that material in the table.

(d) Computation formulae:

(1) (i) The cumulative exposure for an 8-hour work shift shall be computed as follows:

$$E = \frac{C_a T_a + C_b T_b + \dots C_n T_n}{8}$$

where:

E is the equivalent exposure for the working shift.

C is the concentration during any period of time *T* where the concentration remains constant.

T is the duration in hours of the exposure at the concentration C.

The value of *E* shall not exceed the 8-hour time weighted average limit in table

[Sec 1910.1000(d)(1)(i)]

Table Z-2

Material	8-hour time weighted average	Acceptable ceiling concentration	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift: Concentration	Maximum duration
Benzene (Z37.40-1969)[1]	10 p.p.m.	25 p.p.m.	50 p.p.m.	10 minutes.
Beryllium and beryllium compounds (Z37.29-1970).	2 μg./M³	5 μg./M³	25 μg./M³	30 minutes.
Cadmium fume (Z37.5-1970)	0.1 mg./M³	0.3 mg./M³		
Cadmium dust (Z37.5-1970)	0.2 mg./M³	0.6 mg./M³		
Carbon disulfide (Z37.3-1968)	20 p.p.m.	30 p.p.m.	100 p.p.m.	Do.
Carbon tetrachloride (Z37.17-1967)	10 p.p.m.	25 p.p.m.	200 p.p.m.	5 minutes in any 4 hours.
Ethylene dibromide (Z37.31-1970)	20 p.p.m.	30 p.p.m.	50 p.p.m.	5 minutes.
Ethylene dichloride (Z37.21-1969)	50 p.p.m.	100 p.p.m.	200 p.p.m.	5 minutes in any 3 hours.
Formaldehyde (Z37.16-1967)	3 p.p.m.	5 p.p.m.	10 p.p.m.	30 minutes.
Hydrogen fluoride (Z37.28-1969)	do.			
Fluoride as dust (Z37.28-1969)	2.5 mg./M³			
Lead and its inorganic compounds (Z37.11-1969).	0.2 mg./M³			
Methyl chloride (Z37.18-1969)	100 p.p.m.	200 p.p.m.	300 p.p.m.	5 minutes in any 3 hours.
Methylene Chloride (Z37.3-1969)	500 p.p.m.	1,000 p.p.m.	2,000 p.p.m.	5 minutes in any 2 hours.
Organo (alkyl) mercury (Z37.30-1969)	0.01 mg./M³	0.04 mg./M³		
Styrene (Z37.15-1969)	100 p.p.m.	200 p.p.m.	600 p.p.m.	5 minutes in any 3 hours.
Trichloroethylene (Z37.19-1967)	do.	do.	300 p.p.m.	5 minutes in any 2 hours.
Tetrachloroethylene (Z37.22-1967)	do.	do.	do.	5 minutes in any 3 hours.
Toluene (Z37.12-1967)	200 p.p.m.	300 p.p.m.	500 p.p.m.	10 minutes.
Hydrogen sulfide (Z37.2-1966)		20 p.p.m.	50 p.p.m.	10 minutes once only if no other measurable exposure occurs.
Mercury (Z37.8-1971)		1 mg./10M³		
Chromic acid and chromates (Z37.7-1971)		do.[1]		

[1] Occupational exposures to benzene are subject to the requirements of Section 1910.1028 except as specifically exempted by Section 1910.1028(a)(2). Exposures exempted by Section 1910.1028(a)(2) are covered by this Section 1910.1000.

[Entry on lead returned to table at 44 FR 14554, March 13, 1979]

Table Z-3—Mineral Dusts

Substance	Mppcf[a]	Mg/M³
[illegible] (respirable)	250[b] / %SiO₂+5	10mg/M³ / %SiO₂+2
Quartz (total dust)		30mg/M³ / %SiO₂+2
Cristobalite: Use ½ the value calculated from the count or mass formulae for quartz		
Tridymite: Use ½ the value calculated from the formulae for quartz		
Amorphous, including natural diatomaceous earth	20	80mg/M³ / %SiO₂
Silicates (less than 1% crystalline silica):		
Mica	20	
Soapstone	20	
Talc (non-asbestos form)	20[c]	
Talc (fibrous). Use asbestos limit		
Tremolite (see talc, fibrous)		
Portland cement	50	
Graphite (natural)	15	
Coal dust (respirable fraction less than 5% SiO₂)		2.4mg/M³ or 10mg/M³ / %SiO₂+2
more than 5% SiO₂		
Inert or Nuisance Dust:		
Respirable fraction	15	5mg/M³
Total dust	50	15mg/M³

Note: Conversion factors—
mppcf X 35.3 = million particles per cubic meter = particles per c.c.
[a] Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.
[b] The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable.
[illegible] concentration and percent quartz for the application of this limit are to be determined from the fraction [illegible] with the following characteristics:
[illegible] quartz [illegible] 1% quartz, use quartz [illegible]

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	90
2.5	75
3.5	50
5.0	25
10	0

The measurements under this note refer to the use of an AEC instrument. If the respirable fraction of coal dust is determined with a MRE the figure corresponding to that of 2.4 Mg/M³ in the table for coal dust is 4.5 Mg/M³.

§ 1910.1001 Asbestos.

(a) *Definitions.* For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) *Permissible exposure to airborne concentrations of asbestos fibers*—(1) *Standard effective July 7, 1972.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(2) *Standard effective July 1, 1976.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) *Ceiling concentration.* No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(c) *Methods of compliance*—(1) *Engineering methods.* (i) *Engineering controls.* Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) *Local exhaust ventilation.* (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2-1971, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) *Particular tools.* All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) *Work practices*—(i) *Wet methods.* Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) *Particular products and operations.* No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) *Spraying, demolition, or removal.* Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d)(2)(iii) of this section and with special clothing in accordance with paragraph (d)(3) of this section.

(d) *Personal protective equipment*—(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

(ii) In work situations in which the methods prescribed in paragraph (c) of

DTH 000120616

this section are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this section; or

(iii) In emergencies.

(iv) Where both respirators and personnel rotation are allowed by paragraphs (d)(1)(i), (ii), or (iii) of this section, and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by paragraph (d)(1) of this section, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with subdivisions (i), (ii), (iii), and (iv) of this subparagraph.

(i) *Air purifying respirators.* A reusable or single use air purifying respirator, or a respirator described in paragraphs (d)(2)(ii) or (iii) of this section, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(ii) *Powered air purifying respirators.* A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in paragraph (d)(2)(iii) of this section, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(iii) *Type "C" supplied-air respirators, continuous flow or pressure-demand class.* A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(iv) *Establishment of a respirator program.* (*a*) The employer shall establish a respirator program in accordance with the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2-1969, which is incorporated by reference herein.

(*b*) See §1910.6 concerning the availability of ANSI Z88.2-1969 and the maintenance of an historic file in connection therewith. The address of the American National Standards Institute is given in §1910.100.

(*c*) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) Special clothing: The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) Change rooms: (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) Clothes lockers: The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) Laundering: (*a*) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(*b*) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in paragraph (d)(4)(iii)(a) of this section to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(*c*) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with paragraph (g) of this section.

(e) *Method of measurement.* All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400–450 × (magnification) (4 millimeter objective) with phase contrast illumination.

(f) *Monitoring*—(1) *Initial determinations.* Within 6 months of the publication of this section, every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with paragraph (c) of this section.

(2) *Personal monitoring*—(i) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) Sampling frequency and patterns. After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section.

(3) *Environmental monitoring*—(i) samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by paragraph (f)(1) of this section, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

(4) *Employee observation of monitoring.* Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have access to the records thereof.

(g) *Caution signs and labels.* (1) *Caution signs.* (i) *Posting.* Caution signs shall be provided and displayed at each location where airborne concentrations of asbestos fibers may be in excess of the exposure limits prescribed in paragraph (b) of this section. Signs shall be posted at such a distance from such a location so that an employee may read the signs and take necessary protective steps before entering the area marked by the signs. Signs shall be posted at all approaches to areas containing excessive concentrations of airborne asbestos fibers.

(ii) *Sign specifications.* The warning signs required by paragraph (g)(1)(i) of this section shall conform to the requirements of 20" x 14" vertical format signs specified in §1910.145(d)(4), and to this subdivision. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this subdivision.

[Sec. 1910.1001(g)(1)(ii)]

Legend	Notation
Asbestos	1" Sans Serif, Gothic or Block.
Hazard	¾" Sans Serif, Gothic or Block.
Avoid Breathing Dust	¼" Gothic.
Wear Assigned Protective Equipment.	¼" Gothic.
Do Not Remain In Area Unless Your Work Requires It.	¼" Gothic.
Breathing Asbestos Dust May Be Hazardous To Your Health.	14 point Gothic.

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) *Caution labels—(i) Labeling.* Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released.

(ii) *Label specifications.* The caution labels required by paragraph (g)(2)(i) of this section shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

CAUTION

Contains Asbestos Fibers

Avoid Creating Dust

Breathing Asbestos Dust May Cause Serious Bodily Harm

(h) *Housekeeping—(1) Cleaning.* All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) *Waste disposal.* Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(i) *Recordkeeping—(1) Exposure records.* Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 20 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) *Access.* Employee exposure records required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.20 (a)-(e) and (g)-(i).

[45 FR 35212, May 23, 1980]

(3) *Employee notification.* Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) *Medical examinations—(1) General.* The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

(2) *Preplacement.* The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

"(3) *Annual examinations.* On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(4) *Termination of employment.* The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(5) *Recent examinations.* No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

(6) *Medical records—(i) Maintenance.* Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be retained by employers for at least 20 years.

(ii) *Access.* Records of the medical examinations required by this paragraph shall be provided upon request to employees, designated representatives, and Assistant Secretary in accordance with 29 CFR 1910.20(a)-(e) and (g)-(i). These records shall also be provided upon the request to the Director of NIOSH. Any physician who conducts a medical examination required by this paragraph shall furnish to the employer of the examined employee all the information specifically required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

[45 FR 35212, May 23, 1980; 45 FR 54333, August 15, 1980]

§ 1910.1002 Coal tar pitch volatiles; interpretation of term.

As used in Sec. 1910.1000 (Table Z-1), coal tar pitch volatiles include the fused polycyclic hydrocarbons which volatilize from the distillation residues of coal, petroleum, wood, and other organic matter.

§ 1910.1003 4-Nitrobiphenyl.

(a) *Scope and application.* (1) This section applies to any area in which 4-Nitrobiphenyl, Chemical Abstracts Service Registry Number 92933 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to transshipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Nitrobiphenyl.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Nitrobiphenyl. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Nitrobiphenyl where containment prevents the release of 4-Nitrobiphenyl into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4-Nitrobiphenyl or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

DTH 000120618

APPENDIX C

Lake Charles VCM Plant

Conoco Chemicals Company
A Division of Conoco Inc.
P O Box 605
Westlake, Louisiana 70669
(318) 491-5211

DATE:

U.S. Environmental Protection Agency
Air Facilities Branch, Region VI
First International Building
1201 Elm Street
Dallas, TX 75270

Re: Asbestos Removal - Notification

Dear Sirs:

This letter is to inform you of our intention to remove asbestos-containing pre-cast insulation from existing equipment on ______________(1). This removal is necessary to ______________________(2) and will generate approximately ____________________________(3) of insulation.

(1) Fill in inclusive date.
(2) Fill in why?, repair tracer, make tie-ins, etc.
(3) Insert unit measure of insulation to be removed, e.g., 300 feet of 1-inch thick insulation on 2-inch pipe or 180 square feet of 2-inch thick insulation on 10 feet diameter tank.

It should be noted that we require our personnel and contractors to use the wet method for asbestos removal discussed in 40 CFR 61 and 29 CFR 1910.1001. All insulation containing asbestos material, scrap, debris and asbestos-contaminated clothing will be stored wet in sealed pre-labelled asbestos bags until shipment. We plan to continue to notify you at least 10 days prior to any shipment.

Please contact us if you have any questions.

Very truly yours,

J. A. DeBernardi
Plant Manager

br
cc: JWW-MGH-RB-MLA-DLD-JRH-SRA

APPENDIX D

CONOCO

Lake Charles VCM Plant

Conoco Chemicals Company
A Division of Conoco Inc
P O Box 605
Westlake, Louisiana 70669
(318) 491-5211

Date:

U.S. Environmental Protection Agency
Air Facilities Branch, Region VI
First International Building
1201 Elm Street
Dallas, TX 75270

Re: Asbestos Removal - Annual Notification

Dear Sirs:

This letter is to inform you that we anticipate the removal of asbestos-containing pre-cast insulation from existing equipment during the next year. We currently do not have any planned removals. However, historically, we have found it necessary to remove some of this insulation due to routine maintenance, e.g., valve replacement of steam leaks, making tie-ins, repairing steam tracers, etc.. We do not anticipate any single removals of nearly 260 feet of pipe insulation or 160 square feet of flat insulation; however, because we accumulate this material prior to disposal, there is a chance we may ship more than this amount at one time. Note that we plan to continue to notify you at least 10 days prior to any shipment. Also, we will notify you of any significant removals (greater than 260 feet of pipe or 160 square feet of flat insulation) in advance if possible, i.e., it is not an emergency removal.

It should be noted that we require both our personnel and any contractors which we employ to use the wet method for asbestos removal discussed in 40 CFR 61 and 29 CFR 1910.1001. After removal all asbestos-containing material, asbestos-contaminated clothing and debris are stored wet in sealed pre-labeled plastic bags until shipment.

Please contact us if you have any questions.

Sincerely,

J. A. DeBernardi
Plant Manager

br

bcc: JWW-MGH-RB-MLA-DLD-JRH-SRA

APPENDIX E

Lake Charles VCM Plant

Conoco Chemicals Company
A Division of Conoco Inc
P.O Box 605
Westlake, Louisiana 70669
(318) 491-5211

DATE:

State of Louisiana
Department of Natural Resources
Hazardous Waste Management
P O Box 44066
Baton Rouge, LA 70804

Re: Asbestos Disposal - Notification

Gentlemen:

Conoco Chemicals VCM Plant wishes to inform you of our intended disposal of approximately (Quantity) C.Y./# of asbestos material removed from (Source: Pipe, Tank, etc.) insulation. This material is temporarily located at VCM Plant Road, Westlake, Louisiana, 70669, and will be hauled by (Transporter: Name and Address), (EPA No.) on (Date) 1982. The material is wetted and sealed in pre-labelled asbestos bags and will be disposed of at (Landfill: Name and Address), (EPA No.). This landfill is approved to handle industrial waste No. 27.

Please contact us if you have any questions.

Very truly yours,

J. A. DeBernardi
Plant Manager

br
cc: U.S. EPA
Air Facilities Branch, Region VI
First International Building
1201 Elm Street
Dallas, TX 75270

bcc: JWW-MGH-RB-MLA-DLD-JRH-SRA
Environmental File

APPENDIX F

1. MANIFEST NUMBER

0387

STATE OF LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
HAZARDOUS WASTE MANAGEMENT

For Dept. Use

Index # ______

Date ______

2. WASTE INFORMATION:

HM	SHIPPING DESCRIPTION	HAZARD CLASS	WASTE NUMBER	WEIGHT (TONS)	PACKAGING QTY	PACKAGING TYPE
	Waste, solid	[illegible]	514-02	6 yds.	1	Dumpster
	"N.O.S." [illegible]					
WASP	asbestos	[illegible]	514-26	24 yds.		
				15 TONS		

GENERATOR EPA I.D. NUMBER LAD 0[illegible]47

3. GENERATOR INFORMATION: Identification Number: GD-514 Telephone: 491-5437

NAME OF COMPANY: Conoco Chemicals

ADDRESS: P.O. Box 505, Westlake, LA ZIP: 70669

SHIPPING LOCATION: VCM Plant, VCM Road

CERTIFICATION: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation, and the Louisiana Department of Natural Resources.

[signature] ______ Generator Signature

12-10-81 ______ Date

TRANSPORTER EPA I.D. NUMBER LAT [illegible]

4. TRANSPORTATION INFORMATION: Identification Number: [illegible]-H Telephone: 882-0539

NAME OF COMPANY: [illegible] DATE OF PICK UP: 12-10-81 TIME: 3:55

Mike [illegible] DATE OF DELIVERY: 12-10-81 TIME: 4:10

CERTIFICATION: This is to certify that the above-named materials were picked up at the date and time above, that the above named materials were delivered without incident to the disposer at the date and time above, and that to the best of the transporter's knowledge, his portion of the manifest is accurately and correctly filled out.

Mike [signature] ______ Transporter Signature

12-10-81 ______ Date

DISPOSER EPA I.D. NUMBER LAD [illegible]

5.* DISPOSER INFORMATION: Identification Number: ~~SER. #D-529~~ [illegible] Telephone: 882-0530

NAME OF COMPANY: [illegible] ~~PHONE #318-527-6357~~

LOCATION WHERE SHIPMENT RECEIVED: ~~BFI WASTE SYSTEMS~~ [illegible] Facility, Westlake, LA

CERTIFICATION: This is to certify acceptance of the hazardous waste, that the waste has been or will be disposed of in accordance with Department of Natural Resources requirements, to the best of the disposer's knowledge, his portion is accurately and correctly filled out.

CALCASIEU FACILITY
TILDEN STARKS RD.
WESTLAKE, LA
P.O. BOX 5416
~~LAKE CHARLES, LA 70606~~
~~EPA #LAD 000618256~~

[signature] ______ Disposer Signature

12-10-81 ______ Date

6. EMERGENCY INFORMATION:

Immediate Response Information: ______

______ Telephone: ______

Special Handling Instructions: ______

Comments: ______

*If for any reason the disposer does not accept shipment, the transporter is to return the shipment to the point of origin

DTH 000120622

CPC1207

DISTRIBUTION: White-Originator, Green-Transporter, Canary-Disposer, Pink-State, Goldenrod-File

DNR FORM HM-3