



Lake Charles VCM Plant

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

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December 20, 1983

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Department of Natural Resources
Office of Environmental Affairs
Air Quality Division
P O Box 44066
Baton Rouge, LA 70804

Attention: B. Jim Porter, Assistant Secretary

Leak Detection and Elimination Plans, Conoco VCM Plant, Westlake, LA.

Dear Sir:

Enclosed please find two copies of each Leak Detection and Elimination Plan (LDEP), for Conoco's VCM Plant in Westlake, Louisiana. These plans are being submitted pursuant to the requirements of Section 77.6(b)(8) of the Louisiana Emissions Standards for Hazardous Air Pollutants. These plans have been revised from the original LESHAP LDEP submitted September 6, 1983 as a result of recommendations made during the September 20, 1983 meeting with Conoco and Air Quality Division personnel. Because of Conoco Chemicals' potential future of becoming a separate company, two separate plans are being submitted for approval, one plan encompassing the plant area and a second plan encompassing the dock area.

After reviewing the original LESHAP LDEP with staff of the Air Quality Division we are submitting the attached revised plans. We propose to operate under the provision of the current NESHAP LDEP until receiving DNR approval. The LESHAP LDEPs will then be implemented within 30 days.

We respectfully request that the Leak Detection and Elimination Plans be approved. If additional information is required, please call Ron Bryan, Chief Process Engineer, at (318) 491-5062.

Sincerely,

R. A. Conrad
Plant Manager
Conoco VCM

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Enc
bcc: RTF-MGH-JCL-ESW-JWW-RB-DLD-SJR-MS

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PLANT AREA
LEAK DETECTION & ELIMINATION
PLAN FOR LESHAP

The Conoco VCM Plant Area Leak Detection and Elimination Plan is designed to provide a formalized procedure for detecting and controlling leaks from equipment in vinyl chloride service in the plant area. The plan is organized following the requirements of the leak detection and elimination section of the Louisiana emission standard for vinyl chloride. This plan will be reviewed periodically to determine if the plan meets the original purpose.

Continuous Monitoring System

A. Purpose

A continuous monitoring system provides a permanent, dependable means to detect leaks and identify the general area of the plant where a leak is located.

B. Definition of a Leak

A leak shall be defined as two VCM analyses over 10 ppm from any fixed points in the same area (i.e., one analysis over 10 ppm followed by a second analysis over 10 ppm, not necessarily from the same fixed point but in the same general vicinity) during two consecutive 10 minute scans in the process and offsites areas.

C. Description

Two multipoint area analyzers, Honeywell Model 1000 gas chromatographs (CAR), or equivalent, are used for detection of 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 and CAR-401 for the offsites area. The CAR's are presently being utilized for VCM monitoring and have proven to be reliable area monitors. Honeywell has stated that their accuracy is $\pm 5\%$ 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 computer located in the main control room. The computer is programmed to print out a defined leak at the time it occurs and the number of such occurrences on an hourly basis for each point at the end of a 24 hour period.

An audio and a visual alarm will be given with each analysis of 10 ppm or greater. When the first alarm occurs a check by operations personnel will be made. If a leak is found, the action plan will be implemented. If a second alarm occurs in the same area during consecutive 10 minute scans, then by definition, a leak has occurred and the action plan will be implemented.

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D. Location of Monitoring Points

The plant area vinyl chloride monitoring points are located in the plant process and offsites areas as shown in Figures 1 and 2 respectively. A description of the location of each point is given in Table 1.

E. Calibration and Maintenance

The plant area vinyl chloride monitoring system, CAR-171 and 401, will be maintained, calibrated, and span checked on a daily schedule, and all work will be reported in a log book.

Weekly Leak Patrol

A. Purpose

The weekly leak patrol will be used to find leaks in the plant area that have not been identified by the vinyl chloride monitoring system, as described below.

B. Definition of a Leak

A leak shall be defined as 10 ppm measured within six inches of a pump or valve seal interface, or 10 ppm in the general area over the background concentration.

C. Description

An HNU Model 101 portable analyzer, or equivalent, will be used to check for leaks during the weekly leak patrol. The weekly leak patrol will follow the routes shown in Figures 4 and 5. During the patrol the general area, and specifically pump seals and control valves in vinyl chloride service, will be checked. Other fugitive sources will be added to the weekly check list as necessary. If a leak is detected, the operators involved in the leak patrol must then implement the action plan.

Persons conducting the patrol will sign each log entry, record the date and time of each leak patrol whether leaks are detected or not. If a leak is found, the person conducting the patrol must also enter the following information in the log: location of the leak, cause of the leak, and action taken to correct the leak.

D. Calibration and Maintenance

The portable detector will be maintained, calibrated, and span-checked on a weekly schedule. A log book will be kept of this calibration and signed by the person calibrating the detector.

Cooling Water Sampling

A. Purpose

The daily sampling of the cooling water effluent streams from several heat exchangers will be used as a check for internal leaks of exchangers in vinyl chloride service.

B. Definition of a Leak

A sample indicating a level of 10 ppm or more vinyl chloride in an exchanger effluent requires that a second sample be taken and analyzed. If an exchanger is determined to be leaking, the Action Plan will be implemented.

C. Description

The effluent cooling water from the Quench Column Condensers, H-202 A/B, and the Vinyl Column Condensers, H-207A and H-207B which are in vinyl chloride service will be sampled once per day. The water will be tested for vinyl chloride and the results recorded daily in weight ppm. A gas chromatograph, or equivalent instrumentation, will be used to test the cooling water samples.

D. Calibration and Maintenance

The analytical equipment will be calibrated periodically and maintained as necessary for reliable data.

Main Plant Vent Scrubber Stack Monitoring (C-500 Vent)

A. Purpose

An analysis of the C-500 Vent will be used as a check on a number of vent tie-ins to the vent scrubber (C-500) that are normally isolated by rupture disks, valves and relief valves.

B. Definition of a Leak

A leak investigation will begin if a significant trend or concentration of VCM is indicated on the daily analysis. When a leak is determined to exist, the Action Plan will be implemented. The source of the leak will be identified on the Leak Detection Form.

C. Description

Grab samples taken three times per week of the C-500 Vent Gas will help identify if streams not routinely discharged to C-500 begin to leak into the scrubber. A Varian Model 3700 Gas Chromatograph with flame ionization

detector, or equivalent equipment, is used to identify vinyl chloride. A vent analysis sheet is completed for each test day and filed.

D. Calibration and Maintenance

The gas chromatograph will be calibrated and maintained as necessary for reliable data.

Action Plan

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

- 1) The person investigating the leak will attempt to locate and 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) Control the leak, or
 - b) Notify the Maintenance Department to take corrective action to control the leak.
- 3) Each leak found should be accounted for on the Leak Detection Form, along with the action taken to control the leak. The Shift Supervisor will then forward the Leak Detection Form(s) to the Process Superintendent who will in turn forward the form(s) to the Environmental Engineer. These leak detection forms will be kept on file.
- 4) If a leak can not be controlled without a process unit shutdown, it will be noted on the Leak Detection Form along with the expected date of repair. The corrective action taken will be documented upon control of the leak.
- 5) A record of the leaks detected by the leak detection plan shall be retained and made available for inspection by the Assistant Secretary for a minimum of two years or such longer period as ordered by the Assistant Secretary.

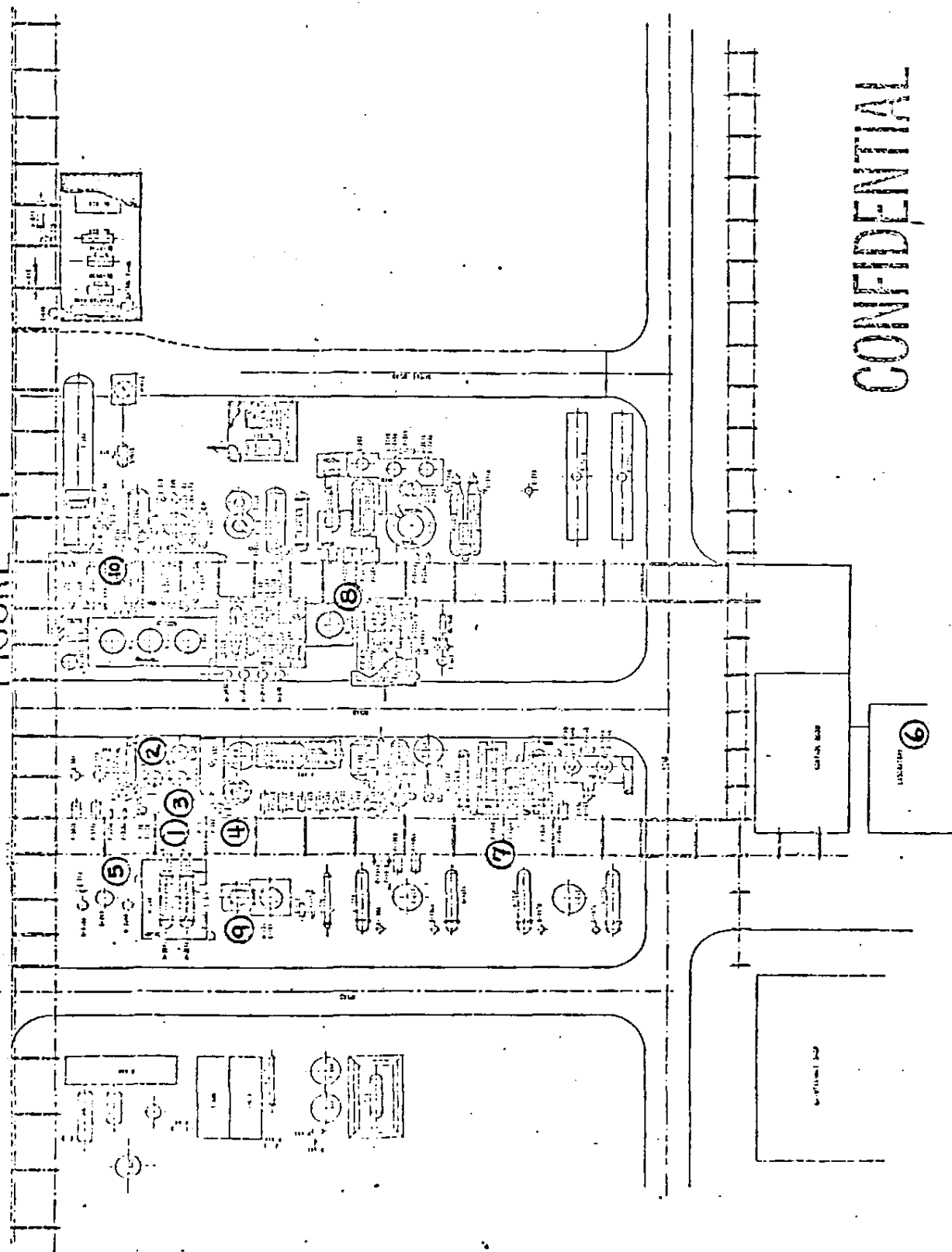
TABLE 1

DESCRIPTION OF LOCATION OF MONITORING POINTS FOR PROCESS AND OFFSITES AREAS

<u>FIXED POINT NO.</u>	<u>LOCATION DESCRIPTION</u>
<u>PROCESSING AREA, CAR-171</u>	
1	VCM Column Reflux Pumps, P-201 A/B
2	Between VCM Dryers, S-207 A/B
3	North of VCM Dryers Area
4	VCM/Caustic Containment
5	VCM to Storage Control Valve, FR-209
6	Laboratory
7	Light Ends Column Reflux Pumps, P-104 A/B
8	Quench Column Reflux Pumps, P-202 A/B
9	Direct Chlorination Reactor Area
10	VCM Column Feed Pumps, P-203 A/B
<u>OFFSITES AREA, CAR-401</u>	
1	Light Ends Transfer Pump, P-402
2	VCM Loading Pumps, P-411 A, B, C
3	VCM Loading Rack No. 1, West
4	VCM Loading Rack No. 1, East
5	VCM Loading Rack No. 2, East
6	VCM Vent Recovery Unit
7	VCM Storage Tanks, Mid-Farm
8	VCM Loading Rack No. 2, West
9	VCM Check Tanks, West
10	VCM Transfer Pumps, P-401 A/B

CAR-171 MONITORING POINTS
PROCESS APFA

FIGURE 1

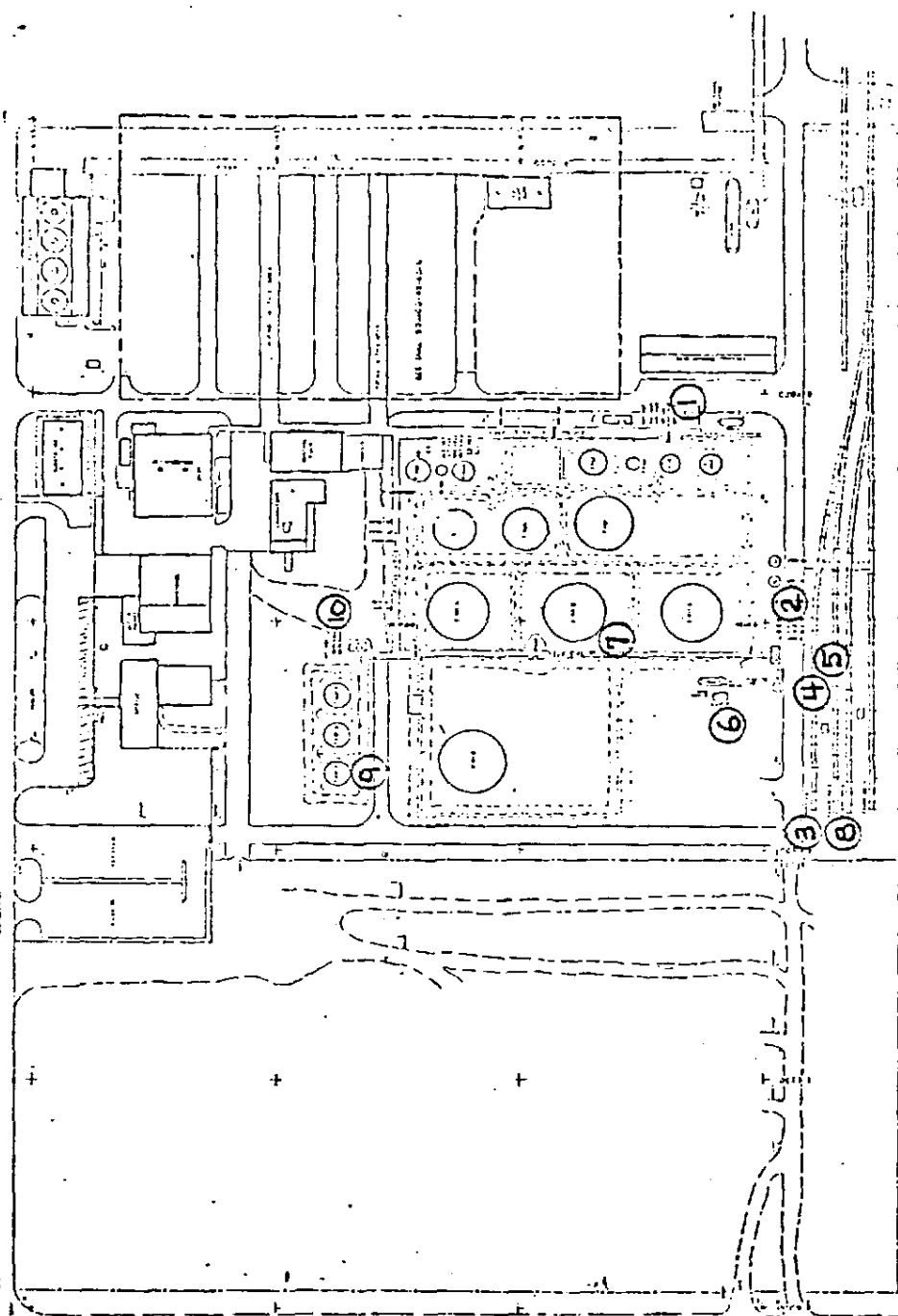


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CAR-401 MONITORING POINTS OFFSITE AREA FIGURE 2



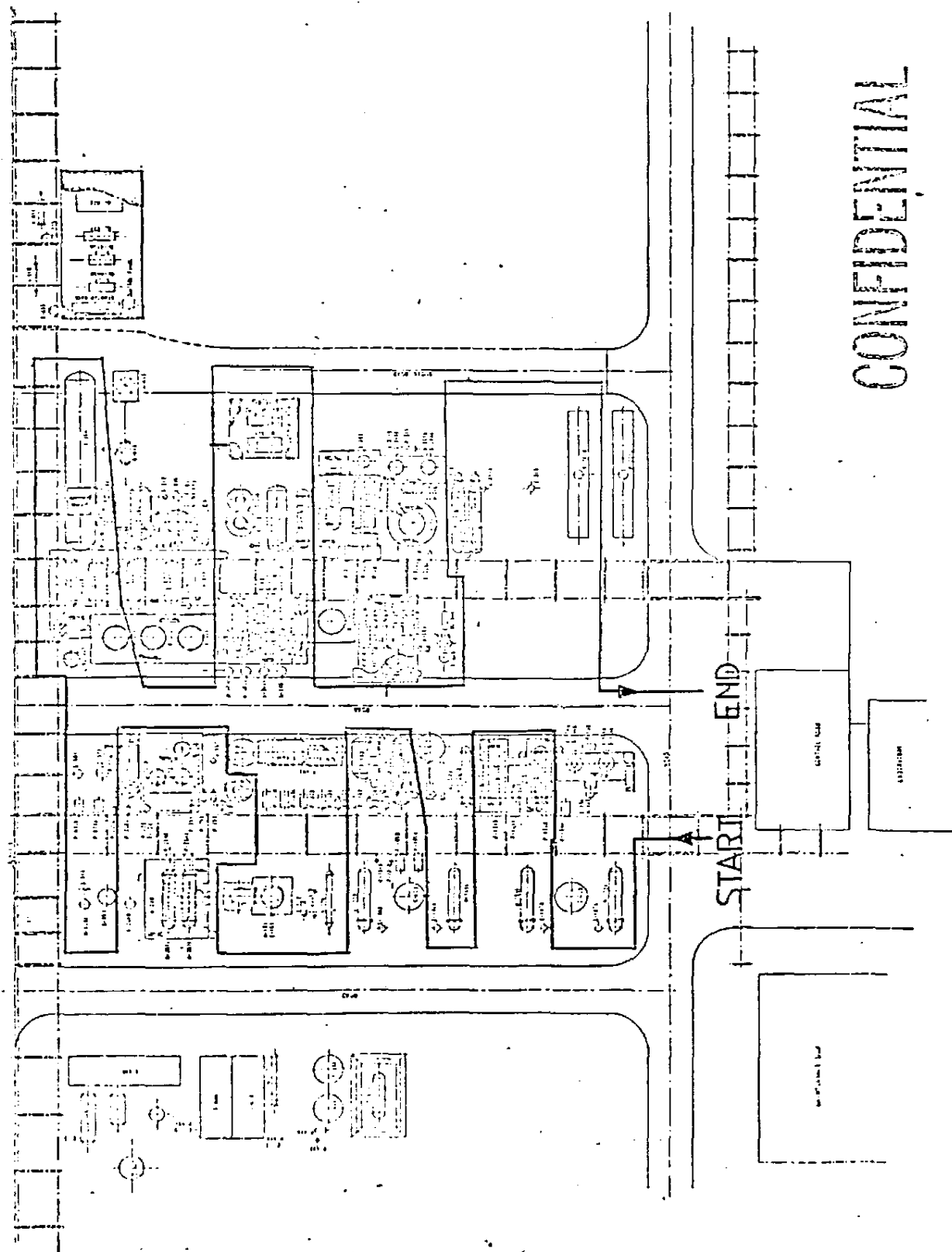
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WEEKLY LEAK PATROL ROUTE

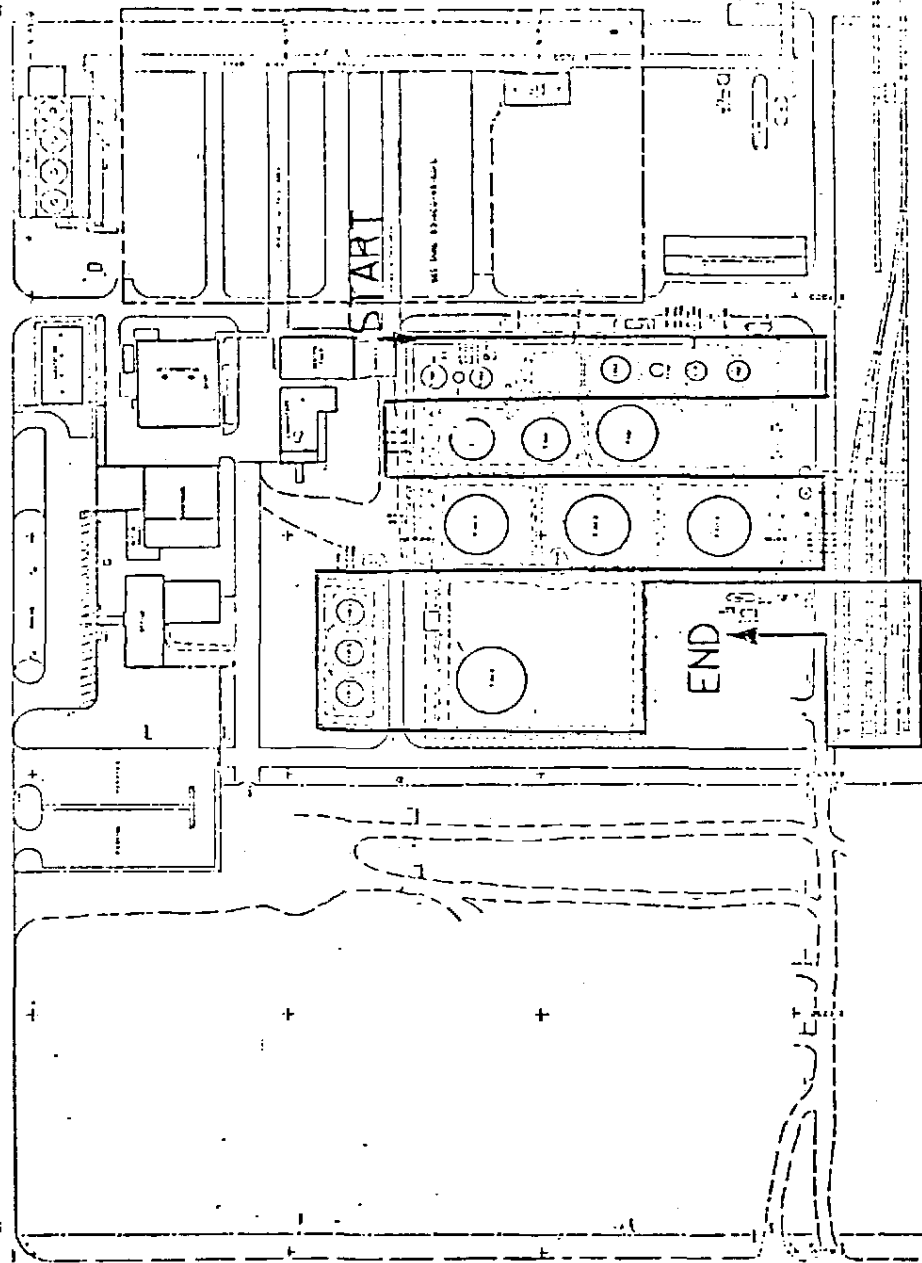
PROCESS AREA

FIGURE 4



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WEEKLY LEAK PATROL ROUTE
+
OFFSITE AREA
FIGURE 5



CONFIDENTIAL

FIGURE 6
CONOCO VCM PLANT
LEAK DETECTION PLAN

CONFIDENTIAL

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.

2) Leak repair delayed until process unit shutdown?

a) Reason:

b) Expected date of repair.

Name of Shift Supervisor:

What time was the leak reported to the Shift Supervisor?

NOTE: Give this form to the Process Superintendent, who in turn, will give it to Engineering for inclusion in our environmental file.

DOCK AREA
LEAK DETECTION & ELIMINATION
PLAN FOR LESHAP

The Conoco VCM Plant Dock Area Leak Detection and Elimination Plan is designed to provide a formalized procedure for detecting and controlling leaks from equipment in vinyl chloride service in the dock area. The plan is organized following the requirements of the leak detection and elimination section of the Louisiana emission standard for vinyl chloride. This plan will be reviewed periodically to determine if the plan meets the original purpose.

Continuous Monitoring System

A. Purpose

A continuous monitoring system provides a permanent, dependable means to detect leaks and identify the general area of the dock where a leak is located.

B. Definition of a Leak

A leak shall be defined as two VCM analyses over 10 ppm from any fixed points in the same area (i.e., one analysis over 10 ppm followed by a second analysis over 10 ppm, not necessarily from the same fixed point but in the same general vicinity) during two consecutive 10 minute scans in the dock areas.

C. Description

A multipoint area analyzer, Honeywell Model 1000 gas chromatograph (CAR), or equivalent, is used for detection of leaks and identification of the general area of the dock where a leak is located. The monitor will sample the air at each sample point on a continuous sequential basis, with each point being sampled once every 10 minutes. The chromatograph is labeled CAR-678. This chromatograph is presently being utilized for VCM monitoring and has proven to be a reliable area monitor. Honeywell has stated that their accuracy is $\pm 5\%$ at VCM concentrations over 1.0 ppm.

The output from each of the monitoring points of CAR-678 is printed on a recording chart. The number corresponding to each sampling location is indicated as well as the vinyl chloride concentration in ppm. This chromatograph is only in operation during ship loading.

An audio and a visual alarm will be given with each analysis of 10 ppm or greater. When the first alarm occurs a check by operations personnel will be made. If a leak is found, the action plan will be implemented. If a second alarm occurs in the same area during consecutive 10 minute scans, then by definition, a leak has occurred and the action plan will be implemented.

D. Location of Monitoring Points

The dock area vinyl chloride monitoring points are shown in Figure 1. A description of the location of each point is given in Table 1.

E. Calibration and Maintenance

The dock area vinyl chloride monitoring system, CAR-678 will be maintained, calibrated, and span checked on a daily schedule during ship loading and on a weekly schedule during non-loading periods.

Action Plan

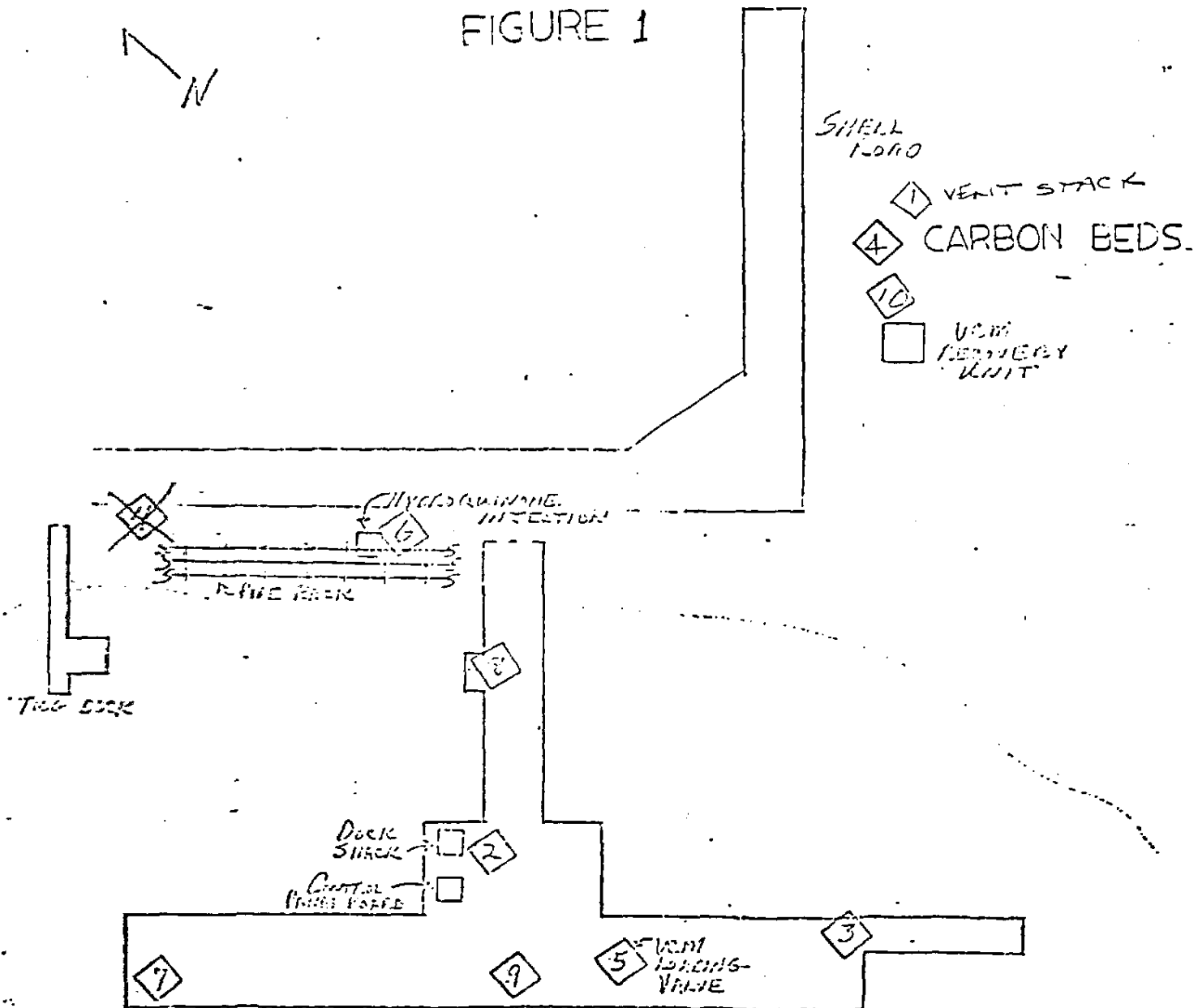
The action plan upon detection of a leak will be as follows:

- 1) The person investigating the leak will attempt to locate and 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) control the leak, or
 - b) notify the Maintenance Department to take corrective action to control the leak.
- 3) Each leak found should be accounted for on the Leak Detection Form, along with the action taken to control the leak. The Shift Supervisor will then forward the Leak Detection Form(s) to the Process Superintendent who will in turn forward the form(s) to the Environmental Engineer. These leak detection forms will be kept on file.
- 4) If a leak can not be controlled without a process unit shutdown, it will be noted on the Leak Detection Form along with the expected date of repair. The corrective action taken will be documented upon control of the leak.
- 5) A record of the leaks detected by the leak detection plan shall be retained and made available for inspection by the Assistant Secretary for a minimum of two years or such longer period as ordered by the Assistant Secretary.

TABLE I

<u>FIXED POINT NO.</u>	<u>LOCATION DESCRIPTION</u>
<u>DOCK AREA, CAR-678</u>	
1	VCM Carbon Beds Vent Stack
2	Dock Operator's Shack
3	Southeast Dock
4	Between two Carbon Beds in Series
5	VCM Loading Valve
6	Hydroquinone Injection System
7	North West Dock
8	East Dock
9	West Dock
10	VCM Vent Recovery Unit

CAR-678 MONITORING POINTS DOCK AREA FIGURE 1



Dock No. 3

LEGEND:

◇ SAMPLE POINT NO. CORRESPONDING TO SAMPLE POINT ON VCM MONITOR RECORDER.

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FIGURE 6
CONOCO VCM PLANT
LEAK DETECTION PLAN

CONFIDENTIAL

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.

2) Leak repair delayed until process unit shutdown?

a) Reason:

b) Expected date of repair.

Name of Shift Supervisor:

What time was the leak reported to the Shift Supervisor?

NOTE: Give this form to the Process Superintendent, who in turn, will give it to Engineering for inclusion in our environmental file.

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