# Interoffice Communication

To J. A. DeBernardi

From J. W. Ware

Date September 17, 1980

Subject Unexpected VCM Release - September 11, 1980


Summary

On September 11, 1980, at approximately 1400 hours, an unexpected release of vinyl chloride to the atmosphere occurred. The release occurred at BL-304 (south "super sucker"), and was caused by operator error. Approximaterly 100 gallons of vinyl chloride were released. It is estimated, with reasonable confidence, that 11 individuals were exposed to vinyl chloride above the permissible levels.


Circumstances Leading Up to the Release

At approximately 1400 hours on September 11, 1980, W. V. Henry, J. W. Ware, C. W. Turner and D. Ross were preparing to enter T-204. Ross was in the process of checking the explosivity and oxygen content of the gases in the tank. Ross and Ware, kneeling at the T-204 manway, detected an odor which both concluded was propylene (not an unusual odor to be detected at this particular location). J. Puerta called Ross over the paging system. Ross, in proceeding to the nearest phone, noticed that the furnace water curtain was on, indicating a flammable gas leak in the plant. Ross ran to the phone and talked to Puerta; Puerta confirming detection of a gas leak. Ross proceeded down the stairs at the east end of the oxy section and encountered a vinyl spill at the south "super sucker", BL-304. Immediately recognizing the source of the leak, Ross held his breath and proceeded to close the vinyl valve at the vinyl dryer, S-207B. Ware, noticing that Ross was alarmed, then also noticed the water curtain at the furnaces and pointed this out to Henry and Turner. Ware, Turner, and Henry then followed Ross down the oxy stairs and, recognizing the source of the release, reversed direction, escaping the release via the stairs west of the oxy reactors.

R. Handy, prior to the release, was occupied with the task of inventorying S-207B vinyl dryer. Basic procedure is to isolate the dryer, purge it with nitrogen, leak check it with nitrogen, pressure it up with vinyl and vent the inerts to the incinerator (see Appendix A). Handy had neglected to close the atmospheric vent line leading to the "super sucker" prior to charging the dryer with vinyl (see Appendix B). This resulted in the vinyl release. Handy was on the overhead vinyl dryer check when he observed Ross running down the oxy stairs. Handy used his portable radio to call the main control room without response. A second call to the incinerator was acknowledged. The incinerator operator, R. Badolato, then called the main control room personnel to inform them of the problem. Handy closed the dryer/incinerator vent valve at approximately the same moment that Ross closed the dryer vinyl valve.

Circumstances Following the Release

Ware, Turner, Henry, Ross and Handy convened cross-wind of the release where Ross had opened a fire monitor to deluge the source of the release to prevent the formation/ignition of a flammable mixture. Personnel then dispersed: Henry proceeded to open the fire monitor south of C-202; Ware proceeded to open the fire monitor south of the furnaces; Turner proceeded to open the fire monitor(s) in the ethylene unit. Henry contacted the main control room and instructed the board operator to announce over the paging system that all process areas were to be evacuated. Lab personnel were informed that high vinyl readings required their evacuation. The ethylene plant control room was also informed of the emergency. A. C. Hughes had arrived at the scene and opened the fire monitor east of the control room. These action steps appeared to be sufficient to secure plant personnel and equipment from immediate harm. Henry proceeded to the control room to monitor ambient vinyl chloride levels in the process area via the fixed point monitor system. The remaining personnel in the unit proceeded to assure confinement of all vinyl at the vinyl dryer, assisted by H. Adkison.

Henry called Ware over the paging system after he arrived at the control room to inform Ware that ambient concentrations of vinyl chloride above the permissible level were still present in the unit (18 ppm at C-203 and 30 ppm at C-201). Satisfied that the immediate hazard had diminished, Ware informed Ross that all further work in the unit would require respiratory protection until ambient vinyl chloride concentrations were confirmed to be below the permissible level (1 ppm). Ross and crew donned protective equipment to further secure the process unit.

Ware and Turner joined Henry in the control room. A preliminary survey of the plant indicated that a satisfactory evacuation had been accomplished. TLV analysis indicated that control room levels of vinyl chloride did not require breathing air use. Turner donned a Scott Air Pak and retrieved a Drager analyzer from atop T-204. Henry utilized this unit to back up the TLV and confirm that the control room levels of vinyl chloride were indeed acceptable. While retrieving the Drager analyzer Turner surveyed the process unit with a TLV and found various concentrations of vinyl chloride ranging from 1200+ ppm in Block II to 300 ppm atop T-204 (see Diagram #1, Appendix C).

At 1430 hours Turner donned a second Scott Air Pak and surveyed in detail the entire unit to determine the extent of the area affected by high vinyl chloride concentrations (see Diagram #2, Appendix C). The ethylene unit foreman was then contacted by Ware and informed that no one should enter his unit without respiratory protection. The foreman stated that he would call all of his people to the control room. Vinyl chloride levels in the ethylene area was monitored during the incident with the results being that shown in Appendix D.

The vinyl chloride levels were then monitored in the unit using the fixed point monitor system in the control room. When, according to this system, vinyl chloride levels had lowered to 1 ppm or less, Turner was sent out with a TLV unit (without breathing air) and instructed not to trespass in an area which showed a reading approaching 5 ppm (see Diagram #3, Appendix C).

Diagram #4, Appendix C shows a fourth survey conducted by Turner.

The "all clear" was given at 1602 hours on September 11, 1980.

Employee Exposure

Nine Conoco employees and two contractor employees were temporarily exposed to vinyl chloride vapors. Seven Conoco employees were exposed while responding to the immediate emergency. The two contractor employees were exposed during evacuation. Two Conoco laboratory employees were also exposed during the evacuation.

Medical Surveillance

To date no adverse physical affects on any of the exposed individuals have been noted. All exposed individuals were informed verbally and by letter of their exposure to vinyl chloride. In addition, medical examinations were made available to the exposed individuals should they desire one.

Recommendations and Conclusions

The basic cause of the release was the unrestricted flow of vinyl chloride from S-207B to the BL-304 atmospheric vent. The underlying cause of the release was operator error. In order to prevent a recurrence of this incident the following will be instituted:

1) Blinds will be installed in the "super-sucker" lines at the vinyl dryers (see Appendix E). On each dryer the associated blind will be removed only after the dryer has been cleared and depressured and will be installed before the dryer is returned to the Operations Department following any Maintenance work. This added restriction will be written into the existing dryer clearing procedure.

2) The revised clearing procedure will be issued and reviewed with both Maintenance and Operations personnel.

Miscellaneous

Appendix F contains letters of notification for OSHA and EPA.

J W Ware
J. W. Ware

## APPENDIX A

## PROCEDURE FOR CLEARING S-207 FOR RECHARGE

1) Line up (open valve) from S-206 to down-stream dryer.

2) Close valve from S-206 to up-stream dryer.

3) Open the valve on the bottom of the up-stream dryer. This will enable you to empty dryer into the line coming from S-206.

4) Close the outlet valve on the up-stream dryer. This isolates the up-stream dryer with only the bottom valve open.

5) Open nitrogen to top of up-stream dryer. Open nitrogen slowly so as not to increase pressure on S-206 by more than 10-12 psig.

6) Watch for level to come down into the sight glass. When the level goes out of sight glass, wait about one minute (no more) then close the bottom valve.

7) Contact incinerator operator, then slowly depressure dryer to S-108. (leave nitrogen cracked in on top while depressuring).

8) Pressure dryer up with nitrogen to 50 psig and depressure three times. During this step, also open nitrogen to spargers, and depressure through sight glass to clear. Will have to keep in close contact with incinerator operator.

9) After No. 8 step, block in nitrogen going to the spargers, and with a positive pressure on the dryer sample for lab analysis. If analysis is less than 2% vinyl, depressure completely. If analysis is more than 2% vinyl, continue step 8 until an acceptable analysis is obtained.

10) After step 9 is complete, open the 2 valves going to the super sucker from the spargers, put the supersucker on and open the nitrogen wide open to the top of the dryer. After five minutes cut the nitrogen back to minimum and open the vent valve in the line to the supersucker.

11) Maintenance will open the dryer and then close the vent valve before recharging.

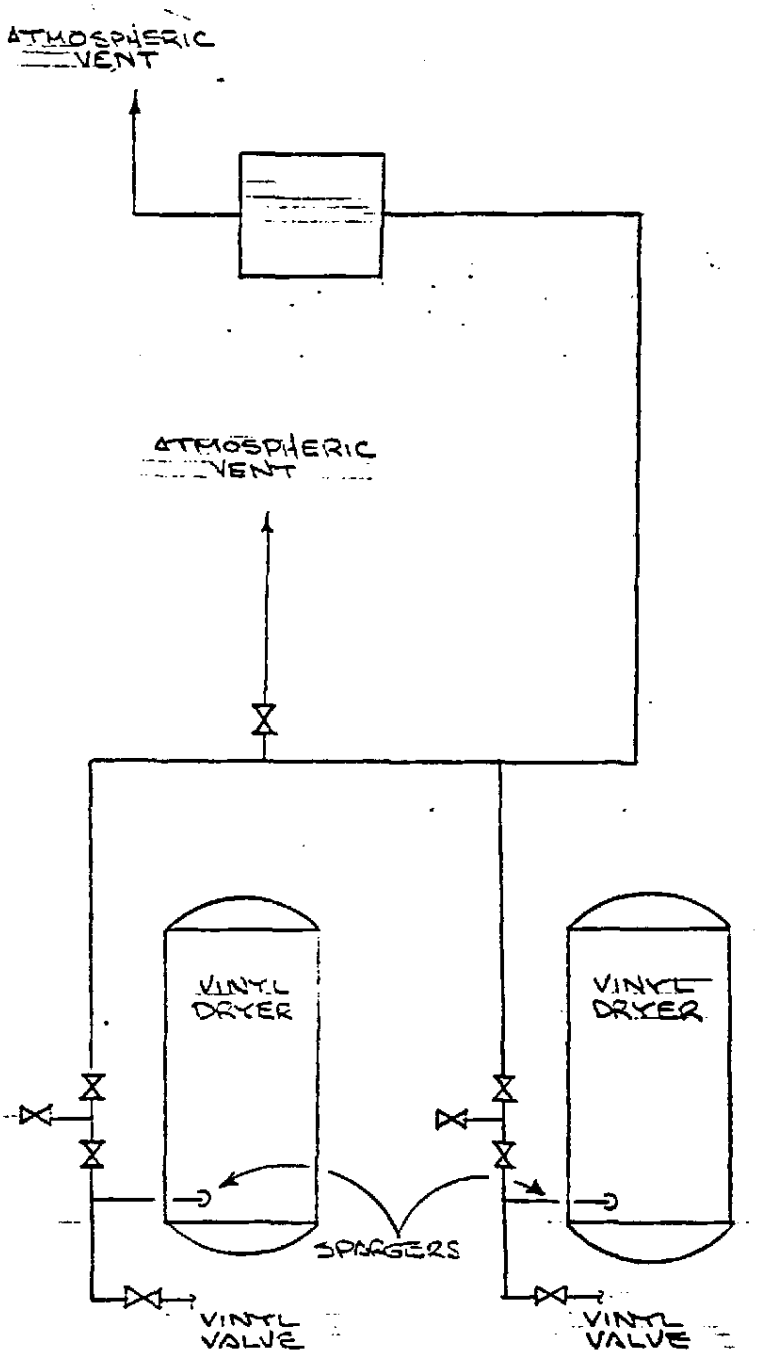
12) When recharge is complete, shut down supersucker and close the two valves from spargers to the supersucper. Pressure the dryer up to 75-100 psig with nitrogen, and leak check top manway. If there are no leaks, depressure, and pressure up to 50 psig two more times and depressure. Dryer is now ready to put in service.

13) Open valve (barely crack open) from top of dryer in service, to spargers of the dryer you are putting in service. Do not lower pressure on S-206 more than 10-12 psig during this step.

14) When pressure is equalized, open the valve to spargers wide open. Call incinerator operator, and slowly bleed nitrogen out of top of dryer to wet vent. When dryer is liquid full, put in service second in line, by opening top valve to the check tanks and closing the valve to the check tanks from the upstream dryer.

# APPENDIX B

APPENDIX B


ATMOSPHERIC VENT
ATMOSPHERIC VENT
VINYL DRYER
VINYL DRYER
SPARGERS
VINYL VALVE
VINYL VALVE

APPENDIX C

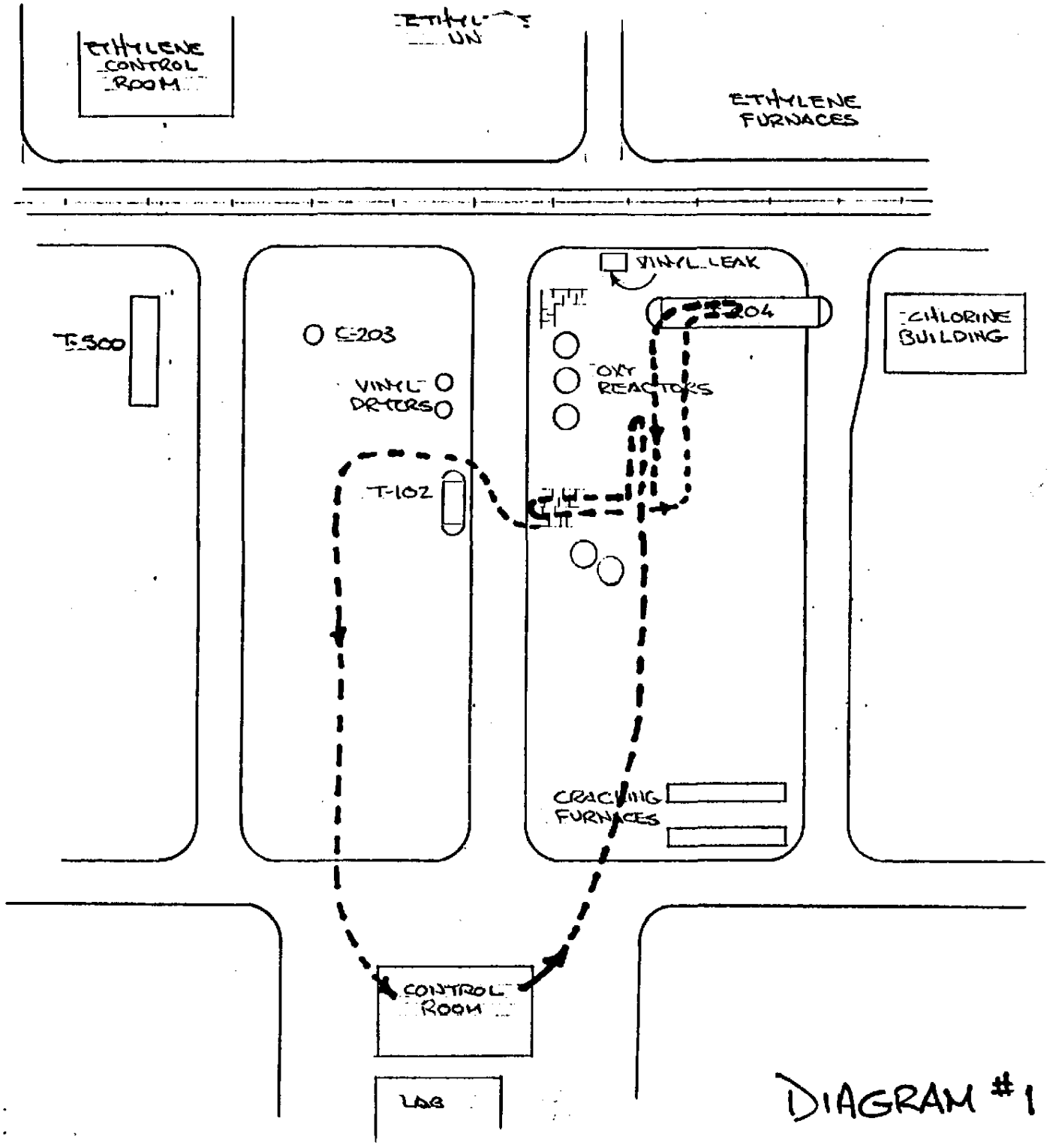



DIAGRAM #1

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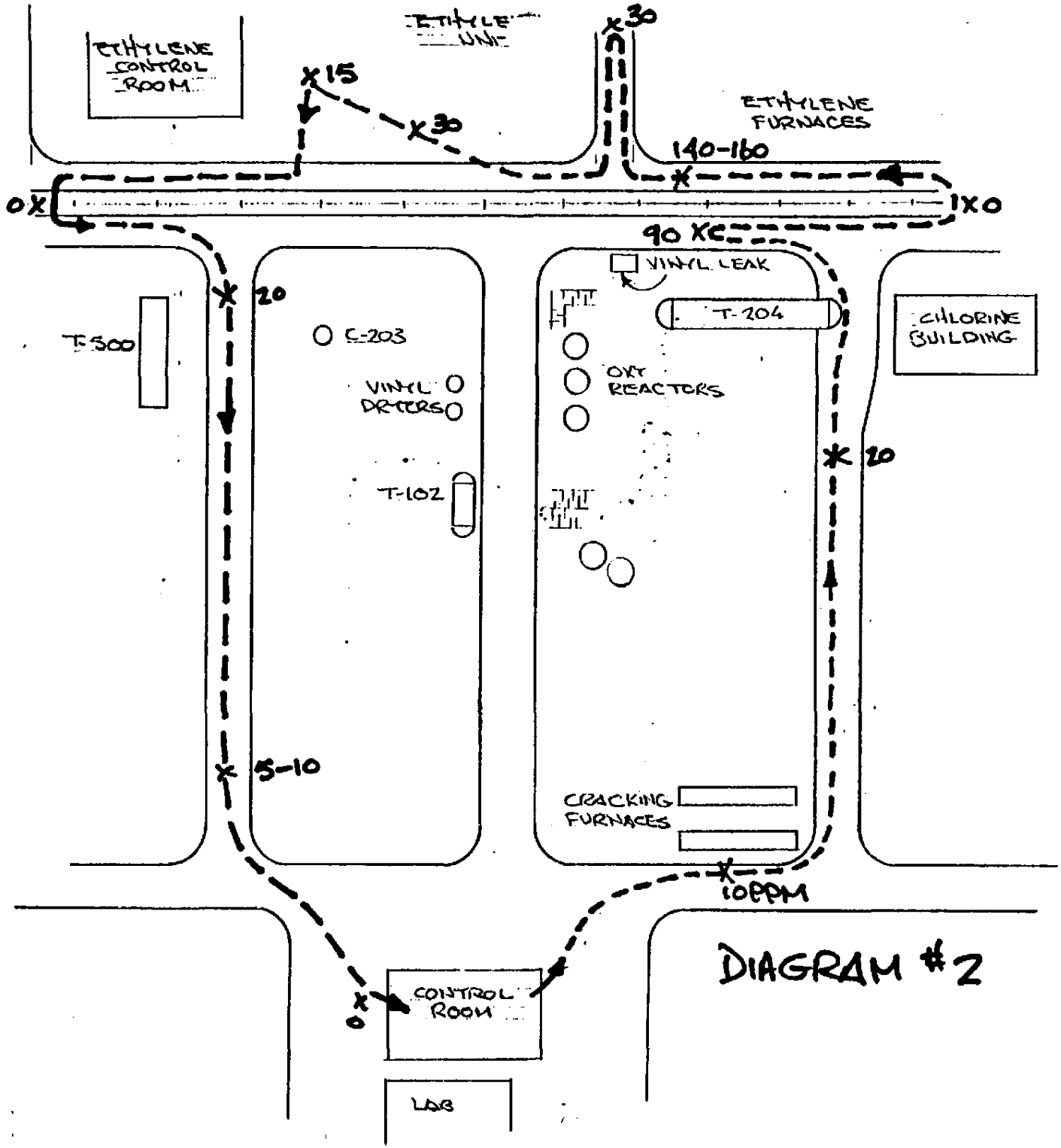


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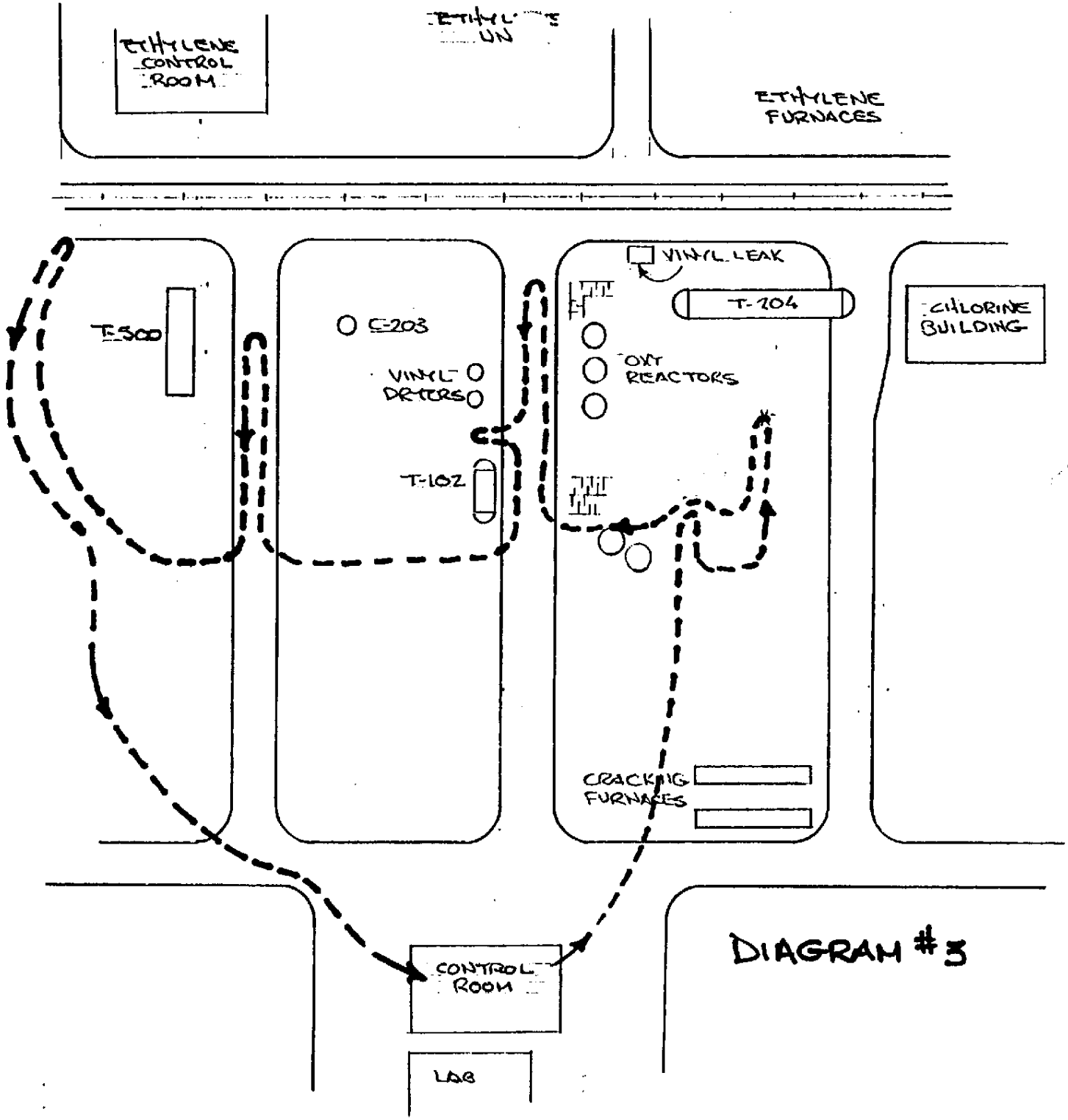


DIAGRAM #3

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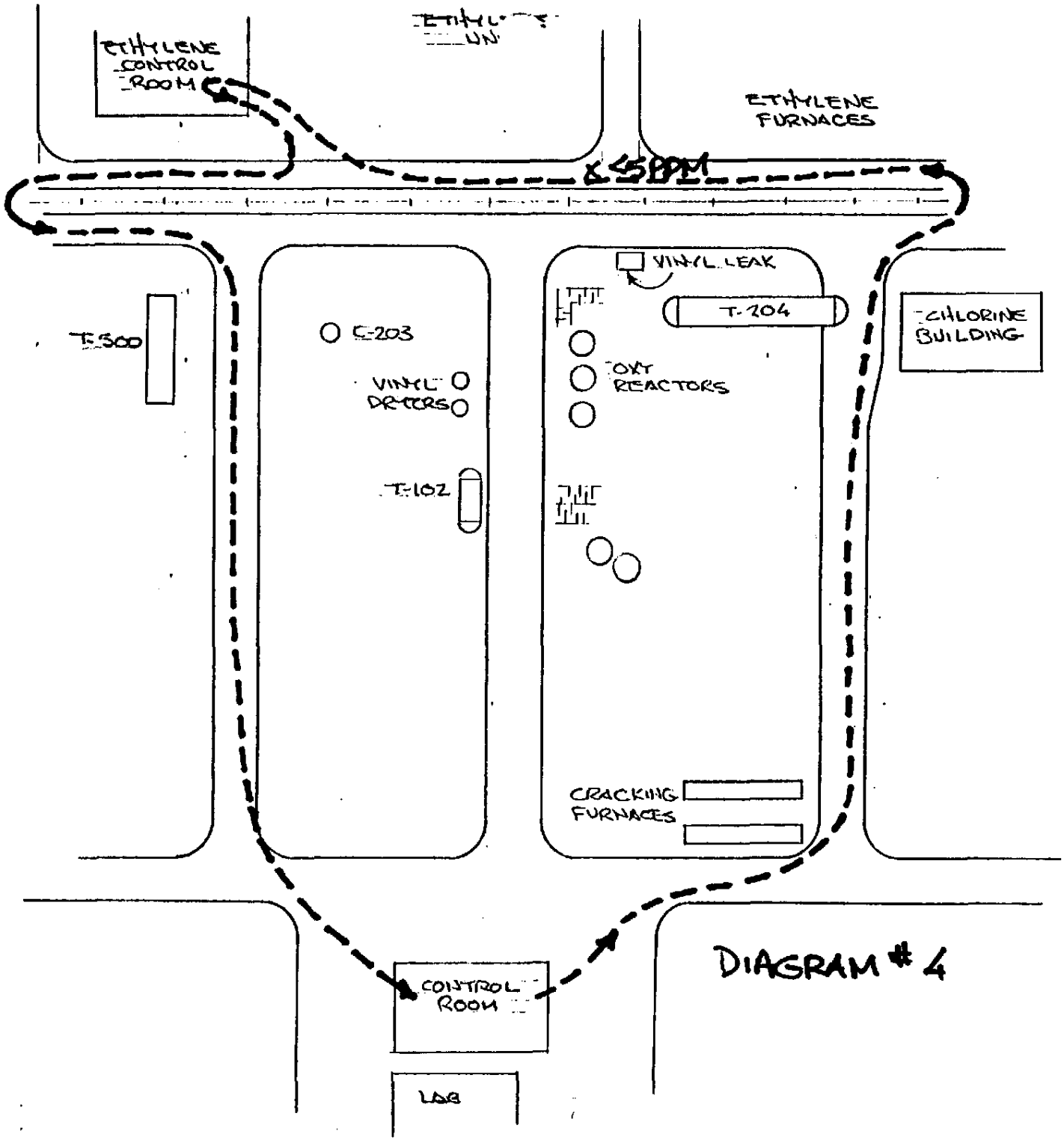


DIAGRAM # 4

CCR 00008083

APPENDIX D