

Interoffice
Communication

To: Ron Bryan - L.C. VCM

From: Harold Kramer

Date: July 22, 1985

Subject: L.C. VCM EPA CONSENT DECREE ESTIMATES

VISTA

The following EPA Consent Decree Budget Estimates are attached for your review. These estimates are based on your list of potential projects transmitted to GED on July 15, 1985, plus projects added by Pat Fetizanan.

<u>Project No.</u>	<u>Description</u>	<u>\$K</u>
VC-08-006	✓ Tank Farm Vent Eductor	\$ 73.5
VC-08-008	✓ Vent Flow Feed Forward	23.0
VC-08-009	✓ Flame Temperature Control	20.5
VC-08-011	✓ Standby Blower Operations	7.0
VC-08-014	✓ Flame Arrestor Instrument Rev. ✓	28.5
VC-08-015	✓ Restriction Orifice ✓	0.5
VC-08-016	✓ HCL Column Control ✓	97.0
VC-08-023	✓ Direct Chlorination Reactor Feed	8.5
VC-08-028	✓ Auto Tiebreaker ✓	67.0
VC-08-029	✓ Oxygen Analyzers ✓	29.0 -
VC-08-031	✓ Wet Vent & D.C. Vent Flow Alarms ✓	6.5
VC-08-032	✓ S-102=Flow Indication & Alarm ✓	5.0
	Subtotal	\$366.0

VC-08-021 Burner Modification (Scope has changed,
estimate will be completed at a later
date.)

Please note that these estimates are in the format according to the Stipulated Penalties agreement. They also do not include the normal 10-15% contingency which is normally included and spent on Budget Quality Estimates, per Conoco's request.

If there are any questions, comments, or additional designs that need to be included, please advise.

Harold E. Kramer

Harold E. Kramer

018/HEK

Copies to: (w/att.)

GW1-JES-PFF-JRC-HEK

366
200
124
683

CCR 000021036

Model
Check
Date
Time

GSD

7/18/85

TABLE 1

JOB STATUS

CONSENT DECREE

VCM PLANT

7/22/85

	CONCEPTUAL STAGE	FINAL FORM	BUDGET		
			DESIGN	ESTIMATE	CLASS "A" DEF. ESTIMATE
I. <u>CONSENT DECREE</u>					
II. <u>1/4 LETTER</u>	4/85	5/85	—	—	—
III. <u>COMPLIANCE PLAN</u>	4/85	—	—	—	—
IV. <u>PROCESS DESIGNS</u>					
<u>COST ESTIMATES</u>					
A. <u>IN-SITU OXYGEN ANALYZER</u>	3/85	5/85	—	—	1/85
PED - B. <u>VENT FLOW FEED FORWARD CONTROL</u>	2/85	3/85	—	—	—
PED - C. <u>AUTO STARTUP AIR BLOWER</u>	3/85	3/85	—	—	—
VCM - D. <u>MODIFIED BURNER</u>	4/85	4/85	—	—	—
PED - E. <u>FLAME TEMP. FEEDBACK</u>	3/85	3/85	—	—	—
— F. <u>NEW NAT'L GAS BURNERS</u>	4/85	4/85	—	—	—
PED - G. <u>REACTOR VENT FLOW CONTROL</u>	3/85	4/85	—	—	—
VCM H. <u>FLAME ARRESTOR LEVEL INSTR.</u>	3/85	3/85	7/85	7/85	7/85
PED - J. <u>TANK FARM VENT EDUCUR</u>	3/85	3/85	—	—	—
? - K. <u>AUTO TIEBREAKER</u>	4/85	4/85	—	—	—
PED L. <u>MODIFIED HCL TOWER CONTROL</u>	7/85	7/85	7/85	7/85	7/85
VCM M. <u>CHLORINE DRYER VENT R.O.</u>	—	5/85	6/85	6/85	—
VCM N. <u>LE COLUMN VENT FLOW INDIC.</u>	—	5/85	6/85	6/85	—
— O. <u>ALARM</u>	—	5/85	6/85	6/85	—
VCM O. <u>100T AND DC VENT HEADER</u>	—	—	—	—	—
— P. <u>ADJUSTABLE HIGH FLOW ALARMS</u>	—	5/85	6/85	6/85	—
V. <u>STIPULATED PENALTIES</u>	7/85	7/85	—	—	—

(Project Deleted)

William L. McClain

VISTA

WKS

Distribution

Date 7-1-85

CC: ~~REM~~
~~RB(3)~~

ORIG: RAC

Please call if you have any problems with the attached.

Bill (are)
Bill

are

Attach.

Distribution:

Dick Conrad

John Friend

Harry Garrison

Jack Stoner

Estela Wackerbarth

CONSULT DECREASE



CCR 000021038

DRAFT

STIPULATED PENALTIES AGREEMENT

This Agreement between Conoco Inc. ("Conoco"), Vista Chemical Company and Vista Polymers Inc. ("Vista") is entered into for the purpose of delineating respective responsibilities for the payment of any stipulated penalties which may be assessed or become due and payable after entry of Consent Decrees in the cases identified below.

1. Case No. 83-1916-E, filed in the District Court for the Western District of Oklahoma;
2. Case No. 83-2510, filed in the District Court for the Western District of Louisiana; and
3. Case No. EC-37-LS-P, filed in the District Court for the Northern District of Mississippi.

The Department of Justice has required, as a term of the Consent Decree to be filed in each of these cases, for payment of stipulated penalties as follows:

1. For failure to submit a compliance plan as described in, and in the time required by, Section III of each Decree, Conoco and Vista shall pay \$1,000 per day of noncompliance.
2. For failure to take or complete the tasks according to the timetable outlined in the compliance plan submitted pursuant to Section III of each Decree, Conoco and Vista shall pay \$1,000 per day of noncompliance.

The Department of Justice has further required, as a term of each Consent Decree, that Conoco and Vista be jointly and severally liable for, inter alia, payment of any stipulated penalties. However, the Decrees permit Conoco and Vista to agree between themselves as to who shall undertake a specific task. See Section II Bound Parties in each Decree.

CCR 000021039

Accordingly, Conoco and Vista agree that payment of any stipulated penalties which may become due pursuant to the terms of the Decrees entered in settlement of the cases captioned above, will be paid as follows:

1. Liability for stipulated penalties for failure to submit a compliance plan as described in or in the time required by Section III of the respective Consent Decree will be borne equally by Conoco and Vista. Within twenty-five (25) days of the event causing stipulated penalties to be due, Conoco will mail to Vista a check for one-half of the amount of stipulated penalties due, made payable to Vista. Within thirty (30) days of the event causing stipulated penalties to be due, Vista will mail to the appropriate office of the United States Attorney, a check for the full amount of stipulated penalties due, together with a transmittal letter as required in Section IV of each Consent Decree. Such transmittal letter is to be signed by counsel for Conoco.

Provided, however, that each party to this Agreement reserves its right to seek recoupment, from the other party, its share of any stipulated penalty paid if the delay or failure which caused a stipulated penalty to be due is primarily attributable to the other party.

2. Liability for stipulated penalties for failure to take or complete tasks according to the timetable outlined in the compliance plan described in Section III of the respective Consent Decrees will be borne solely by Vista. Within thirty (30) days of the event causing stipulated penalties to be due, Vista will mail a certified check to the appropriate office of the United States Attorney made payable to the Treasurer of the United States, together with a transmittal letter as required in Section IV of each Consent Decree. Provided, however, that Vista reserves its right to seek recoupment from Conoco any stipulated penalty paid to the extent the delay or failure which caused a stipulated penalty to be due relates primarily to Conoco's failure to follow the procedures enumerated below.

For any of the tasks identified in any compliance plan submitted pursuant to Section III of each Consent Decree for payment of which Conoco is liable in accordance with the

Du Pont-Conoco/Vista Asset Agreement dated July 20, 1984,

Conoco and Vista agree to use the procedures enumerated below:

1. No later than thirty (30) days prior to submission of the compliance plans, Conoco will receive from Vista a budget quality process design and cost estimate for each project included in the compliance plan. The cost estimate will exclude contingencies. Any disagreements between Vista and Conoco concerning the design or associated cost estimates will be resolved prior to joint submission of the compliance plans.
2. Once the compliance plans are approved by EPA and DOJ, Vista will prepare the definitive process design and cost estimate according to the timetable in the approved compliance plan. An Authorization for Expenditure (AFE) will be prepared and approved by Vista and transmitted to Conoco with copies of the definitive process designs and cost estimates attached. Each AFE total will reflect the total capital projects identified in an individual plant compliance plan. The cost estimate will include 24% of direct cost for total Engineering plus 15% of Engineering to cover overhead. The cost estimate will include contingencies. Fifteen (15) days after receipt of the AFE and support documents, Conoco will complete its review of the process design and cost estimate provided, however, that if additional information is necessary to evaluate an AFE or to resolve differences between Conoco and Vista, Conoco will have an additional 15 days in which to complete its review of the AFE.
3. Vista will complete the capital project according to the time schedule included in the compliance plan.
4. Within thirty (30) days after Conoco has completed the review of the AFE, a progress payment invoice will be sent to Conoco from Vista and every thirty (30) days thereafter until the AFE total has been paid. Invoices are due upon receipt.
5. The amount of the monthly progress payment is based on the following formula:

AFE total or budget quality cost estimate total (plus 15% of the estimate total), whichever is less, per plant divided by the total number of months of the longest term project identified in the AFE for each plant.

CCR 000021041

The progress payments will be in equal installments invoiced on the thirty (30) day cycle until the total amount identified under the above paragraph is paid.

6. During the course of project implementation Vista will consult with Conoco in the event Vista identifies changes that could affect project cost in excess of the total budget quality estimate plus 15%.

Conoco and Vista recognize that after completion of the last project addressed in an AFE, a review of expenditures will be necessary. To that end, Vista will make available for inspection sufficient documentation to permit Conoco to verify the expenditures which have been or will be reimbursed by Conoco.

Upon completion of the review, Conoco will determine whether the amounts expended by Vista were warranted under the AFE. If they were so warranted, Conoco or Vista will invoice the other for monies over or under the approved AFE amount respectively. Invoice payment will be due thirty (30) days after receipt of the invoice.

In the case of any disagreement with a request for reimbursement Conoco and Vista will meet to determine the split of responsibilities for these expenditures. Upon resolve, the companies will follow the invoice procedures described in the preceding paragraph.

CCR 000021042

FOR CONOCO INC.

FOR VISTA CHEMICAL COMPANY AND
VISTA POLYMERS INC.

Estela S. Wackerbarth

William L. McClain
Counsel for Vista Chemical Co.
& Vista Polymers Inc.

Donald D. Eoff
Director,
Contract Coordination

CCR 000021043

WLM07/010

Discussion w/ GJF:

BUDGET & DESIGN & ESTIMATE:

Will need to confirm estimate with JZ

Couple of estimates.

WPS

To: Distribution

From: S. C. Racca
Date: August 1, 1985

Interoffice
Communication

Subject: Consent Decree "Emission Control Plan"
Administrative Measures

VISTA

As a result of the USA vs. Conoco Consent Decree recently entered into by Vista, several "Administrative Measures" intended to reduce/eliminate the emissions of vinyl chloride due to relief valve releases and incinerator bypasses must be committed to by the VCM Plant. These measures include formal Operator Training programs, formal Operating procedures, a formal Preventive Maintenance program, a formal Notification of Status program, and Miscellaneous Inspection Programs. By formal it is meant an in-writing commitment concerning the scope of each program, the frequency for accomplishment of all identified action steps, and written documentation of completion of each action step.

As a result of discussions during the July 11 and previous meetings concerning identified "Administrative Measures", the following division of duties/responsibilities is established:

- 1) Operations Department (MLA) responsible for development and implementation of:
 - a) Operator Training Programs
 - b) Operating Procedures
 - c) Miscellaneous Inspection Programs
- 2) Mechanical Department (JRH) responsible for development and implementation of:
 - a) Preventive Maintenance Programs
 - b) Miscellaneous Inspection Programs
- 3) Process Engineering Department (SCR) responsible for development and implementation of:
 - a) Notification of Status Program

Attached are specific measures which must be included in each of these programs. They are broken down into

TABLE I. ADMINISTRATIVE MEASURES TAKEN AND TO BE
TAKEN BY THE OPERATIONS DEPARTMENT

I. Measures Taken

A. Operator Training

- 1) Annual relief valve release avoidance training.
- 2) Special counseling of operators following any incident which did lead, or could have led, to a relief valve discharge.
- 3) Specialized training program concerning the properties of liquid-full systems with specific emphasis on how those properties relate to overpressuring caused by failure to properly align block valves while putting a flake caustic dryer on line and while switching check tanks.
- 4) Each operator undergoes comprehensive training and testing while progressing from one position to another.

B. Operating Procedures

- 1) Modification of start-up sequence procedure for removing nitrogen from the HCl column following an inventory control shutdown.
- 2) Development of furnace clearing procedure for venting nitrogen prior to start-up.
- 3) General procedure for removal of nitrogen in process equipment before, or during, start-up.
- 4) Establishment of specific procedures to limit impurities in the ethylene used as reactor feedstock by the ethylene feedstock supplier at the request of the VCM Plant.

C. Miscellaneous Inspections

- 1) Routine monitoring of the pressure drop across the flake caustic dryers and appropriate corrective action when increased pressure drop is observed.
- 2) Addition of caustic decanter high pressure alarm switch to the "blind list" (used to ensure blinds are removed prior to start-up following turnarounds) in July, 1982.
- 3) Pre-startup inspections prior to putting new equipment in service.
- 4) Bi-weekly inspections of tell-tale pressure gauges on relief valve rupture disc assemblies.

D. Miscellaneous Measures

- 1) Institution of formal incinerator bypass investigations by operations supervisory personnel. These investigations include a detailed report of each bypass incident and a written corrective action plan.

II. Measures to Be Taken

A. Operator Training

- 1) Training program related to prevention of incinerator bypasses will be formalized. It will include discussions of past bypasses, their cause, and appropriate preventive measures.

B. Operating Procedure

- 1) Procedures for minimizing the potential for incinerator bypasses due to routine and emergency/non-routine vents will be reviewed and updated.

CCR 000021048

C. Miscellaneous Measures

- 1) The chlorine supplier will be formally notified of the impact of off-specification chlorine on incinerator operation and advance warning by the supplier will be given to Vista pursuant to the supply contract.

CCR 000021049

TABLE II. ADMINISTRATIVE MEASURES TAKEN AND TO BE TAKEN BY THE MECHANICAL DEPARTMENT

I. Measures Taken

A. Preventive Maintenance

- 1) Conduct periodic check of relief valves during turnarounds by an outside contractor. This check is to ensure that all relief valves operate at their rated pressure and that they are in good mechanical condition.
- 2) Calibration of instrumentation to ensure that it is functioning properly and will alert of possible overpressure conditions.

B. Miscellaneous Inspections

- 1) All in-plant maintenance on relief valves is overseen by a certified relief valve inspector employed by the plant.
- 2) Following construction and installation of new equipment and/or replacement of existing equipment, the maintenance department's check-out procedure includes visual inspection along with hydrotesting and/or weld X-rays.

C. Miscellaneous Measures

- 1) Pre-torqued rupture disc assemblies are used to prevent damage to the disc during installation

II. Measures to be Taken

A. Preventive Maintenance

- 1) The existing plant-wide routine maintenance program will be reviewed and updated to specifically include instrument and mechanical items related to incinerator shutdown prevention.

TABLE III. ADMINISTRATIVE MEASURES TAKEN AND TO BE
TAKEN BY THE PROCESS ENGINEERING DEPT.

I. Measures Taken

A. Miscellaneous Measures

- 1) Warning signs have been installed near the start buttons of five pumps in vinyl chloride service. These signs warn operators to check valve line-up before starting the pump to prevent a possible VCM relief valve discharge.

II. Measures to be Taken

A. Notification of Status

- 1) Institute a formal Notification of Status program to ensure that administrative measures identified herein are conducted in a timely manner.

CCR 000021051

To _____

From _____

Calculation Sheet

VISTA

July 24, 1985

Consent Decree MTO

VISTA PLANT CONACO VISTA HOUSTON
RAC, RB, MGH, WPS, SCR / JHN, CSW, GJF / WLM, TOG, JCL

80 hr for new operators
40 hr for upgrades

II. B. Items — Technical Merit

JHN Agree with all except Auto Tie-Breaker
2.c&d. — ~~that~~ ~~for~~ JHN & GJF

- 1) Addressing power in consent decree is common.
- 2) Incentive bypassed

Put all projects except tie-breaker
Pay for all
Pay for none of projects already done.

~~Accept~~

→ Budget Quality Estimate &
Design for

Keep as project to do

Converge copy 1/2 of tie-breaker project.

WEAVE ATTACHMENT A 1, 2
KEEP ATTACHMENT B ATTACHED

CCR 000021052

Made By _____

Date _____

Page _____ of _____

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

Go thro projects in first two hours

- ① BEST ENG JUDGMENT - GOOD LOW COST PLAN
 - ② ADDRESSES ARE IN SEC 114
 - ③ GOOD BATTLE BETWEEN CAPITAL/ADMIN
 - ④
 - ⑤ PREVIOUSLY GIVEN UP QUESTIONABLE PROJECTS
 - WE ⑥ EPA WILL COME DOWN & ASK FOR BIGGER (#) PROJECTS
WANT EVERYTHING
- MAKE THEM LIST PROJECTS THEY WANT TO
HOLD OUT

① INCLIN POWER

- ① INCLIN POWER
- ② INSTRUMENT POWER
- ③ PARALLEL INCLIN

14
720
146
660

PREVIOUSLY

DON'T VOLUNTEER

- I TECHNICAL REVIEW
- II. BEGIN
- III. REASONS FOR KEEPING
- IV. MAKE THEM TELL US THEIR PLAN
- V. WHERE IS VISTA IF CORRECT
- VI.

CCR 000021053

Made By _____

Date _____

Page _____ of _____

V3-20G-S

Job No. _____

Title _____

To _____

From _____

Calculation Sheet

VISTA

CONSENT DECREE MEETING

7/24/85

7³⁰ AM PRE MEETING

RAC, RB, WPS, SCR, MWS / PFF, ERM, RWC / TAG, WLM, JCL

I. WEAVE ADMINISTRATIVE MEASURES AND PROJECTS INTO THE PLAN - SUGGESTION FROM MARK MTC

II. B. Physical Measures to be Taken

PRIORITY	ITEM		Elimination
1	1, 2, 5	- Combustion air flow -	15
2	3	- Reduced to #7M	
RENEW	6	- #4 will eliminate this - \$125M	
21	7	- Auto cutback for R-101 - \$8M	2
1	8	- Only way to prevent - \$28M	2
2 ?	9	- Tank Farm Vent Eductor - \$73.5M	5
1	10	- Auto Tie-breaker	5
1	11	- HCl Column Revisions - \$97M	6
#1	12	- \$500	
1	13	- \$5000	3 1.5
1	14	- \$6500	

\$790 M
w/o 3/6/9 → \$586 M

\$691 M
\$485 M

I. B. MEASURES TAKEN

1.		
2 & 3.	\$25 M	4, 6, 7, 8 - MONEY SPENT AFTER CLOSING
4.		
5		
6		1, 2, 3, 5 - CAN GIVE IT
7		
8		

CCR 000021054

Made By _____

Date _____

Page _____ of _____

Job No. _____

Title _____

CONOCO/VISTA VCM PLANT CONSENT DECREE MEETING

July 24, 1985

OBJECTIVE

- DETERMINE MEASURES TO BE INCLUDED IN "EMISSION CONTROL PLAN"

AGENDA

- REVIEW ATTACHMENT A MEASURES AND ESTABLISH STATUS OF EACH

I. MEASURES TAKEN

A. Administrative Measures

1. Formal Incinerator Bypass Investigations
2. Ethylene Feedstock Supplier Procedures

B. Physical Measures

PRE-CLOSING

STARTED BEFORE
CLOSING, FINISHED
AFTER

POST CLOSING

LOW CAPITAL
POST CLOSING

POST CLOSING

1. Vinyl Flake Caustic Dryer (S-207A/B) Restriction Orifice
2. Dry and Wet Vent Header Pressure Control Modifications
3. Dry and Wet Vent Header Flow Indication
4. Tank Farm Vent Blower Anti-surge Instrumentation
5. Combustion Air Blower Mechanical Stops
6. Dry and Wet Vent Header High Pressure and Direct Chlorination Reactor High Flow Alarms in Main Control Room
7. Combustion Air Blower Steam Turbine Driver Lube Oil Filter Modifications
8. Incinerator Instrument Power Supply Low Voltage Alarms

II. MEASURES TO BE TAKEN

A. Administrative Measures

1. Preventive Maintenance Program
2. Operating Procedures
3. Operator Training
4. Notification of Status Program
5. Chlorine Feedstock Supplier Advance Warning

CCR 000021055

B. Physical Measures

1. In-situ Oxygen Analyzers
2. Combustion Air Flow Control
 - a. Vent Header Flow Feedforward (or Ratio)
 - b. Firebox Oxygen Concentration Feedback
 - c. Liquid Flow Feedforward (or Ratio)
 - d. Natural Gas Flow Feedforward (or Ratio)
3. Automatic Start-up of Standby Combustion Air Blower
4. New or Modified Burner Assembly
5. Flame Temperature Control Modifications
6. Separate Natural Gas/Combustion Air (Premixed) Burner
- RWC 7. Direct Chlorination Reactor Vent Flow Control
8. Flame Arrestor Level Control Revisions
9. Tank Farm Vent Eductor
- RWC 10. Automatic Tie-Breaker
- ERM 11. HCl Column Control Modifications
12. Resize Vinyl Flake Caustic Dryer (S-207A/B) Restriction Orifice
13. Light Ends Column Accumulator Flow Indication and Alarm
14. Dry and Wet Vent Header High Flow Alarms

- REVIEW INCINERATOR BYPASS INFORMATION REQUEST (" § 114") RESPONSE.

CCR 000021056

TABLE I

Incinerator Bypass Nature and Cause Summary for the Period From

May 1, 1983 through March 13, 1985

<u>Nature and Cause Category</u>	<u>Total Number of Bypasses Per Category</u>			
	<u>Partial Bypass</u>	<u>Automatic Shutdown</u>		
		<u>Flame Failure</u>	<u>Low Combustion Air Flow</u>	<u>Other</u>
I. Excessive Vent Flow from Main Plant				
A. Routine Vents				
1. Vinyl Product Caustic Dryer (1)	1			
2. Vinyl Vent Recovery Unit (2)	3	1		1
3. Oxychlorination Purge Gas Dryer (3)	1			
4. Flake Caustic Dryer (4)	1			1
5. Caustic Melt Blowdown Drum (5)				1
6. EDC-Caustic Decanter T-102 (6)	1			
7. Direct Chlorination Reactor Startup (7)	1			
8. Miscellaneous Equipment Clearing for Maintenance (8)	2	4	1	3
9. Main Plant Startup and Inventory (9)	2	1		
B. Non-routine or Emergency Vents				
1. Light Ends Storage Tank (10)	1			
2. Vinyl Column (11)	5	3		2
3. Direct Chlorination Reactor				
a. Impurities in Reactor Feedstock (12)				
1) Ethylene	4	3		
2) Chlorine	5			2
4. HCl Column (24)	1			
C. Unknown Source	3	3		

CCR 000021057

<u>Nature and Cause Category</u>	<u>Total Number of Bypasses Per Category</u>			
	<u>Partial Bypass</u>	<u>Automatic Shutdown</u>		
		<u>Flame Failure</u>	<u>Low Combustion Air Flow</u>	<u>Other</u>
II. Instrument Malfunction				
A. Combustion Air Control (13)			1	1
B. Instrument Panel Power Supply (14)				1
C. Combustion Air Automatic Shutoff (15)			1	
D. Flame Arrestor Level Control (16)	1			1
E. Flame Scanner (17)		1		
F. Valve Positioner (18)		1		
G. HCl Absorber Quench Vapor Inlet Temperature (19)				1
III. Mechanical Malfunction				
A. Incinerator Burner	4			1
B. Tank Farm Vent Blower	4 (20)			
C. Incinerator Firebox				1
IV. Steam Outage			1	1
V. Electrical Power Outage	2 (21)			2
VI. Liquid Byproduct Feed Interruption		1		
VII. Operator Inattention	1			

CCR 000021058

<u>Nature and Cause Category</u>	<u>Total Number of Bypasses Per Category</u>			
	<u>Partial Bypass</u>	<u>Automatic Shutdown</u>		
		<u>Flame Failure</u>	<u>Low Combustion Air Flow</u>	<u>Other</u>
VIII. Miscellaneous				
A. Tripout of Steam Turbine Driving Combustion Air Blower (22)			2	
B. Cause Unknown (23)			1	

CCR 000021059

Notes for Table I

- (1) The vinyl product caustic dryer is used to remove moisture from product being transferred from storage to railcars or ship.
- (2) The vinyl vent recovery unit recovers vinyl product from railcar and ship vents by condensing vinyl vapors. Once condensed vinyl is recovered the remainder of the vent stream is incinerated.
- (3) The oxychlorination purge gas dryer removes moisture from the oxychlorination purge stream before the stream enters the direct chlorination reactor.
- (4) The flake caustic dryer is used to remove moisture from vinyl product being transferred from the processing unit to storage.
- (5) Caustic melt from the flake caustic dryers is routinely transferred to the caustic melt blowdown drum where entrained and/or dissolved vinyl is weathered off to the incinerator.
- (6) Crude ethylene dichloride is washed with caustic and then phase separated in EDC-caustic decanter T-102.
- (7) Ethylene dichloride is produced by direct chlorination of ethylene in the direct chlorination reactor.
- (8) During turnarounds and maintenance shutdowns equipment must be cleared with nitrogen prior to opening for entry.
- (9) During main plant startup equipment must be purged of all oxygen and then inventoried.
- (10) Pressure in the Light Ends Storage Tank is normally automatically controlled by venting excess pressure to the incinerators. Failure of the automatic controller and subsequent overpressure of the tank necessitated emergency venting.
- (11) The bottoms of the HCl Column are fed to the Vinyl Column where vinyl chloride product and recycle ethylene dichloride are separated. Occasionally the HCl column goes "sour" which results in HCl vapors in the top of the Vinyl Column, necessitating emergency venting of the Vinyl Column condensers.

CCR 000021060

- (12) Impurities in the Direct Chlorination Reactor feedstock and/or feedstock supplier operational upsets result in abnormally high vent rates.
- (13) Incinerator combustion air control is used to maintain sufficient excess oxygen to ensure complete combustion.
- (14) The incinerator instrument panel power supply provides regulated power to all control and indication instrumentation.
- (15) When an automatic incinerator shutdown occurs a safety shutoff valve on the combustion air automatically closes preventing addition of air to firebox.
- (16) Liquid seal flame arrestors are used to prevent flash back from the incinerator firebox into the exhaust gas headers.
- (17) Incinerator firebox flame scanners are used to detect the firebox flame.
- (18) Valve positioners are used on the exhaust gas header pressure control valves to ensure correct valve position for a given controller output signal.
- (19) HCl absorber quench vapor inlet temperature is monitored and will initiate an automatic incinerator shutdown should safe operating temperature be exceeded.
- (20) Mechanical malfunction of the tank farm vent blower results in bypassing of the tank farm vent only, not the direct chlorination and wet vent headers.
- (21) The incinerator did not shutdown because its power was not interrupted for more than 3 seconds, but power to the tank farm vent blower and to the main plant was interrupted on 2-7-84 and 6-1-84, respectively.
- (22) Incinerator combustion air is supplied by forced draft fans driven by either steam turbine or electric motor. Turbine tripouts were caused by low lube oil pressure resulting from plugged filter elements.
- (23) The exact cause of the incinerator bypass that occurred on 12-31-84 at 0430 is unknown. Prior to its occurrence the vent header pressure decreased followed by a flame failure indication.

- (24) A mixture of HCl, vinyl chloride, and ethylene dichloride is fed to the HCl Column where the HCl is separated from the vinyl chloride and ethylene dichloride.

CCR 000021062

Table II

Incinerator Bypasses
Reported During the Period from
May 1, 1983 through March 13, 1985

Date	Time(3)	Nature & Cause Category	Partial Bypass	Automatic Shutdown			Vent Header(s) Bypassed		
				Flame Failure	Low Combustion Air Flow	Other	Wet	Dry	Tank Farm
05-13-83	0900-0945	I.A.8.				x	x	x	x
05-14-83	2200-2204	I.B.3.a.2)	x				x	x	x
05-15-83	0010-0015	I.B.3.a.2)	x					x	
05-21-83	1645-1650	I.C.	x				x		x
05-25-83	0700-0730	I.A.8.				x	x	x	x
06-06-83	1800-1820	I.B.3.a.2)	x					x	
06-10-83	1000-1005	I.B.3.a.2)				x	x	x	x
06-10-83	1555-1600	I.A.8.				x	x	x	x
06-18-83	1100 -								
06-21-83	1400 (2)	III.B.	x						x
06-22-83	2030-2200	I.A.4.				x	x	x	x
07-08-83	0100-1000(2)	III.B.	x						x
08-01-83	2045-2130	I.A.8.			x		x	x	x
08-04-83	1015-1030	III.A.	x				x	x	x
08-10-83	1700-1715	I.A.5.				x	x	x	x
08-24-83	1400-1415	I.B.3.a.2)				x	x	x	x
08-28-83	0430-0440	I.B.2.				x	x	x	x
09-02-83	1530-1540	I.A.2.				x	x	x	x
10-13-83	1715-1717(1)	I.B.3.a.1)	x					x	
11-01-83	2230-2235	I.A.7.	x				x	x	x
11-05-83	1100-1105	II.A.				x	x	x	x
11-14-83	1545-1625	I.B.3.a.1)		x			x	x	x
11-15-83	0800-0805	II.B.				x	x	x	x
11-30-83	0145-0215	I.B.2.		x			x	x	x
12-15-83	0415-0425	II.C.			x		x	x	x
12-21-83	0400-0410	VIII.A.			x		x	x	x
12-23-83	0535-0550	VIII.A.			x		x	x	x
12-23-83	0630-0730	II.D.				x	x	x	x
12-25-83	1300-1530	IV.			x		x	x	x
01-12-84	2000-2005	I.B.2.	x				x	x	x
01-26-84	1030-1032	I.C.		x			x	x	x
01-27-84	1820-1830	I.C.		x			x	x	x
01-30-84	1000-1002	I.A.1.	x					x	
02-05-84	0900-1115	V.				x	x	x	x
02-05-84	2010-								
02-06-84	0100	III.A.				x	x	x	x
02-07-84	1630-1705	V.	x						x
02-09-84	(1,2) 1900-1905	I.A.9.	x				x		x

CCR 000021063

Date	Time(3)	Nature & Cause Category	Partial Bypass	Automatic Shutdown			Vent Header(s) Bypassed		
				Flame Failure	Low Combustion Air Flow	Other	Wet	Dry	Tank Farm
02-10-84	0815-0940 (5 mins.)	I.C.	x					x	
02-11-84	1251-1545	I.B.4.	x				x	x	x
02-13-84	0225-0300	I.B.2.	x				x	x	x
02-13-84	2315-2325	IV.				x	x	x	x
02-14-84	0740-1215	III.C.				x	x	x	x
02-14-84	1747-1811	I.B.3.a.1)	x				x	x	x
02-17-84	0040-0043	I.A.8.	x				x		x
02-19-84	0030-0128	I.B.2.		x			x	x	x
02-22-84	1730-1732	I.A.2.	x					x	
03-08-84	1830-1832	I.C.	x					x	
03-09-84	1600-1610	I.A.8.		x			x	x	x
03-30-84	1110-1115	I.B.2.		x			x	x	x
04-02-84	2200-2202	I.B.1.	x				x	x	x
04-05-84	1030-1045	I.A.9.	x					x	
04-06-84	1430-2232 (23 mins.)	III.A	x				x	x	x
04-07-84	1410-1415	III.A.	x				x		x
04-11-84	1905-1912	I.A.8.	x					x	
04-22-84	0300-0302	I.B.3.a.2)	x					x	
04-25-84	1430-1455	I.B.3.a.2)	x					x	
05-07-84	2000-								
05-11-84	1515(2)	III.B.	x						x
05-11-84	0720-0745	I.B.3.a.1)	x				x	x	x
05-28-84	0750-0754	II.F.		x			x	x	x
05-30-84	0820-0821	I.A.3.	x					x	
05-31-84	0930-1053 (5 mins.)	V.				x	x	x	x
06-01-84	1310-1311	V.	x				x	x	x
06-01-84	1845-1925	I.B.2.	x				x	x	x
06-20-84	1250-1300	I.C.		x			x	x	x
06-27-84	1650-1700	II.E.		x			x	x	x
06-28-84	1200-1215	I.B.2.				x	x	x	x
06-28-84	1630-1650	I.B.2.	x				x	x	x
06-28-84	1845-1925	I.B.2.	x				x	x	x
07-06-84	1000-1058	I.A.2.	x					x	
07-19-84	1530-1622	I.A.8.		x			x	x	x
07-19-84	1625-1630	I.A.8.		x			x	x	x
07-20-84	0200-0205(1)	I.A.8.		x			x	x	x
07-22-84	1350-1400(1)	I.A.9.		x			x	x	x
09-04-84	0415-0730(2)	III.B.	x						x
09-05-84	1210-1255	VI.		x			x	x	x
09-10-84	1100 (5 secs.)	I.A.2.	x				x		x
09-20-84	1300-1301	I.A.4.	x				x		x
09-21-84	1630-1645	III.A.	x				x	x	x

Date	Time(3)	Nature & Cause Category	Partial Bypass	Automatic Shutdown			Vent Header(s) Bypassed		
				Flame Failure	Combustion Air Flow	Other	Wet	Dry	Tank Farm
09-28-84	1550 (2 secs.)(1)	VII.	x					x	
10-08-84	1510-1520	I.A.2.		x			x	x	x
10-25-84	1535-1546	II.A.			x		x	x	x
12-03-84	1455 (5 secs.)(1)	I.A.6.	x				x		x
12-12-84	0905-0912	II.G.				x	x	x	x
12-13-84	0250-0340	I.B.3.a.1)		x			x		x
12-14-84	0115-0135	I.B.3.a.1)	x					x	
12-24-84	0735-0736	II.D.	x				x	x	x
12-31-84	0430-0440	VIII.B.		x			x	x	x
01-21-85	1800-1802	I.B.3.a.1.)		x			x	x	x

Notes:

- (1) Three hour time-weighted average is estimated to be less than 10 ppm.
- (2) Only the Tank Farm Vent bypassed the incinerator; therefore, the magnitude of the vent flow and vinyl chloride concentration were small. See Bypass Mechanism for the Tank Farm Vent attached.
- (3) When the duration of the bypass spanned two or more consecutive days, two lines are used where the starting date and time are given on the first line and the ending date and time on the next. When the bypass was intermittent, the time period over which the bypass occurred is given followed by the total time during which the incinerator was bypassed in parenthesis, i.e., 1815-0940 (5 min.). When the duration of the bypass was less than 1 minute, the starting time is given followed by the duration in parenthesis, i.e., 1455 (5 secs.).

CCR 000021065

Table III

Vent Header Affected Equipment Sources

I. Wet Vent Header

A. Continuous Sources

1. Light Ends Column Overhead Accumulator (S-102)
- collects overhead product from the Light Ends Column
2. EDC-Caustic Decanter (T-102) - crude ethylene dichloride (EDC) and caustic are phase separated in this vessel
3. EDC-Acid Decanter (T-103A) - crude EDC and acid are phase separated in this vessel
4. Steam Stripper Aqueous Holding Tank (T-110) - contains feed for the Steam Stripper
5. Tank Farm Vent System - collects vents from storage tanks
6. Light Ends Storage Tank (T-402) - stores overhead product from the Light Ends Column
7. Natural Gas Dryers (S-149 A/B) - remove moisture from natural gas entering the Direct Chlorination Reactor
8. CPS Collection Drum (T-512) - receives and phase separates (organic and aqueous phases) liquid from the CPS Underground Collection Drum (T-514)
9. CPS Underground Collection Drum (T-514) - collects and adjusts the pH of drains from the Closed Process Sewer (CPS) system

B. Intermittent Sources

1. Flake Caustic Dryers (S-207 A/B) - remove moisture from product being transferred to storage
2. Vinyl Column Condensers (H-207 A/B) - condense overhead product from the Vinyl Column

3. Vinyl Product Caustic Dryer (S-401) - removes moisture from product being transferred from storage to railcar or ship
4. Oxychlorination Purge Gas Dryers (S-322 A/B) - remove moisture from oxychlorination purge gas before the gas enters the Direct Chlorination Reactor
5. Caustic Melt Blowdown Drum (S-108) - collects caustic melt from the Flake Caustic Dryers

II. Dry (or Direct Chlorination) Vent Header

A. Continuous Sources

1. Direct Chlorination Reactor Crude EDC Tank (T-101) - receives crude EDC product from the Direct Chlorination Reactor
2. Heavy Ends Column Overhead Accumulator (S-103) - collects overhead product from the Heavy Ends Column
3. EDC Tar Still Column (C-104) - distillation column for removing EDC from heavy ends byproduct
4. VCM Tar Still Column (C-204) - distillation column for removing EDC from heavy ends byproduct
5. MeCl Unit CO₂ Stripper (W-112) - Removes CO₂ and other noncondensables from MeCl product²
6. MeCl Chiller (X-7) - Recovers MeCl product from the desuperheater vent

B. Intermittent Source

1. Vinyl Vent Recovery Unit - recovers vinyl from railcar and ship vents during loading

III. Tank Farm Vent Header

A. Continuous Sources

1. Tars Storage Tanks (T-405 & T-452) - store heavy ends byproduct

2. Slops Tank (T-460) - stores off-specification intermediate products
3. Pure EDC Storage Tank (T-451) - stores pure ethylene dichloride product
4. Dry Crude EDC Storage Tank (T-450) - stores crude EDC from the Direct Chlorination Reactor Crude EDC Tank and/or recycle EDC from the bottom of the Vinyl Column
5. Wet EDC Storage Tank (T-453) - stores wet EDC from the Wash System

CCR 000021068