Copies to J.L. Watson
M. Barnes
Harvey
A. McMillan - Paul
N. Brooks - T. Foster

RECEIVED
DEC 15 1972
J. T. BARR

ETHYL CORPORATION

MANUFACTURING DEPARTMENT

December 8, 1972

1-3-73

PLEASE ADDRESS REPLY
TO: BOX 341
BATON ROUGE, LA. 70821

TO: Messrs. C. A. Gellner - Hooker Chemical
J. N. McCrea - Imperial Chemical Industries
W. J. Boyle, Jr. - Monsanto Company
Per Rangnes - Norsk Hydro A.S.
Jim Nicholson - Olin Corporation
E. T. Biehl - Pantasote Company
Roy Stack - PPG Industries
Jorge Alvarez - Promociones Industriales Mexicanas S.A.
W. C. L. Rodgers - Shell Chemical Company
R. A. Asti - Stauffer Chemical Company
C. G. Thompson - Tenneco Plastics
R. L. Frantz - Union Carbide Company
W. M. Iliff - Uniroyal, Inc.
J. T. Barr - Air Products
R. F. Schwab - Allied Chemical Corporation
H. E. Kling - American Chemical Corporation
S. J. Moll - Borden Chemical
R. J. Freele - Conoco Plastics
H. E. Birr - Diamond Shamrock
Tom Christianson - Dow Chemical Company
H. G. Smith - Ethyl Corporation
W. W. Madden - Firestone Plastics Company
M. G. Glenn - General Tire
D. L. Dowell - B. F. Goodrich Company
Malcolm Trowbridge - Goodyear Tire & Rubber Company
J. C. Flores - Great American Chemical Corporation
C. W. Coote - Gulf Canada

SUBJECT: VINYL CHLORIDE SAFETY ASSOCIATION MEETING
January 31 - February 1, 1973
Atlanta, Georgia

Gentlemen:

Attached is the program for the Vinyl Chloride Safety Association Meeting which will be held at the Regency Hyatt in Downtown Atlanta, Georgia, January 31 - February 1, 1973. Bus service is provided between the airport and hotel at $2.25 each way.

The hotel requires that all reservations be in at least twenty-one (21) days prior to your arrival date. Any reservation received after that time will be honored on a space available basis only. You are urged to make your reservations promptly. The current rates for rooms are $22 to $32 for singles, $29 to $40 for doubles or twins, and $75 to $175 for suites.

I also need to know the number of people and their names, if possible, from your company that will attend so that luncheon and other arrangements can be completed as soon as possible.

After registration, there will be a brief business meeting to elect officers and handle any other matters of a general business nature.

The remainder of the meeting will be devoted to discussion of safety topics. Heading the list is the development of suggested industry-wide safety standards. We propose that time be allowed to organize the members into specific work groups for this purpose. Most topics suggested by members have been discussed at previous meetings. Different people attend the meetings from year to year and have not had the benefit of hearing all discussions. Reducing safety practices into written suggested standards with final review and approval of the full membership should be of value to all. The word "suggested" is used on purpose because all may not agree on which practice is best for their specific situation - deluge vs. fog systems being a prime example.

Guest speakers are being obtained by Mr. Ray Asti. These will be announced later but one would be from FIA to report on the vapor cloud study. There will be no dinner meeting so that the evening of January 31, 1973 will be available for informal discussions and meetings of the safety standards work groups.

For the session, "OSHA Impact - 1972", exchange of information on actual inspections is desired if you have experienced one and can discuss the high points.

Remaining time will be used for up-dating previously discussed topics. These have been listed so that they can be reviewed and those of major interest selected for discussion.

Finally, new topics will be solicited on a commentary sheet during the meeting to assist the program chairman for the next meeting. It would be of help if your willingness to be the discussion leader for a particular topic is shown on the commentary.

My sincere thanks to those who volunteered to be discussion leaders.

Our very best wishes for your safety, health, happiness and prosperity.

Henry G. Smith

Henry G. Smith
Ethyl Corporation - PVC

HGS:mcw

VINYL CHLORIDE SAFETY ASSOCIATION

JANUARY 1973 MEETING

PLACE: Atlanta, Georgia
Hyatt Regency Hotel
265 Peachtree Street 30303

DATES: January 31 - February 1, 1973

MEETING FORMAT

JANUARY 31

8:00 a. m. - 9:00 a. m.	REGISTRATION
9:00 a. m. - 9:30 a. m.	BUSINESS MEETING
9:30 a. m. - 12:00 Noon	AGENDA DISCUSSIONS
12:00 Noon - 1:30 p. m.	LUNCHEON - GUEST SPEAKER
1:30 p. m. - 5:00 p. m.	CONTINUE AGENDA DISCUSSIONS

FEBRUARY 1

9:00 a. m. - 12:00 Noon	CONTINUE AGENDA DISCUSSIONS
12:00 Noon - 1:30 p. m.	LUNCHEON - GUEST SPEAKER
1:30 p. m.	ADJOURN

VINYL CHLORIDE SAFETY ASSOCIATION
MEETING AGENDA
ATLANTA - JANUARY 31 - FEBRUARY 1, 1973

1. Industry-wide Safety Standards - Organize to develop suggested safety standards for our industry.
   Discussion Leader: Edward T. Biehl
   Pantasote

2. Explosive Ranges in Reactors, Slurry Tanks and Vessels - What are the procedures used to avoid going through the explosive range in reactors, slurry tanks and other vessels?
   Discussion Leader: P. Bogart
   Tenneco

3. Industrial Fire Brigades - Developing and training an effective fire brigade system for industrial plants requires a sustained effort.
   Discussion Leader: Dan McDonald
   Ethyl Corporation

4. OSHA Impact - 1972 - What is your experience with OSHA inspections and what does the inspector check?
   Discussion Leader: Ronnie Vant
   Pantasote

5. Accident Experience - Are there new incidents or accidents to report or additional information on previous ones discussed?
   Discussion Leader: Joe Mudd
   General Tire

6. Safety Problems in Vinyl Chloride Monomer Plants - What are some of the safety problems experienced in production, storage and shipment of vinyl chloride monomer?
   Discussion Leader: W.C.L. Rodgers
   Shell Chemical

7. Pressure Vessel Obsolescence - What are the criteria and methods used to establish obsolescence of reactors and other pressure vessels including effects of metal stress, stress corrosion and vibration fatigue?
   Discussion Leader: (To be announced)

8. New Information on Previous Topics - Is there new or previously undisclosed safety information on topics discussed at past meetings?

   8.1 Reaction termination
   8.2 Emergency power
   8.3 Dryer fires
   8.4 Control room design
   8.5 Deluge systems vs. fog systems
   8.6 Electrical classifications
   8.7 Spark sources
   8.8 High pressure water cleaning

8. New Information on Previous Topics (cont'd)

8.9 Rupture disc/relief valve venting systems
8.10 Vessel entry procedures
8.11 Casketing
8.12 Reactor hand cleaning and AOL
8.13 Polyperoxide formation
8.14 Plant safety design and spacing
8.15 Disposal of vented vapors
8.16 Noise policies
8.17 Emergency ventilation
8.18 Emergency procedures - writing and implementation
8.19 Safety procedures and job check sheets
8.20 Job safety analysis
8.21 Inadvertant valve opening
8.22 Remote shut-off/excess flow valves for VCM storage tanks
8.23 Minimum safe manpower levels
8.24 Operator training/how do involve maintenance
8.25 Vessel inspection and records
8.26 Bulk handling and storage safety hazards
8.27 Catalyst handling and storage
8.28 Vapor cloud dispersion
8.29 VCM sniffing
8.30 Supervision/balance between operations and safety
8.31 Pressure test procedures
8.32 Welding practices

Discussion Leader: W. W. Madden
Firestone

ESCAMBIA CHEMICAL CORPORATION

PVC PLANT

EMERGENCY PROCEDURES

September 12, 1969

Issued to _____ Date _____

TABLE OF CONTENTS

LOCATION OF REACTOR BUILDING DELUGE TRIPS

Following are the locations of trips or switches to operate any portion or all of the deluge (sprinkler) system in case of emergency.

First Floor Deluge Only

1. Main 1st floor trip, SE stairwell.
2. Inside door, west exit.
3. Inside door, NW exit.
4. Inside door, NE exit.
5. Inside door, SW exit.
6. Inside door, SE exit to stairwell.

Second Floor Deluge Only

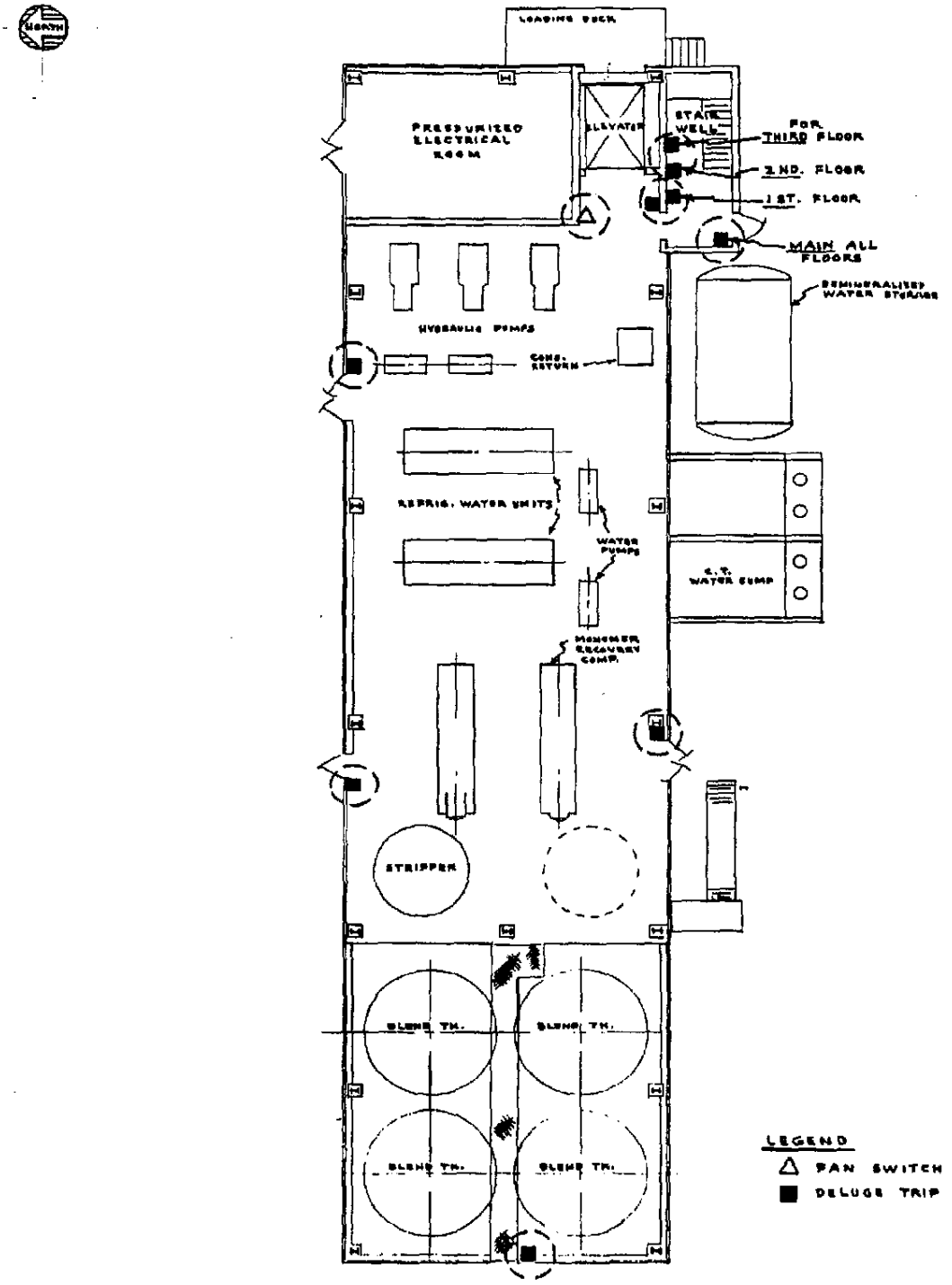
1. Main 2nd floor trip, SE stairwell
2. Inside door SW exit to metal stairs.
3. Inside door SE exit to stairwell.

Third Floor Deluge Only

1. Main 3rd floor trip, SE stairwell, first floor.
2. Inside door, SW exit to metal stairs.
3. Inside door, SE exit to stairwell.

Simultaneous Deluge - All Floors

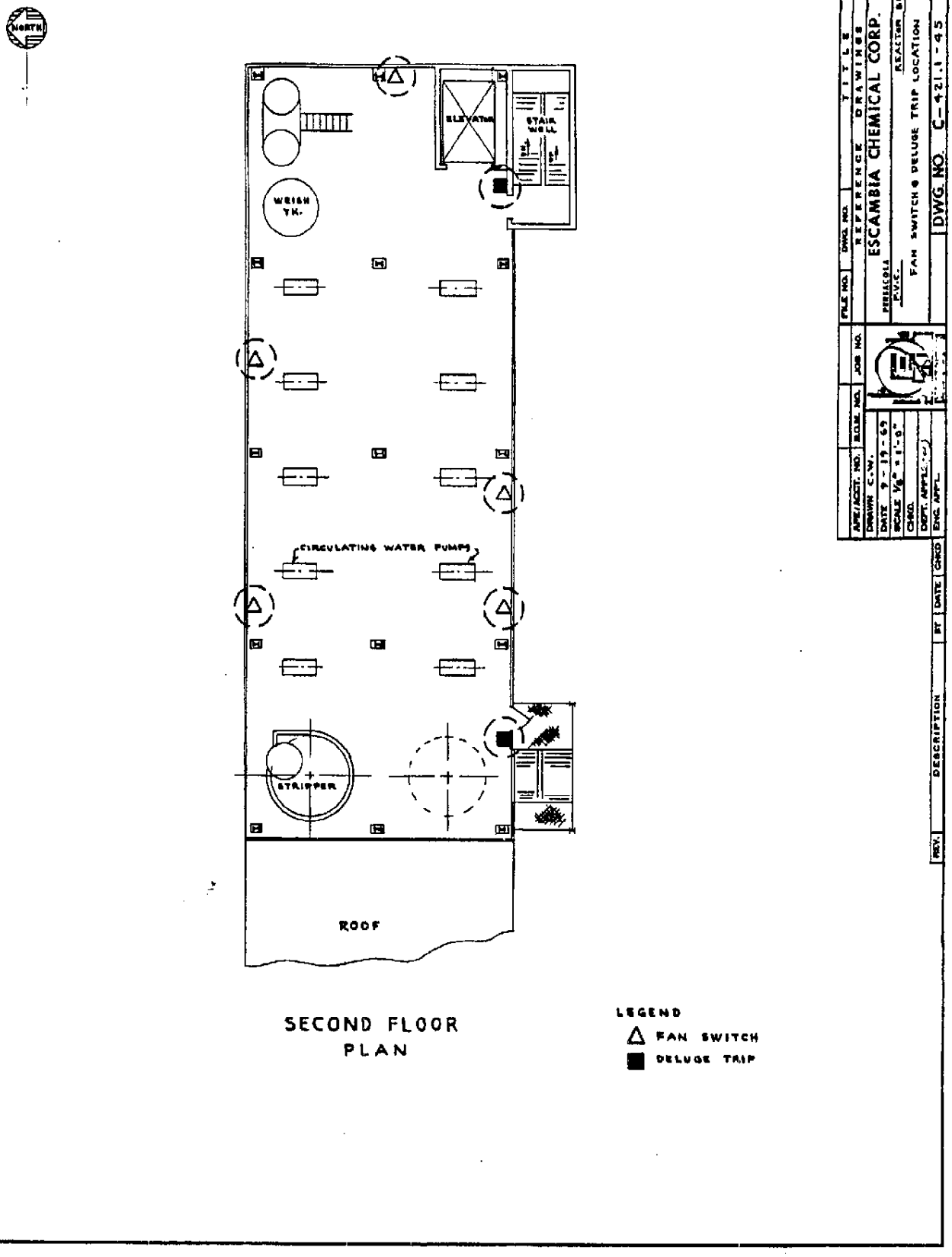
1. Inside outer door, SE stairwell, first floor.

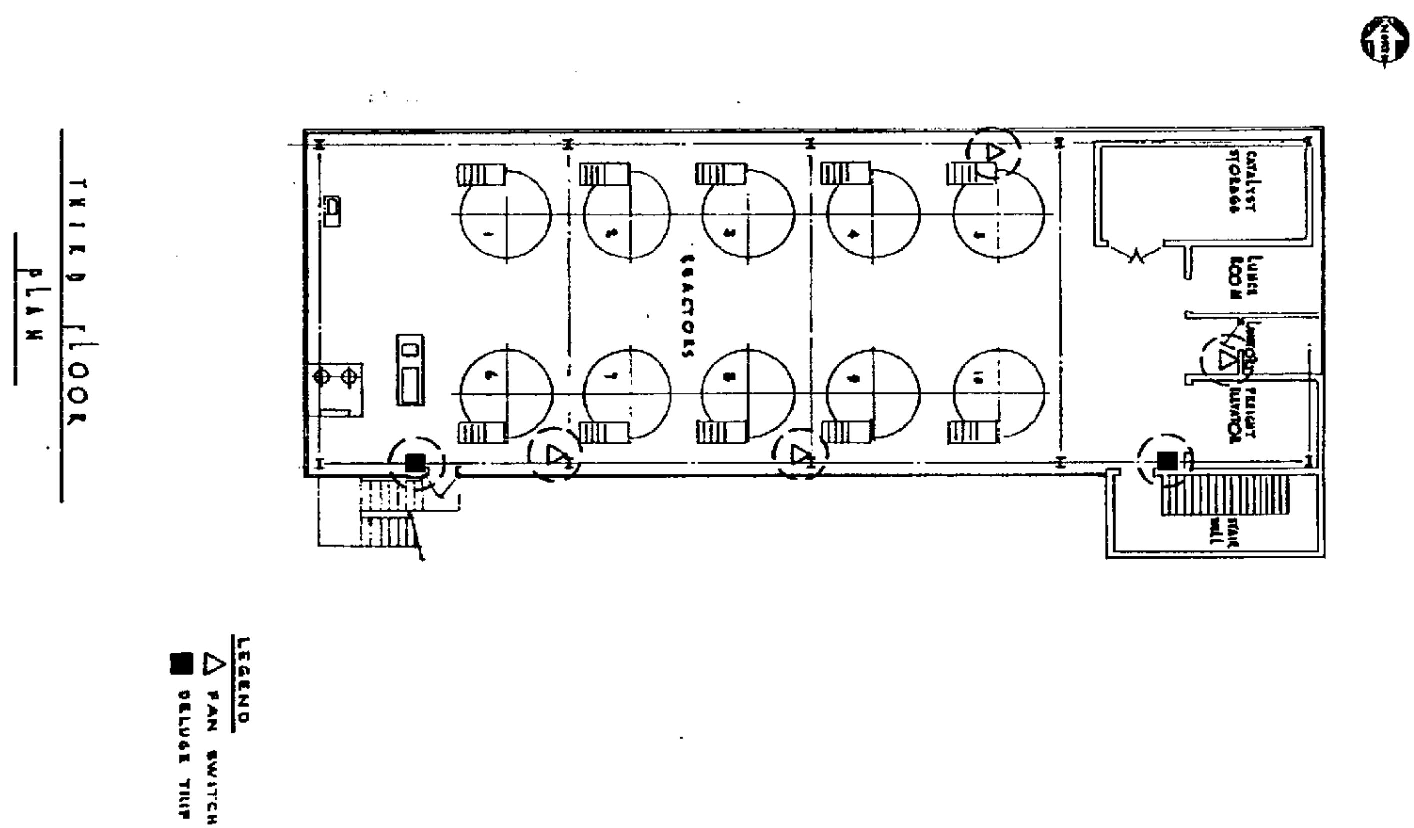


FIRST FLOOR PLAN

TITLE
DRAWINGS
REFERENCE
DWG. NO.
FILE NO.
ESCAMBIA CHEMICAL CORP.
PENSACOLA FLORIDA
REACTOR BLDG.
FAN SWITCH & DELUGE TRIP LOCATION
DWG. NO. C-421.1-44
JOB NO.
S.O.M. NO.
APS/ACCT. NO.
DRAWN C.W.
DATE 9-19-63
SCALE 1/4"=1'-0"
CHKD.
DEPT. APPL.
ENG. APPL.
REV.
DESCRIPTION
BY
DATE
CHKD

AP00035946


NORTH
ELEVATOR
STAIR WELL
WEISH TK.
CIRCULATING WATER PUMPS
STRIPPER
ROOF
SECOND FLOOR PLAN
LEGEND
FAN SWITCH
DELUGE TRIP
TITLE
DRAWINGS
REFERENCE
ESCAMBIA CHEMICAL CORP.
PENSACOLA FLORIDA
REACTOR BLDG.
FAN SWITCH & DELUGE TRIP LOCATION
DWG. NO. C-421.1-45
FILE NO.
DWG. NO.
JOB NO.
APE/ACCT. NO.
ECM. NO.
DRAWN C.W.
DATE 9-19-69
SCALE 1/8" = 1'-0"
CHKD.
DEPT. APPL.
ENG. APPL.
REV.
DESCRIPTION
BY
DATE
CHKD
ENG. APPL.



REV.	DESCRIPTION	BY	DATE	CHKD

AFE/ACCT. NO.	B.O.M. NO.	JOB NO.
DRAWN A. B.		
DATE 9-19-69		
SCALE 1/8" = 1'-0"		
CHKD.		
DEPT. APPL.		
ENG. APPL.		

FILE NO.	DWG. NO.	TITLE
		REFERENCE DRAWINGS

ESCAMBIA CHEMICAL CORP.

PENSACOLA FLORIDA

P.V.C. REACTOR BLDG.

FAN SWITCH & DELUGE TRIP LOCATION

DWG. NO. C-421.1-46 ISSUE 0

AP00035948

PROCEDURE FOR TESTING SPRINKLER SYSTEM SWITCHES

1. Open slowly, part way, the 2" drain valves under each trip to flush out drain lines.

2. Close 6" valve on manifold under each trip.

3. Open 2" drains, wide open.

4. Open 4" drain on bottom of strainer.

5. Close main 8" valve.

6. Press buttons located at doorways on 1st, 2nd, and 3rd floors to see if trips will release.

7. Reset them each time. To reset, remove cover on trip, push up spring level in center, release spring level, push up weight until it catches in the "up" position. If the weights are left down and you open the water valves, it will flood the room.

8. After testing all stations, be sure weights are caught in the "up" position.

9. Clean and inspect water strainer.

10. Close all drains.

11. Open all water valves.

12. Bleed drains of air.

13. Check again and make sure all valves are left in the right position.

14. Check after opening valves for water supply by opening 2" drain valves under each deluge valve. This will assure that gate is not off stem in main valves.

15. Check nozzles for obstructions by blowing out line with air.

Normal water psi is 75-80.

LOCATION OF SWITCHES FOR VENTILATING FANS IN PVC

Familiarize yourself with the location of the switches so you can act quickly and turn on the fans if there is a vinyl chloride monomer leak.

1st Floor Reactor Building
Overhead Ventilating Fan.
Switch is on north wall on your left side when facing 1st floor elevator door.

2nd Floor Reactor Building
Overhead Ventilating Fan.
Switch is on east wall at old 200# steam letdown station.

Window Fan Switches.
North wall under #2 reactor on right of fan.
North wall under #5 reactor on left of fan.
South wall under #7 reactor on left of fan.
South wall under #8 reactor on right of fan.

3rd Floor Reactor Building
Overhead Ventilating Fan.
Switch is on wall to right of door to washroom.

Window Fan Switches.
North wall behind #5 reactor. Left of fan behind storage cabinet.
South wall behind #7 reactor. Right of fan under basket stretcher.
South wall behind #8 reactor. On wall left of fan.

The Blend Tank Vent and Blend Tank Sump Fans must be kept running at all times.

EMERGENCY PROCEDURE - MINOR FIRE IN PVC PLANT

1. Shut off or stop operation of item of equipment which is on fire.

2. If there is an electrical fire, use a carbon dioxide extinguisher or a dry chemical (powder) extinguisher. Use no H_2O.

3. For an oil fire, or flammable organic liquids or gases, use either a carbon dioxide extinguisher or a dry powder extinguisher. A water extinguisher would likely be ineffective and/or dangerous.

4. If there is a wood or trash fire, or fire in a building or area where no electrical equipment or flammable liquids or gases are located, you may use water extinguishers.

5. Use large amounts of H_2O for an IPP fire.

6. If process pipelines carrying VCl monomer or other dangerous liquids or gases are passing through the affected area, get the flows of these valved off and secured immediately. Do not vent off or drain any chemicals from any pipes or equipment into the affected area.

7. Put out the fire as rapidly as possible if it is feasible to do so without help, then notify the shift supervisor immediately.

8. Notify the Safety Department.

EMERGENCY PROCEDURE - MAJOR FIRE

1. Trip the deluge system -- all floors.

2. Turn in a fire alarm by picking up the nearest telephone and dialing 7-114.

3. Notify all personnel working in the area to stop working and leave the area.

4. Evacuate all personnel from the vicinity of the fire.

5. I f the fire is in the reactor building, valve off all vinyl chloride and vinyl acetate into and out of the reactor building at the purification building. (See list below.) Or if the fire is at the purification area, do the same thing in the reactor building concerning lines into or out of purification.

6. Play Q.A.R. water supply onto the building or site of fire.

7. Turn off the Joy process air compressor.

8. If possibility of explosion exists, evacuate the area.

Valves to be Closed to Isolate Monomer Supply

1. Close all suction and discharge and bypass valves on both east and west monomer supply pumps in the field.

2. Close all valves underneath (liquid discharge) the VCl recovery storage tank. Close all vapor and liquid entry valves to the top of the recovery tank. Close valves on recompressing lines, equalizing lines, etc.

3. Close all valves under and on top of the north and south distilled monomer storage tanks (north and south). All valves where VCl liquid or vapors could leave the tanks must be closed. Close equalizing and recompressor valves.

4. Close all valves around the VCl unloading compressor (both into and out of). Also close all liquid and vapor valves on all transfer lines at any tank car of VCl monomer which may be hooked up.

Emergency Procedure - Major Fire - continued

Valves to be Close to Isolate Monomer Supply - continued

5. Close all valves into and out of the VCl feed pumps to the evaporator column. After shutting off feed and steam to evaporator, close all valves into and out of the evaporator and condensers, etc.

6. Close all valves on all lines over and under the East and West VCl monomer storage tanks. Close valves on all vapor lines and all liquid lines.

7. Close all valves on suction and discharge of vinyl acetate and trichloroethylene field supply pumps. Close all valves on vinyl acetate and trichloroethylene field storage tanks.

8. In general, close all valves which may be closed to isolate all raw materials from the reactor building or other site of a fire.

EMERGENCY PROCEDURE - FOR A BAD VINYL CHLORIDE LEAK IN PVC AREA

If a major leak of VCl were coming from a flange, broken line, bursted sight glass, manway gasket blown, etc., every attempt should be made to stop the leak as soon as possible. If charging VCl to reactor or weigh tank, cut off and valve in. If leak is a reactor and cannot be stopped, valved off, or isolated, put reactor instruments on manual control with full refrigerated water. Drop batch to stripper if possible, for recovery to zero pressure. Then pull to as much vacuum as possible with steam jets. If batch cannot be dropped to stripper, put on recovery overhead and pull pressure to zero pressure and evacuate with steam jets, all at the same time. Cut off recovery overhead when pressure reaches zero pressure and continue using jets.

Solution operator should see that all ventilating fans are running on second and third floors and start signalling that there is a bad VCl leak in PVC area by constantly tooting air whistle. If shift supervisor and senior operator are not present and tooting of whistle does not bring them, try to phone and send trainee to locate them.

Turn on deluge system and call for all Area "A" fire pumps to be started.

Make sure no one is in elevator or a reactor. If they are, get them out.

Notify maintenance shop, all welders, and personnel that there is a leak and to avoid all sparks and possible sources of ignition to the gas.

Call 282 at the boiler* to notify personnel in that area. Barricade roads in path of vapors.

Call 250 at ammonia to notify personnel in that area.

Also stop work of all maintenance, Carroll employees and any outside contractors in the area. Do not connect or disconnect any extension cords, or drop tools or metal objects or anything that could cause a spark.

If gas becomes so strong that it is unsafe to breathe, everyone should leave the building to fresh air and to a safe distance in case of an explosion.

Recovery operator should proceed to purification and bring Chemox case to south side of reactor building and put it on. The other Chemox mask is at the foot of inside stairs at the east end of reactor building. Make sure Chemox mask is operating properly before going into area with gas present.

Shift supervisor should check to make sure all people are out of area and at a safe distance. He should start the deluge sprinkler system, if not already started, to help prevent a fire or explosion. Consider** turning in the fire alarm and/or evacuating entire area if chance of an explosion and no hopes of saving unit.

The same procedures should be followed, except the recovery part, for a leak on VCl lines, VCl weigh tank, charge filter, strippers, etc. On the weigh tank, recovery should be attempted by recovering the VCl through an empty reactor, and overhead recovery lines. If a bad leak developed on stripper, continue recovery as outlined for a reactor.

* Decision should be made as to cutting fires in boilers. Steam left in system should be used to pressurize fire boxes.

** Fire crew should be kept a safe distance from escaping flammable gas or liquid. This may be several hundred feet.

In any fire which is caused by escaping gas or liquid, the flames should not be extinguished unless by so doing the fuel supply can be valved off. Otherwise, an explosion hazard much greater than the fire may be created.

EMERGENCY PROCEDURE - MISCELLANEOUS VINYL CHLORIDE LEAKS

1. Major leaks, such as reactor manway gasket blown, etc., see the previous section entitled, "Emergency Procedure for a Bad Vinyl Chloride Leak in PVC Area." If there is a reactor manway leak of minor proportions, check to see if tightening the manway nuts will stop the leak before proceeding to the Emergency Procedure.

2. Agitator Drawbar Nut leaks may be stopped by closing the valves on the inlet and outlet of the hydraulic oil supply, thus stopping the agitator, and the tightening of the drawbar nut, if possible. If this is unsuccessful, proceed to the "Emergency Procedure for a Bad Vinyl Chloride Leak in PVC Area."

3. Minor Flange Leaks may be stopped by tightening down on the bolts in the flanges, and valving off the supply of VCl or VAc to the point of leakage, if possible. If the minor leak does not stop, try to ventilate the immediate area with fans or exhaust blowers and notify the shift supervisor.

4. Major Flange Leaks may be handled in the same manner as the procedure for minor leaks, except that if the leak does not stop after tightening flange bolts and valving off the monomer supply, immediately follow the instructions in "Emergency Procedure for a Bad Vinyl Chloride Leak in PVC Area."

5. Sight Glass Leaks should not be dealt with by tightening down on the holding nuts. This may cause the glass to fail completely and compound the problem. If a sight glass leak is minor, ventilate the area well and then notify the shift supervisor. If it is a major leak and does not stop, proceed to "Emergency Procedure for a Bad Vinyl Chloride Leak in PVC Area."

CAUTION: In case of any monomer leak, major or minor, be certain to observe all of these additional precautions:

1. Be sure all ventilating fans are operating.

2. Shut off VCl to the leak.

3. Wear a Chemox mask if the leak is sufficient to pose personal danger.

4. Caution all operating personnel.

5. Do not connect or disconnect any extension cords, do not drop tools or any metal objects, do not provide any source of sparks.

6. Stop maintenance or any outside contractors from working in the area or doing hot work.

7. Be sure no one is in a reactor or on the elevator. If so, get them out.

EMERGENCY PROCEDURE - FOR VENTING OR SHORT-STOPPING REACTION

The reactor may have to be vented for several reasons:

The stirrer may fail and excessive temperature and pressure may exist.

The recirculating pump or cooling water supply may fail.

A bad leak may develop.

The line to the rupture disc may be plugged.

If the reaction temperature cannot be manually controlled lower than 160°F, try venting the monomer through the vacuum line. The steam jet can be put on.

Notify all personnel, and especially the electricians, that monomer is being vented to the atmosphere.

If venting the monomer does not control the reaction, drop to stripper and start the recovery compressor.

Transferring of the batch to another reactor is a possible way of lowering the pressure. Pull vacuum on empty reactor and have drop valve open, then open valve on reactor that has high pressure. Batch will transfer to the other reactor.

VENTING OR EVACUATING EQUIPMENT OR PIPE LINES FOR MAINTENANCE

Before issuing a work permit, all block valves in process lines should be closed and tagged. All pressure should be removed and liquids drained.

In the case of vinyl chloride, this should be accomplished by evacuating with the tank car unloading compressor or recovery compressor whenever possible. When this cannot be done and vinyl chloride must be vented to the atmosphere, a thorough check should be made to see that there is proper ventilation and that there is no non-explosion-proof equipment, welding, or other sources of ignition accessible to vapors. Then vapors and/or liquid should be bled off slowly to reduce the chance of a static spark.

When evacuating large lines or vessels, water should be added to the low point on the line or vessel while vapors are being removed from the top. The vessel or line can then be drained and opened with less chance of having an explosive mixture. When draining a vessel of water after it has been evacuated, a vent large enough on top must be opened to prevent forming a vacuum and collapsing it.

Occasionally a section of line is removed from service which has no evacuation line or even a bleed. In this case bolts on a flange can be gradually loosened to obtain a small bleed. This is best done by process since they are more familiar with the pressure and contents.

Care should always be taken when draining pumps and lines of vinyl chloride that ice doesn't form and plug these drains, giving the false impression that it is depressured.

See Safety Handbook, "Preparing Equipment for Maintenance".

PROCEDURE FOR HANDLING OF DIISOPROPYL PEROXYDICARBONATE (IPP)

Solid IPP must be stored at low temperatures, below 0°F, preferably, and never for long periods of time above 20-30°F. It melts at 46°F, and if the liquid is allowed to warm further, it undergoes slow decomposition. This is evidenced by slow bubbling, followed shortly afterward by a very rapid and possibly violent decomposition. Liquid or solid IPP should never be stored in a confined space at temperatures above 40°F. Under such circumstances there is great possibility that rapid and violent decomposition may be developed to the point that a detonation can occur. However, if any decomposition of IPP should ever occur short of actual detonation, remember that the vapors of decomposition given off will be flammable and sources of ignition must be avoided. (The vapors formed upon decomposition are acetaldehyde, acetone, ethane, isopropyl alcohol, carbon dioxide, carbon monoxide, and oxygen.)

IPP is stored under refrigerated conditions in stainless steel trays and covered with a polyethylene film and stainless steel lid. Never use anything but stainless steel trays and never store anything except IPP in the stainless steel trays. Never use paper.

Never leave paper, rags, or trash lying in the vicinity of IPP storage sites. Any small quantities of IPP which might be dropped or spilled can ignite such trash by its decomposition and cause a fire.

When transporting IPP in stainless steel trays outside any mechanical refrigeration unit, use plenty of dry ice to maintain a sub-zero temperature. If left outside a refrigerator, check and replenish the dry ice supply every 24 hours at least. Always place trays in storage boxes so that adequate space is maintained for good air circulation and good cooling can take place. Bottom trays are supported by latticework platform. Place dry ice under trays as well as over them. Do not leave IPP exposed directly to the rays of the sun.

When handling IPP, always wear rubber gloves and goggles due to the possibility of decomposition and also because IPP is a severe skin irritant. If any contacts the skin, it should be washed off promptly with isopropyl alcohol. Never breathe mists or vapors given off by warm IPP or allow any to contact the eyes. It is mildly toxic.

Small spills of solid IPP can simply be flooded with water and washed up with soap and water. Never push solid spills into confining areas.

If acids come into contact with frozen IPP crystals, a violent decomposition can occur. Never store any other chemicals directly alongside IPP.

Do not allow moisture to condense and accumulate in or on top of refrigerated storage boxes. Keep all storage facilities clean and dry to prevent contamination.

NOTE: In case of emergency, such as rapidly decomposing IPP, or a fire caused by heat effects of decomposition or ignited products of decomposition, play large amounts of water over the site to dilute the chemical and put out the fire.

It should also be noted that Lauroyl Peroxide can be a dangerous chemical. It may ignite when left in contact with a hot steam line. A fire involving lauroyl peroxide should be flooded with water immediately. This material supports combustion and cannot be extinguished by smothering.

If acids come into contact with frozen IPP crystals, a violent decomposition can occur. Never store any other chemicals directly alongside IPP.

Do not allow moisture to condense and accumulate in or on top of refrigerated storage boxes. Keep all storage facilities clean and dry to prevent contamination.

NOTE: In case of emergency, such as rapidly decomposing IPP, or a fire caused by heat effects of decomposition or ignited products of decomposition, play large amounts of water over the site to dilute the chemical and put out the fire.

It should also be noted that Lauroyl Peroxide can be a dangerous chemical. It may ignite when left in contact with a hot steam line. A fire involving lauroyl peroxide should be flooded with water immediately. This material supports combustion and cannot be extinguished by smothering.

EMERGENCY PROCEDURE - AGITATION STOPPAGE ON REACTOR

1. Try to recover overhead. This will normally break up the crust and allow agitator to move.

2. Add water if pressure on reactor is not over 125 lbs. If pressure is over 125 lbs, VCl will back up into the water line.

3. Put on full refrigerated water to cool batch. Without agitation there is very little heat exchange to the reactor jacket.

4. Vent at short intervals through the vac line and check at bleed-off line for foaming.

5. Drop to stripper if the preceding steps do not get agitation started. (In the case of 6180, this is about the only procedure that will work without plugging up a line.)

INSTRUMENT AIR FAILURE (NO PLANT AIR AVAILABLE)

Purification

Shut down the evaporator. Shut down feed pump, close suction and discharge valves. Close valve in steam line to evaporator reboiler. Close valve in make line at the distilled monomer tanks. The automatic steam valve and the feed flow control valve are air-to-open valves and would close on instrument air failure.

The VCl feed pump would continue to run, causing a high discharge pressure and pump seals would most likely fail, resulting in the release of explosive vapors in the area.

Reactor and Reactor Building Equipment

1. The absorption refrigeration machines will go down because of loss of purge air to the non-explosion-proof motors to the solution pumps.

2. All the automatic control valves in the reactor cooling system are air-to-close valves and would open wide on loss of instrument air. Hand valve before control valve should be closed immediately on all reactors that do not require refrigerated water.

   Throttle hand valve in refrigeration water line to control temperature on reactors that are peaking. The sump return valve will have to be blocked in with hand valve while a reactor is taking refrigerated water to prevent all of the refrigerated water from returning to the cooling tower water sump instead of the refrigerated water sump.

   Reactors not requiring excessive cooling should be controlled by hand with cooling tower water in the same manner as refrigerated water except do not block in hand valve at automatic sump return valve. Water will return to the cooling tower water sump.

3. The refrigerated water should be valved off to all reactors not requiring excessive cooling to prevent waste of water.

4. Automatic steam valves to all reactors are air-to-open valves and will close automatically upon loss of air. Hand-block valves at each automatic steam valve should be closed in case the automatic valve leaked through. Reactors with excessive pressures and temperatures should be put on overhead recovery or carefully vented to atmosphere.

LOSS OF PROCESS AIR EMERGENCY PROCEDURE

Process and instrument air is supplied to the PVC plant by two Joy air compressors--one 515CFM compressor and one 200CFM compressor. The smaller compressor (200 CFM) is used as a standby in case the 515 CFM compressor should be out of service for some mechanical reason.

Should the larger compressor (515 CFM) fail, the smaller compressor can be started and put on the line. The smaller compressor will not carry the PVC plant load-demand alone. Plant air from Area "A" compressor house is tied into air system at the east end of the second floor of the reactor building. The block valve in line from Area "A" would have to be cracked open to bring air up to operating pressures.

In the event of a loss of electrical power to the PVC plant and both compressors become inoperable, there is a control valve in the air line from Area "A" which is adjusted to open at approximately 80 psi, but the block valve before control will have to be opened. This valve is generally kept closed because PVC air pressure usually is lower than 80 psi and control valve would cycle open and closed, causing variations in pressure at Area "A".

There is a line from the process air compressors tied into the instrument air system on pipe rack at the southeast corner of the purification building. If you lose the process air, you also lose the instrument air. Then it is most important that the air from Area "A" is cut in immediately. All air usage other than for instrumentation should be cut to a minimum until the loss of air problem is corrected.

If there is an electrical failure at Area "A" and PVC at the same time, all sources of air would be lost.

Watch for foaming in reactor. If batch foams up, lines may plug causing relief valves on reactors to lift.

Miscellaneous Equipment

1. Vent Control from recovered monomer tank would close.

   Use bypass around control valve to regulate pressure on recovered monomer tank or vent off pressure at the tank.

2. Suction Pressure Controller to recovery compressor would open. In the event there was still pressure on the suction, the relief valves would lift and belts would slip from overload. Throttle hand valve in suction line to prevent overloading compressors.

3. Cooling Tower Water return valve from pit would open, lowering level of water in cooling tower water sump.

   Throttle hand valve before control valve to regulate level in the sump.

4. Hydraulic System

   a) Suction Pressure Control Valve would close causing a high suction pressure.

   b) Discharge Pressure Control Valve would open, causing discharge pressure to drop and resulting in lowering of RPM on reactors.

      Open bypass around control valve and close off plug on each valve before control valve. Close off on bypass valve until discharge pressure is enough to give required RPM.

Finishing Building

1. Steam Control Valve to dryer closes. Open bypass around control valve to control temperature of dryer.

2. Drying lines would have to be shut down because with no air, centrifuge feed valve would close. In case something should happen to the centrifuge, the automatic feed cut-off would not operate

because of no air pressure.

3. Bagging would have to cease because of lack of air to operate bagging machine. Portable compressor can be hooked up if this happens.

4. There would be no air to operate timers on the product collectors.

5. Bulk transfers would have to be shut down because of no air to operate timers in product collectors and no air purge on rotary valve packing glands, which would cause the rotary valves to mill.

LOSS OF REFRIGERATED WATER

1. Refrigerated water can be lost due to a power failure or malfunction of the absorption refrigeration machines.

2. In the event of power failure, the emergency generator will supply power for the absorption refrigeration machines.

3. In the event of malfunction of the absorption refrigeration machines, the following causes have been known to cause trouble:

   a) Loss of power to condenser or solution pumps, main breaker or heaters out.

   b) Strainers on condenser pump, refrigerated water on at suction of refrigerated water pumps.

   c) Steam traps not working or condensate strainer plugged, condensate pumps not in operation.

   d) Automatic steam valve instruments put automatic steam valve in shutdown condition. Reset automatic control to steam valve.

   e) Check level in sight glass of machines to check on operation. Sight glass level indicates load on machine--high level, low load--low level, high load. Check cold spot on machine at north end half-way-up.

   f) Loss of cooling tower water will shutdown machines or loss of purge air to non-explosion-proof motor will also shut down machines. These conditions will also cause alarm on third floor to function.

   g) Too high ambient air temperature around thermobulb on solution pump. Run water over thermobulb to cool down temperature. Keep insulation around thermobulb in good repair.

   h) Excessive leakage on packing of condenser water pump will cause pump to lose prime and not pump enough water to condenser. Re-pack pump.

   i) Excessive amount of non-condensables in system will cause loss of vacuum and lower efficiency of machines. Run purge units at least 15 minutes every day.

EMERGENCY PROCEDURES - LOSS OF PLANT STEAM

1. Shut down both PVC dryers.

2. Shut off feed to VCl evaporator.

3. Stop unloading of any monomer which may have been in progress and secure lines.

4. Stop charging any more PVC reactors.

5. If any reactors require refrigerated water (refrigerator machines would be down), put on maximum amount of cooling tower water and if this is not sufficient to control temperature of the batch, then vent it to the atmosphere or recover to the stripper.

6. When steam comes back on, start back up in the following order and notify boiler operator before so doing:

   a) Refrigeration machines.

   b) PVC rotary dryers.

   c) Charge PVC reactors.

   d) Start feed to VCl evaporator.

   e) Resume unloading VCl monomer.

   NOTE: If both electric power and steam supply are ever lost at the same time, there will be no source of power for agitator drives or reactors. If such a case even presents itself, vent the reactors one-at-a-time (according to the highest pressure) around the bypass of the vacuum jets to the atmosphere and thus relieve excess pressures.

PVC POWER FAILURE (LONG DURATION)

Shift Supervisor

1. Proceed to the emergency generator with a flashlight and a squeeze bottle of ethyl ether immediately. If the diesel is not already running and starting air pressure is okay, start it at once. May have to use ether injection into manifold. If air pressure is low, check with "A" Area to see that supply is not valved off at compressor building. Check voltage (480) and frequency (60) on panel. Adjust engine speed, if required, with the governor to obtain correct frequency.

2. Return to first floor of reactor building and make sure senior operator has N_2 or air on hydraulic pressurizing tank and performed his other duties.

3. Keep an eye on pressurizing system. Bleed condensate from steam turbine lines and prepare for a start-up of steam turbine hydraulic pump.

4. When finishing operator returns from boiler room, let senior operator take over first floor and proceed to third floor reactor building to check how reactor operators are doing. Depending on situation, direct third floor operations or reassign duties to senior operator.

5. Check the elevator in case personnel are caught between floors.

6. Find out how many reactor circulating water pumps can be shut down or if one absorption refrigeration unit can be turned off to reduce the electrical load by 60 H. P. Then one recovery compressor can be started.

EMERGENCY POWER FAILURE (SHORT DURATION)

1. Open hydraulic back-pressure-control bypass valve located on third floor of reactor building.

2. Check on hydraulic oil suction pressurizing pump. Press start button if pump is off, and check nitrogen pressure if pump is not running or fails to start on emergency power.

3. Open bypass at hydraulic oil pump and start pump if power is available.

4. If power is on, and pumps started with bypass valve on pump closed, close bypass on third floor of reactor building.

5. If power is not on, check emergency generator and call boiler operator to inform him that steam-driven hydraulic oil pump will have to be turned on.

6. Check water circulating pumps on reactors, absorption refrigeration, cooling tower water pumps, step-bearing purge pumps and agitators for blend tanks.

7. Check all equipment for operation when power is available. The time delay capacitors frequently fail and require the services of an electrician to repair.

8. In checking equipment, make sure that all ventilating and exhaust fans are in operation to keep the area free of gas.

WHEN UTILITY POWER RETURNS

Shift Supervisor

1. Proceed to emergency unit and transfer emergency power to utility power. If you suspect that the utility power return may be only temporary, leave diesel engine running at no load. (If electrician is on duty, get him to make switch if auto switch has not already made the transfer.)

2. Start instrument air compressor.

3. Check operations of the hydraulic system, the absorption refrigeration units, and the reactors.

4. Start blend tank agitators.

   NOTE: When starting up blend tank agitators after slurry has settled, it is advisable to agitate with air first and "jogging" the motor before leaving power on.

5. Check operation of all essential equipment to make sure it functions (i.e., double Duraseal unit, step-bearing purge pumps, centrifuge wash water pump).

6. Make out report of failure as soon as possible after operations return to normal.

PVC POWER FAILURE (LONG DURATION)

Senior Operator

1. Proceed immediately to the hydraulic pressurizing system. Nitrogen pressure should be on automatically by then. If it isn't, turn on plant air, if any, to pressurizing tank. Open bypass on suction pressure control valve to pressurize hydraulic system. Then try to obtain N_2 pressure by checking cylinder pressure, regulator valve pressure, block valves, pressure switch, etc. When emergency power is available, close bypass and start pressurizing pump. Open bypass valves around both electric hydraulic pumps.

2. When the shift supervisor has arrived at first floor of reactor building, try to call on phone first, or send finishing operator to the boiler control room to inquire of the boiler operator as to when steam can be obtained. Check pressurizing system. Slowly start steam turbine as soon as steam is available. Only use enough steam to run agitators at 40 rpm.

3. If additional steam is available, start up one or both absorption units.

4. Remain on first floor during duration of power failure. Check often with reactor operator on reactor pressures. Try to keep hydraulic suction pressure 20 psi above highest reactor pressure with the suction pressure control valve. Use plant air to pressurizing tank, if necessary.

5. Check oil level in pressurizing tank often. Keep advising reactor operator of any loss of oil.

6. Add oil to pressurizing tank with pump as required. Use recovery operator and the finishing operator.

PVC POWER FAILURE (LONG DURATION)

Senior Operator

1. If unloading a car, close valves on vapor and liquid lines on unloading compressor.

2. Shut off steam manually on the evaporator.

3. Shut off monomer feed valve to evaporator.

4. Shut off the suction valve to the Freon compressor.

5. Check to see if plant air valve opened to instrument air tank.

6. Proceed to reactor building and shut off steam to unit heaters.

7. Report immediately to the first floor reactor building for further instructions.

PVC POWER FAILURE (LONG DURATION) - When Utility Power Returns

Senior Operator

1. Start one electric hydraulic pump.

2. Continue having oil added to pressurizing tank until normal level is reached.

3. Shut off steam turbine pump after notifying boiler.

4. If steam is available, start up absorption refrigeration machines if they are down.

5. When reactor operator has advised that reactor pressures have returned to normal, adjust oil suction back-pressure control valve to 150 psi or 20 lbs above highest reactor operating pressure.

6. Report to shift supervisor and advise on status of first floor of reactor building.

7. Start solutions refrigeration units.

PVC POWER FAILURE (LONG DURATION)

Reactor Operator

1. Close inlet and outlet valves on any hydraulic motors leaking oil.

2. When emergency power is available, check reactor jacket water circulating pumps. Shut down any that are not needed so that one compressor may be started on emergency power.

3. Watch pressure on all reactors on cycle. If charging, close valves on VCl charging and transfer lines.

4. Slowly vent reactors showing a rise in pressure via the vacuum header and steam ejector bypass, or if compressor is on emergency power, reactor close to end of reaction may be put on recovery, or one that has no agitation.

5. Turn on full refrigerated water cooling manually until refrigerated water temperature rises to cooling tower water temperature. Then switch to full manual cooling with tower water. (Air to valve 7-8.) Cooling tower water bypass can be opened to give maximum flow.

6. Vent reactors in rotation for about one minute each (this also helps to keep batches stirred). Longer venting time may be required on reactors with excessive pressures.

7. If steam turbine comes in operation, close inlet hydraulic valve to any reactors that do not need agitation, then distribute hydraulic pressure evenly to get equal rpm's on reactors on cycle. (Close bypass hydraulic back-pressure control valve.) Run agitators at 50 rpm, or better, if possible. Check with senior operator by telephone.

8. If senior operator advises that oil is being lost, check each reactor visually. If there is evidence of a bad oil leak, observed through sight glass or on the chart, valve off and depressure the motor. Vent the reactor to atmosphere totally and not too rapidly or recover if compressor is running, if danger of vapors leaking out into room.

PVC POWER FAILURE (LONG DURATION) - When Utility Power Returns

Reactor Operator

1. Stop venting.
2. Have recovery operator start recovery compressor at once.
3. Put any reactor with no agitation on recovery.
4. Place all reactors as required on refrigerated cooling.
5. Adjust all agitation to 130 rpm.

PVC POWER FAILURE (LONG DURATION)

Solutions Operator

1. Open bypass on hydraulic back-pressure control valve.

2. Proceed to cooling tower water supply pump and cooling tower fan and start them as soon as emergency power is available.

3. Start refrigerated water sump pump.

4. Start cooling tower water sump pump.

5. Return to third floor reactor building and help reactor operators.

6. Watch temperature of IPP in freezer. Add dry ice if necessary. If no dry ice and temperature reaches 45°F, dump IPP in open field.

PVC POWER FAILURE (LONG DURATION)

Recovery Operator

1. Always keep a vacuum on empty strippers, in case of any emergency.

2. Start steam jets and pull vacuum, when steam is available, on strippers.

3. Drop any batch that is near end of cycle or cannot control to stripper for recovery.

4. Check inlet valves to all blend tanks and make sure they are closed tight. If we have loss of air, dump valves at bottom of stripper may open.

5. Start blend tank exhaust fan and pit fan when electricity is back on.

PVC POWER FAILURE (LONG DURATION)

Finishing Operator

1. Shut off centrifuge wash water block valves.

2. Shut off steam to dryers and rotexes.

3. Shut off purge water to dryer screw conveyors.

4. Report immediately to the senior operator at first floor reactor building for further instructions.

PVC POWER FAILURE (LONG DURATION)

Alpine Mill Operator

1. Cut off feed and water to alpine mill.

2. Cut off feed and steam to rotex, if transferring.

3. Close gate valves on bottoms of holding bins that are being transferred.

EQUIPMENT ON EMERGENCY CIRCUIT

			H.P.
	MCC-1 (440 V)		
1.	Main breaker for MCC-1		-
2.	Reactor jacket water circulating pumps	(10-15 H.P. ea.)	150
3.	Pumps on absorption refrigeration machines:		
	Condenser water pumps	(2-15 H.P. ea.)	30
	Purge pumps	(2-2 H.P. ea.)	4
	Generator & Absorber pumps	(2-1.5 H.P. ea.)	3
	Evaporator pumps	(2-2 H.P. ea.)	4
*4.	Refrigerated water sump pumps	(2-60 H.P. ea.)	60
5.	Cooling Tower water (supply) pump		125
6.	Cooling Tower fan		40
*7.	Cooling tower water (return) sump pumps	(2-30 H.P. ea.)	30
8.	Hydraulic oil pressurizing pump		1.5
*9.	Recovery compressor	(2-60 H.P. ea.)	60
	Emergency Lighting Panel - EM (110 V)		
1.	Emergency lights		4
*2.	Reactor step-bearing purge pumps	(2-2/3 H.P. ea.)	0.7
3.	Sprinkler system		-
	Other Equipment		
1.	Preheater on main boiler		1.5
2.	Lubricating oil pump for Elliott Turbine		15
3.	Foam pump at methanol storage area		5
		TOTAL	443.7

443.7 x .746 - 331 KW
Rated capacity of Generator - 350 KW

*Only one pump running at a time.

PROCEDURE FOR STARTING AND STOPPING PVC EMERGENCY GENERATOR

For Starting

1. Check oil and water.

2. Be sure oil switch is on.

3. Press start switch located on control panel and hold "until engine comes up to full speed."

4. Check voltage and cycles.

5. DO NOT MOVE TEST SWITCH unless no utility power is available.

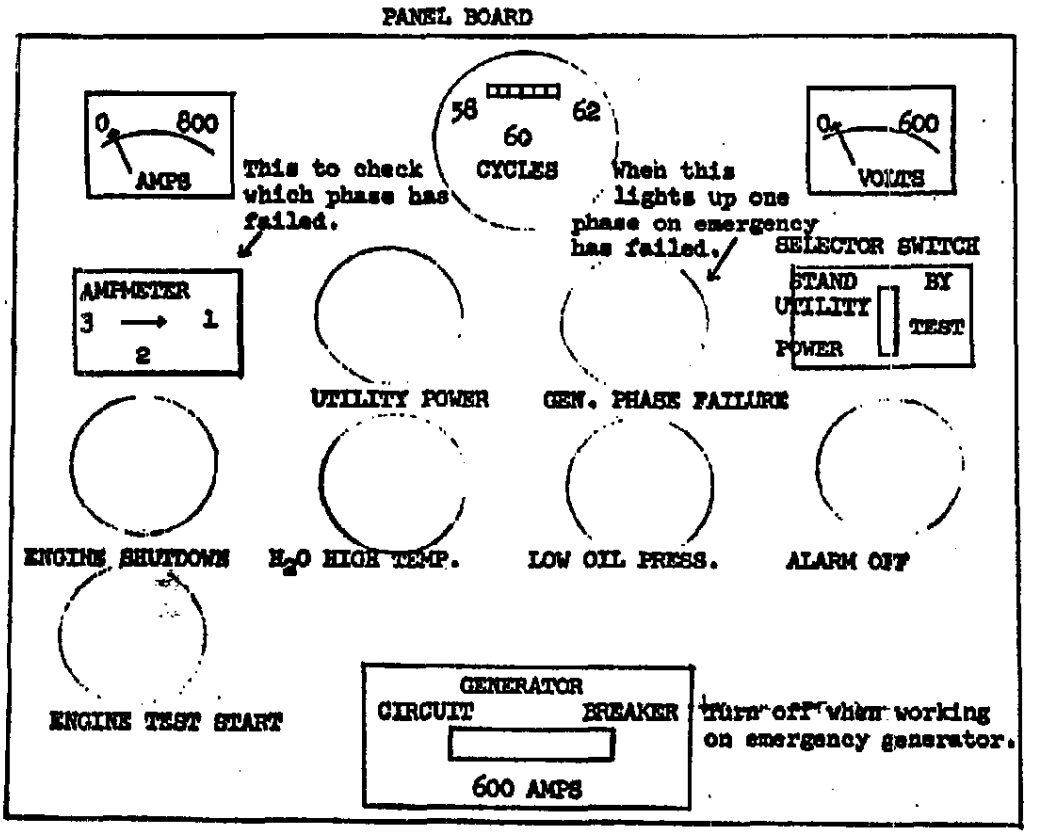
For Stopping

1. Check lights on panel indicating emergency or utility power. Do not stop engine while light is showing on emergency power or while load is showing on ampere meter.

2. Press engine stop switch and hold until engine comes to a complete stop.

3. Leave the selector switch set on automatic.

EMERGENCY GENERATOR



EMERGENCY GENERATOR TESTING PROCEDURE

For routine testing of the Caterpillar engine on the emergency generator in the PVC area, the procedure is as follows:

1. The electrician will notify the shift supervisor that he intends to test the engine.

2. The PVC supervisor or the senior operator will then accompany the electrician to the emergency generator building.

3. The PVC supervisor or the senior operator will then push the ENGINE START button on the lower left corner of the control panel. (He is positively not to turn the STAND-BY switch to the TEST position.)

4. The electrician may then check the generator voltage, the voltage frequency (cycles/second), the engine oil pressure and the engine water temperature while the engine is at full speed.

5. Then the PVC supervisor or the senior operator will make sure that the UTILITY POWER SIGNAL LIGHT is still lighted after which he will stop the engine by holding down the ENGINE SHUTDOWN button until the engine comes to a full stop.

EMERGENCY STEAM-DRIVEN TURBINE

Operation of Steam Turbine Hydraulic Pump

1. Keep pump pressured with oil. Bypass closed. Suction and discharge valves open.

2. Before starting turbine call boiler operator.

3. Drain condensate from steam line. Open F&S H_2O to bearings.

4. Start turbine slowly by opening hand valve a small amount.

5. Gradually bring turbine up to speed. When near full speed, observe the governor valve and control speed.

6. Open hand valve to wide-open position.

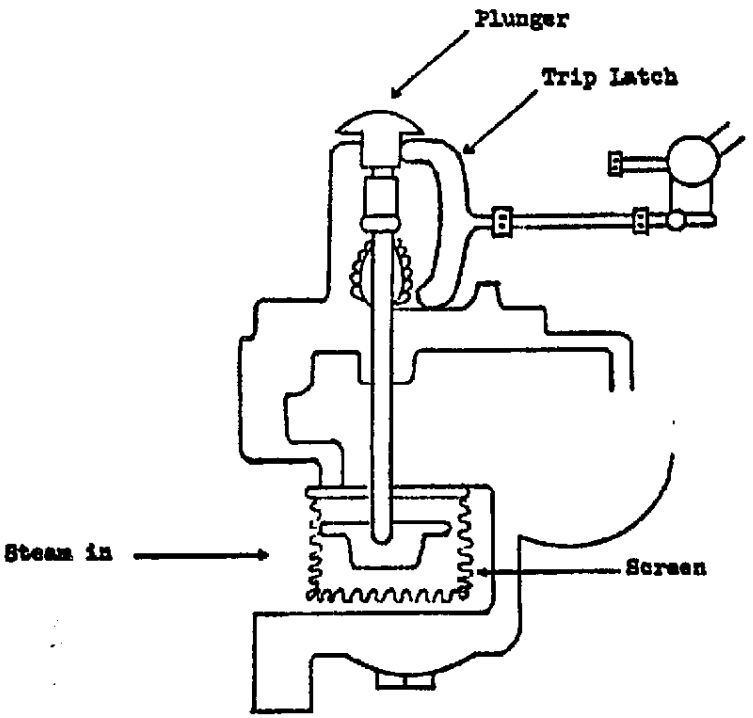
7. Make sure each oil ring is turning and carrying oil by looking through oil cup on top of bearing housing cover.

8. There is an overspeed trip on the turbine which should be kept engaged. If trip is released, it will block the steam from going into the turbine.

9. To reset trip, push down on spring-loaded plunger and shove trip latch into position. If plunger won't push down, drain condensate from bottom of valve and try again.

OVERSPEED TRIP ON STEAM TURBINE

FOR HYDRAULIC PUMP



Air Products and Chemicals, Inc.

PUT IT IN WRITING

Date December 7, 1972

To H. L. Watson, Calvert City Subject VINYL CHLORIDE SAFETY ASSOCIATION

From J. T. Barr, Calvert City

( ) Take Action ( ) For Your Approval ( ) For Your Info ( ) Discuss With Me
( ) For Your Comments ( ) As Requested ( ) File ( ) Note & Return

Attached is a copy of the notice for the next meeting of the Vinyl Chloride Safety Association. Please let me know who will attend this meeting so that I can notify the secretary of the Association.

J. T. BARR

JTB:sl

cc: N. H. Brock, Jr./Trexlertown
A. K. McMillan/Pensacola/42

VINYL CHLORIDE SAFETY ASSOCIATION

Notice of 1973 Meeting

The Vinyl Chloride Safety Association Meeting is scheduled for January 31 and February 1, 1973, at the Regency Hyatt House in Atlanta, Georgia. The meeting is scheduled to run from 9:00 a.m. on January 31 until noon on February 1.

There will be three meeting sessions. The first one will be on January 31 from 9:00 a.m. until 12:00 noon with a luncheon speaker from 12:00 until 1:30 p.m. The second session will close at 5:30 p.m. that same day. The third session will be held on February 1 beginning at 9:00 a.m. and terminating at 12:00 noon.

A prompt response to Mr. Henry Smith from the people planning to attend this meeting would be appreciated so that adequate lodging and arrangements can be made.

Plan to see you in Atlanta in January.

M. G. Glenn, Chairman
Vinyl Chloride Safety Association