

**VINYL II CONSOLIDATED AUDIT
AGENDA FOR
PLANT PRESENTATION/DISCUSSION/TOUR**

**7:30 - 11:30
TUESDAY, SEPTEMBER 10, 1991**

ORGANIZATION & PLOT PLAN	10 MINUTES
PROCESS & UNIT OPERATIONS (Process Description, Flow Sheets, Chemistry Including Side Reactions, Instrumentation and Critical Instruments)	90 MINUTES
* FURNACE AREA	25 MINUTES
* DISTILLATION	20 MINUTES
* OXY	25 MINUTES
* ECOLOGY	20 MINUTES
REVIEW OF PLANT/DEPARTMENT POLICIES/PROCEDURES AND COMMUNICATIONS	20 MINUTES
REVIEW TRAINING AND RETRAINING PROGRAMS	30 MINUTES
REVIEW OF SIGNIFICANT INCIDENTS/ MAJOR CONCERNS	30 MINUTES
* LOSSES	
* REACTIVE CHEMICALS	
* SAFETY	
* MEDICAL	
PLANT GENERAL TOUR	60 MINUTES
* PROJECTS	
* AREAS OF CONCERN	
* MAINTENANCE SHOPS	
* MOTOR CONTROL CENTERS	
* EATING FACILITIES	
* LABS	

CONFIDENTIAL

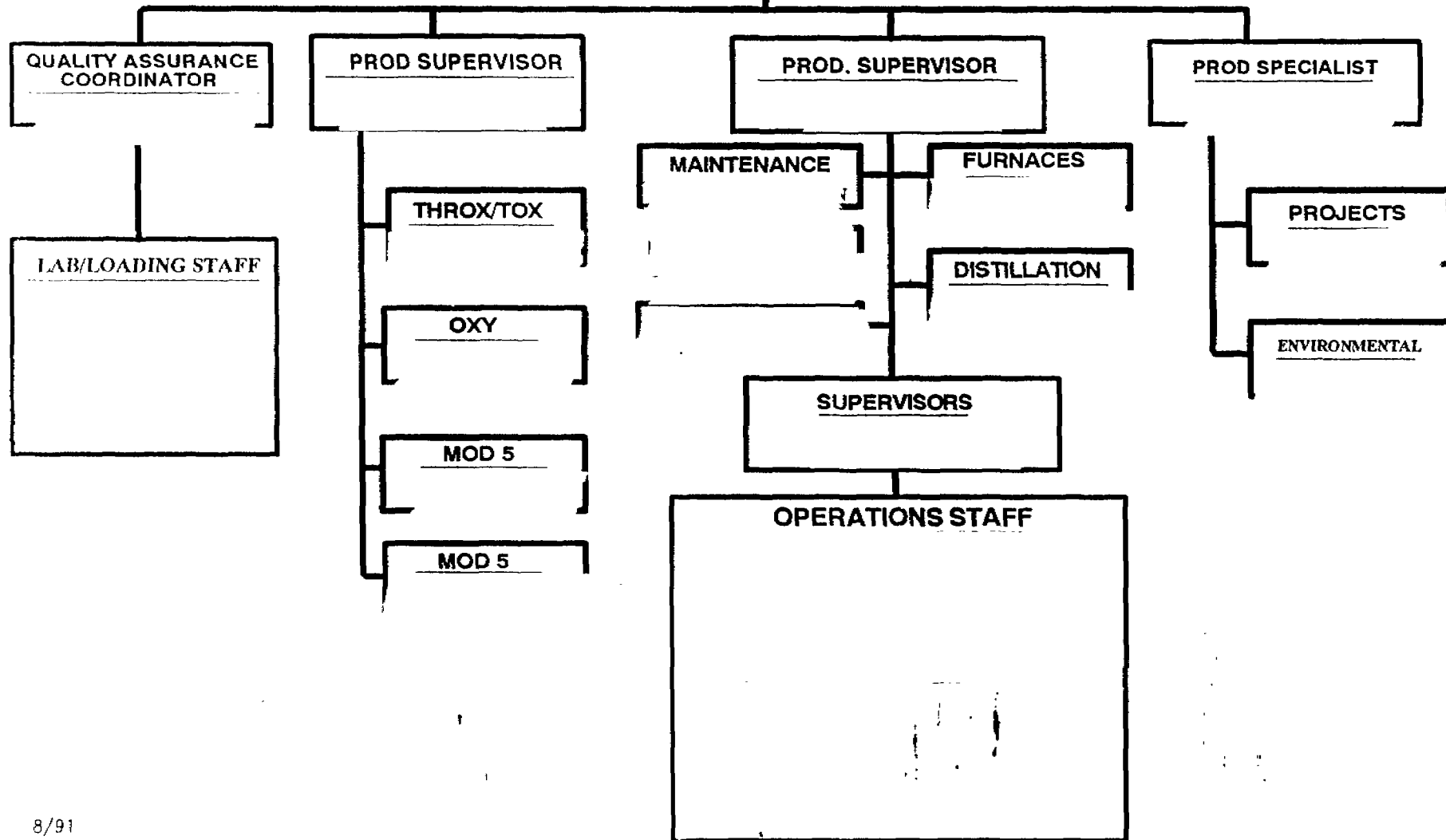
REDACTED

R&S149671

VINYL II

PLANT SUPERINTENDENT

SECRETARY

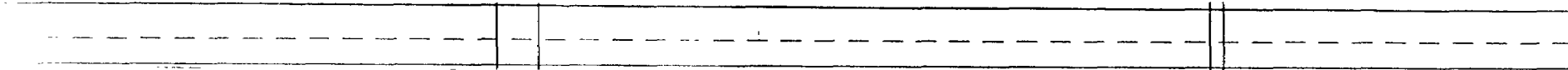
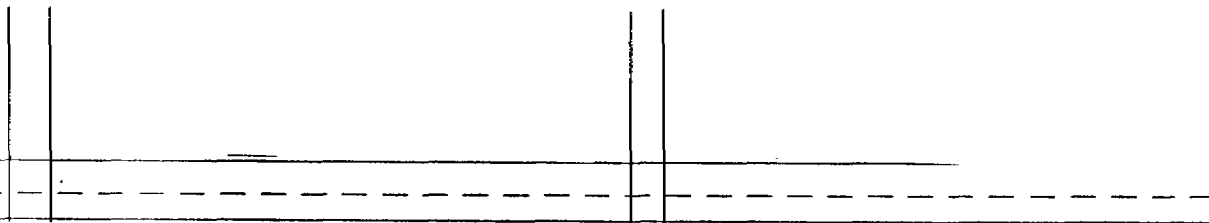
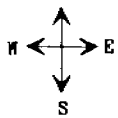


8/91

R&S149672

REDACTED

CONFIDENTIAL



PROCESS & UNIT OPERATIONS

CONFIDENTIAL

R&S149674

VINYL II

EDC CRACKING CHEMISTRY

Primary Reaction

Major Secondary Reactions

Minor Secondary Products

9/3/91

Dow Confidential

CONFIDENTIAL

REDACTED

R&S 149675

EDC CRACKING FURNACES

Good Job!
E. Hott

CONFIDENTIAL

REDACTED

R&S149676

DOWTHERM SYSTEM

CONFIDENTIAL

REDACTED

R&S 149677

CRITICAL INSTRUMENTS
FURNACE AREA

- 70%
CRIT. Instr.
Combustible
GAS

T585 HIGH LEVEL SWITCH	LSH-5846
T585 LEVEL TRANSMITTER	LT-5844
D101/E112 COMBUSTIBLE GAS MONITOR	CG-10
D101 and D102 CGM GROUND LEVEL	CG-11
D102 GROUND LEVEL CGM	CG-12
F110 CGM	CG-46
F101 AND F103 CGM	CG-48
D101 UPPER CGM	CG-49
D102 UPPER CGM	CG-50
D102 UPPER CGM	CG-51
D101 UPPER CGM	CG-52
F101 AND F102 CGM	CG-7
F104 CGM	CG-8
D111 AND D104 CGM	CG-9
P100 LOW DISCHARGE PRESSURE	PSL-1003
P100 LOW DISCHARGE PRESSURE (P100 SC)	PSL-1003
P263 PRESSURE CONTROL VALVE	CV-2747
T261 LEVEL	LT-2653

CONFIDENTIAL

R&S149678

CONFIDENTIAL

REDACTED

R&S149679

DISTILLATION

DOW CONFIDENTIAL

9/91

DISTILLATION

REACTIVE CHEMICALS

DOW CONFIDENTIAL

9/2/91

DISTILLATION CRITICAL INSTRUMENTS

- T-230 LEVEL (4months)
- CHLORINE TO C250 EV (1 year)
- VINYL SPHERE EBV'S (6 months)
- VINYL TO OCCIDENTAL EBV (6 months)
- COMBUSTIBLE GAS MONITORS
 - C250 (4 weeks)
 - K125 AND F110 (3 months)
 - D111 AND D104 (3 months)

CONFIDENTIAL

REDACTED

R&S149682

C-100/C-110/C-111

ORIGINAL.
REVISED: DJH 9/3/91

12/14/89

CONFIDENTIAL

REDACTED

R&S149683

C-120/C-140

ORIGINAL:
REVISED: DJH 9/3/91

12/14/89

CONFIDENTIAL

REDACTED

R&S149684

Critical Instrument
Reactive Chemical

C-250/C-255

DOW CONFIDENTIAL

ORIGINAL
REVISED: DJH 9/2/91

12/14/99

CONFIDENTIAL

REDACTED

R&S149685

Critical Instrument

C-260/C-270

ORIGINAL
REVISED DJH 9/3/91

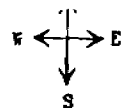
12/11/89

OXY/EDC AND ASSOCIATED EQUIPMENT RAINWATER STRIPPER REFRIGERATION SYSTEMS

- I. R-202 - Oxy I
- II. R-202 - Oxy II
- III. C-220 - 1 & 2 - Oxy water organics stripper
- IV. C-230 - Oxy EDC lights stripper
- V. C-235 - EDC Water wash system
- VI. C-240 - Rainwater organics stripper
- VII. Wet vent system
- VIII. K-320 - K330 - Propylene refrigeration compressors

CONFIDENTIAL

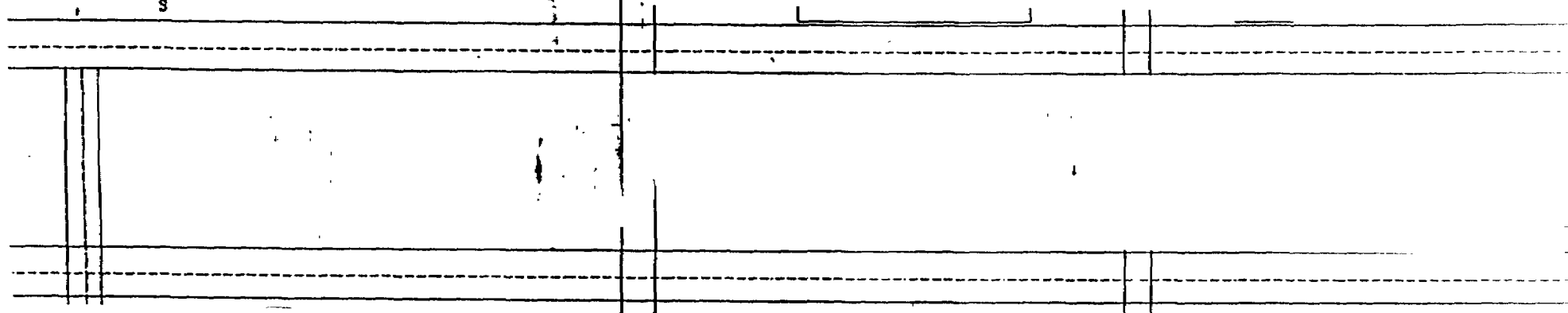
R&S 149686



R&S149687

REDACTED

CONFIDENTIAL

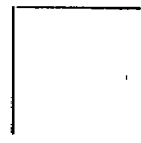


7000
5000
Rene

CONFIDENTIAL

REDACTED

R&S149688



|

|

—

CATALYST LOADING DETAIL

CONFIDENTIAL

REDACTED

R&S 149689

R-201 AND 202

MAIN REACTION

SECONDARY REACTIONS

CONFIDENTIAL

REDACTED

R&S149690

R201 & 202 (cont'd)

CONFIDENTIAL

REDACTED

R&S 149691

WASH COLUMNS C-203 & C-204 REACTIONS

CONFIDENTIAL

REDACTED

R&S 149692

CRITICAL INSTRUMENT LIST

OXY I AND II

	Frequency (Weeks)
Acoustic Emission Detectors R-201	26
Acoustic Emission Detectors R-202	26
CV-2245 K-215 Lube Oil Pressure C.V.	52
CV-2259 K-215 Bearing Oil Supply Pressure C.V.	52
FT-2231 K-215 Total Discharge Flow	52

CONFIDENTIAL

R&S 149693

OXY I INSTRUMENT STARTUP CHECKLIST

R201 OXYGEN FLOW	_____
R201 HCL FLOW	_____
R201 C2H4 FLOW	_____
R201 RECYCLE FLOW	_____
D201 LEVEL (50% GLYCOL)	_____
D201 PRESSURE	_____
R201 HEAD PRESSURE (50-150)	_____
R201 DIFFERENTIAL PRESSURE	_____
OXY SYSTEM PRESSURE	_____
C201 LEVEL (N2 PURGE)	_____
C203 LEVEL (N2 AND H2O PURGE)	_____
C211 LEVEL (FLUOROLUBE)	_____
D130 LEVEL H2O AND EDC	_____
I OXYGEN PRESSURE SHUTDOWN	_____
J2, HCL, C2H4 RECYCLE CONTROL VALVES	_____
J203 PH	_____
T222 PH IN AND OUT	_____
J220 EDC FILLED	_____
ANALYZERS	_____
TITRALYZERS (C201)	_____
ALL RECYCLE ANALYZERS (O2, C2H4, CO, CO2)	_____

CONFIDENTIAL

R8S149694

OXY I TRIP SHUTDOWN CHECK

INITIALS: _____

DATE: _____

NOTE: THE FOLLOWING OXY REACTOR TRIP CHECK SHOULD BE DONE PRIOR TO EVERY REACTOR STARTUP. CHECKS NO. 1 AND 2 SHOULD BE DONE WHILE THE RECYCLE COMPRESSOR IS SLOW-ROLLING AT 500 RPM. THE OTHER CHECKS CAN BE DONE WITH THE RECYCLE COMPRESSOR RUNNING ON MINIMUM GOVERNOR.

** ALL TESTS SHOULD BE DONE WITH ANTI-SURGE CONTROL VALVE WIDE OPEN. **

1. _____ SHUTDOWN: RUPTURE DISC FAILURE TRIP

EVENTS: C2H4, O2, RECYCLE EBV'S AND C2H4, O2, HCL RECYCLE CONTROL VALVES WILL CLOSE. E217 STEAM VALVE WILL CLOSE. K215 WILL TRIP. C211 VENT VALVE WILL OPEN.

PROCEDURE: ACTIVATE THE CONTROL ROOM-MOUNTED RUPTURE DISC FAILURE TRIP SWITCH HS-2078.

2. _____ SHUTDOWN: K215 TRIP

EVENTS: C2H4, O2, RECYCLE EBV'S AND C2H4, O2, HCL RECYCLE CONTROL VALVES WILL CLOSE. E217 STEAM VALVE WILL CLOSE. AUTO-MATIC N2 PURGE. K215 WILL TRIP.

PROCEDURE: ACTIVATE THE CONTROL ROOM-MOUNTED EMERGENCY TRIP SWITCH HS-2239A.

3. _____ SHUTDOWN: LOW RECYCLE FLOW
SETPOINT: 4 DIVISIONS OF RECYCLE FLOW

EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL RECYCLE CONTROL VALVES WILL CLOSE. E217 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.

PROCEDURE: GRADUALLY REDUCE THE RECYCLE FLOW BY MANUALLY CLOSING THE CONTROL VALVE WITH THE ANTI-SURGE CONTROL VALVE WIDE OPEN. THE REACTOR TRIP SHOULD ACTIVATE WHEN THE RECYCLE FLOW REACHES 4.5 UNITS. DO NOT BRING THE RECYCLE FLOW BELOW 4 UNITS.

4. _____ SHUTDOWN: LOW HCL FLOW
SETPOINT: 2 DIVISIONS OF HCL FLOW

EVENTS: C2H4, O2 EBV'S AND HCL, C2H4, O2 CONTROL VALVES WILL CLOSE. AUTOMATIC N2 PURGE.

PROCEDURE: SUPPLY AN EXTERNAL SIGNAL TO FSC-2064 EQUIVALENT TO 4 UNITS. GRADUALLY DECREASE THE SIGNAL TO FSL-2064. THE REACTOR SHOULD TRIP WHEN THE SIGNAL IS EQUIVALENT TO 2 UNITS.

CONFIDENTIAL

R&S149695

5. ___ SHUTDOWN: HIGH HEAD TEMPERATURE
- SETPOINT: 2 THERMOCOUPLES IN SAME THERMOWELL AT 250 DEG C
- EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL RECYCLE CONTROL VALVES WILL CLOSE. E217 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: LIFT ONE LEAD TO INPUT OF CONVERTER 2068A. LIFT ONE LEAD TO INPUT OF CONVERTER 2068B. THESE TEMPERATURE SWITCHES SHOULD HAVE BEEN PREVIOUSLY CALIBRATED: TSH-2068 A/B, 2069 A/B, 2070 A/B
6. ___ SHUTDOWN: HIGH INLET TEMPERATURE
- SETPOINT: INLET TEMPERATURE AT 250 DEG C
- EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL RECYCLE CONTROL VALVES WILL CLOSE. E217 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: LIFT ONE LEAD TO INPUT CONVERTER 2067A. LIFT ONE LEAD TO INPUT CONVERTER 2067B. THESE TEMPERATURE SWITCHES SHOULD HAVE BEEN PREVIOUSLY CALIBRATED: TSH-2067 A/B
- ___ SHUTDOWN: HIGH OXYGEN IN THE RECYCLE STREAM
- SETPOINT: IR AND MASS SPEC ANALYZERS OVER 4% OXYGEN
- EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL CONTROL VALVES WILL CLOSE. E217 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: RUN SIGNAL TO ANALYZER CONVERTER 2208 UPSCALE. GRADUALLY INCREASE THE SIGNAL TO THE ANALYZER CONVERTER 2214 UNTIL THE TRIP ACTIVATES. REPEAT ABOVE INTERCHANGING CONVERTERS.
8. ___ SHUTDOWN: EMERGENCY MANUAL REACTOR TRIP
- EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL CONTROL VALVES WILL CLOSE. E217 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: ACTIVATE CONTROL ROOM-MOUNTED REACTOR TRIP SWITCH HS-2089.
9. ___ SHUTDOWN: HIGH OXYGEN HEADER
- SETPOINT: 210 PSIG OXYGEN PRESSURE DOWNSTREAM OF OXYGEN REGULATORS
- EVENTS: C2H4, O2 EBV'S AND HCL, C2H4, O2 CONTROL VALVES WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: BREAK THE CONTACTS ON DSH-2048. THE PRESSURE SWITCH DSH-2048 SHOULD HAVE BEEN CALIBRATED PREVIOUSLY.

CONFIDENTIAL

R&S149696

10. ___ SHUTDOWN: LOW C2H4 FLOW
- SETPOINT: 2 DIVISIONS OF C2H4 FLOW
- EVENTS: C2H4, O2, EBV'S AND HCL, C2H4, O2 CONTROL VALVES
 WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: SUPPLY AN EXTERNAL SIGNAL TO FSC-2061 EQUIVALENT
 TO 4 UNITS. GRADUALLY DECREASE THE SIGNAL TO
 FSL-2061. THE REACTOR SHOULD TRIP WHEN THE SIGNAL
 IS EQUIVALENT TO 2 UNITS.
11. ___ SHUTDOWN: LOW OXYGEN FLOW
- SETPOINT: 2 DIVISIONS OF OXYGEN FLOW
- EVENTS: C2H4, O2 EBV'S AND HCL, C2H4, O2 CONTROL VALVES WILL
 CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: SUPPLY AN EXTERNAL SIGNAL TO FSC-2063 EQUIVALENT
 TO 4 UNITS. GRADUALLY DECREASE THE SIGNAL TO
 FSL-2063. THE REACTOR SHOULD TRIP WHEN THE
 SIGNAL IS EQUIVALENT TO 2 UNITS.
12. ___ PROCEDURE: BE SURE THAT ALL INSTRUMENTATION IS RECONNECTED
 AND IN WORKING ORDER BEFORE THE REACTOR IS STARTED
 UP. SUCH AS VENT EVV, FLOW AND PRESSURE TRANSMITTERS

CONFIDENTIAL

R&S149697

OXY II INSTRUMENT STARTUP CHECKLIST

● OXYGEN FLOW	_____
0202 HCL FLOW	_____
0202 C2H4 FLOW	_____
0202 RECYCLE FLOW	_____
0202 LEVEL (50% GLYCOL)	_____
0202 PRESSURE	_____
0202 HEAD PRESSURE (50-150)	_____
0202 DIFFERENTIAL PRESSURE	_____
0202 SYSTEM PRESSURE	_____
0202 LEVEL (N2 PURGE)	_____
0204 LEVEL (N2 AND H2O PURGE)	_____
0212 LEVEL (FLUOROLUBE)	_____
0214 LEVEL	_____
LEVEL H2O AND EDC	_____
HIGH OXYGEN PRESSURE SHUTDOWN	_____
0202 HCL, C2H4 RECYCLE CONTROL VALVES	_____
0204 PH	_____
0222 PH IN AND OUT	_____
0220 EDC FILLED	_____
ANALYZERS	_____
0202 ANALYZERS (C202)	_____
ALL RECYCLE ANALYZERS (O2, C2H4, CO, CO2)	_____

CONFIDENTIAL

R&S149698

INITIALS: _____

OXY II TRIP SHUTDOWN CHECK

DATE: _____

NOTE: THE FOLLOWING OXY REACTOR TRIP CHECK SHOULD BE DONE PRIOR TO EVERY REACTOR STARTUP.

BEFORE STARTING CHECKLIST

1. SET UP SIMULATORS (@ 5 UNITS) TO CLEAR LOW FLOW TRIPS ON RECYCLE, O₂, HCL, AND C₂H₄.
2. K216 SHOULD BE DOWN FOR CHECKS NO. 1, 2 & 3.

HAVE AN ELECTRICIAN UNPLUG CONTROL POWER AND SWITCH TO TEST POWER. THIS WILL ALLOW THE TRIPS TO BE CHECKED WITHOUT STARTING THE MACHINE. PUSH THE START SWITCH IN FIELD WHICH WILL CLEAR THE SHUTDOWN ALARM BUT MACHINE WILL NOT START.

3. BLOCK IN AND BLEED DOWN AIR TO C212 VENT VALVE TO PREVENT IT FROM OPENING AND DEPRESSURING SYSTEM.

**** ALL TESTS SHOULD BE DONE WITH ANTI-SURGE CONTROL VALVE WIDE OPEN. ****

1. _____ SHUTDOWN: RUPTURE DISC FAILURE TRIP

EVENTS: C₂H₄, O₂, RECYCLE EBV'S AND C₂H₄, O₂, HCL RECYCLE CONTROL VALVES WILL CLOSE. E218 STEAM VALVE WILL CLOSE. K216 WILL TRIP. C212 VENT VALVE WILL OPEN.

PROCEDURE: 1) ACTIVATE THE CONTROL ROOM-MOUNTED RUPTURE DISC FAILURE TRIP SWITCH HS-2104.

2) DISCONNECT THE WIRING ON RUPTURE DISC PRESSURE SWITCH - PSH2104.

2. _____ SHUTDOWN: K216 TRIP

EVENTS: C₂H₄, O₂, RECYCLE EBV'S AND C₂H₄, O₂, HCL RECYCLE CONTROL VALVES WILL CLOSE. E218 STEAM VALVE WILL CLOSE. AUTO-MATIC N₂ PURGE. K216 WILL TRIP.

PROCEDURE: ACTIVATE THE CONTROL ROOM-MOUNTED EMERGENCY TRIP SWITCH HS-2287.

3. _____ SHUTDOWN: D214 LEVEL

SETPOINT: 100+%

EVENTS: C₂H₄, O₂ RECYCLE EBV'S AND C₂H₄, O₂, HCL RECYCLE CONTROL VALVES WILL CLOSE. E218 STEAM VALVE WILL CLOSE. AUTOMATIC N₂ PURGE. K216 WILL TRIP.

PROCEDURE: BREAK THE CONTACTS ON LSH-2281. THE LEVEL SWITCH LSH-2281 SHOULD HAVE BEEN CALIBRATED PREVIOUSLY.

4. _____ SHUTDOWN: LOW RECYCLE FLOW

SETPOINT 4 DIVISIONS OF RECYCLE FLOW

EVENTS: C₂H₄, O₂ RECYCLE EBV'S AND C₂H₄, O₂, HCL RECYCLE

CONFIDENTIAL

RS149699

PROCEDURE: GRADUALLY REDUCE THE RECYCLE FLOW BY MANUALLY CLOSING THE CONTROL VALVE WITH THE ANTI-SURGE CONTROL VALVE WIDE OPEN. THE REACTOR TRIP SHOULD ACTIVATE WHEN THE RECYCLE FLOW REACHES 4.5 UNITS. DO NOT BRING THE RECYCLE FLOW BELOW 4 UNITS.

SHUTDOWN: LOW HCL FLOW

SETPOINT: 2 DIVISIONS OF HCL FLOW

EVENTS: C2H4, O2 EBV'S AND HCL, C2H4, O2 CONTROL VALVES WILL CLOSE. AUTOMATIC N2 PURGE.

PROCEDURE: SUPPLY AN EXTERNAL SIGNAL TO FSC-2094 EQUIVALENT TO 4 UNITS. GRADUALLY DECREASE THE SIGNAL TO FSL-2094. THE REACTOR SHOULD TRIP WHEN THE SIGNAL IS EQUIVALENT TO 2 UNITS.

6. SHUTDOWN: HIGH HEAD TEMPERATURE

SETPOINT: 2 THERMOCOUPLES IN SAME THERMOWELL AT 250 DEG C

EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL RECYCLE CONTROL VALVES WILL CLOSE. E218 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.

PROCEDURE: LIFT ONE LEAD TO INPUT OF CONVERTER 2098A LIFT ONE LEAD TO INPUT OF CONVERTER 2098B. THESE TEMPERATURE SWITCHES SHOULD HAVE BEEN PREVIOUSLY CALIBRATED: TSH-2098 A/B, 2099 A/B, 2100 A/B

SHUTDOWN: HIGH INLET TEMPERATURE

SETPOINT: INLET TEMPERATURE AT 250 DEG C

EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL RECYCLE CONTROL VALVES WILL CLOSE. E218 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.

PROCEDURE: LIFT ONE LEAD TO INPUT CONVERTER 2097A. LIFT ONE LEAD TO INPUT CONVERTER 2097B. THESE TEMPERATURE SWITCHES SHOULD HAVE BEEN PREVIOUSLY CALIBRATED: TSH-2097 A/B

8. SHUTDOWN: HIGH OXYGEN IN THE RECYCLE STREAM

SETPOINT: IR AND MASS SPEC ANALYZERS OVER 4% OXYGEN

EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL CONTROL VALVES WILL CLOSE. E218 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.

PROCEDURE: RUN SIGNAL TO ANALYZER CONVERTER 2267 UPSCALE. GRADUALLY INCREASE THE SIGNAL TO THE ANALYZER CONVERTER 2275 UNTIL THE TRIP ACTIVATES. REPEAT ABOVE INTERCHANGING CONVERTERS.

9. SHUTDOWN: EMERGENCY MANUAL REACTOR TRIP

EVENTS: C2H4, O2 RECYCLE EBV'S AND C2H4, O2, HCL CONTROL VALVES WILL CLOSE. E218 STEAM VALVE WILL CLOSE. AUTOMATIC N2 PURGE.

CONFIDENTIAL

R&S149700

10. ___ SHUTDOWN: HIGH OXYGEN HEADER
- SETPOINT: 210 PSIG OXYGEN PRESSURE DOWNSTREAM OF OXYGEN REGULATORS
- EVENTS: C2H4, O2 EBV'S AND HCL, C2H4, O2 CONTROL VALVES WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: BREAK THE CONTACTS ON DSH-2059. THE PRESSURE SWITCH DSH-2059 SHOULD HAVE BEEN CALIBRATED PREVIOUSLY.
11. ___ SHUTDOWN: LOW C2H4 FLOW
- SETPOINT: 1.5 DIVISIONS OF C2H4 FLOW
- EVENTS: C2H4, O2, EBV'S AND HCL, C2H4, O2 CONTROL VALVES WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: SUPPLY AN EXTERNAL SIGNAL TO FSC-2091 EQUIVALENT TO 4 UNITS. GRADUALLY DECREASE THE SIGNAL TO FSL-2091. THE REACTOR SHOULD TRIP WHEN THE SIGNAL IS EQUIVALENT TO 2 UNITS.
12. ___ SHUTDOWN: LOW OXYGEN FLOW
- SETPOINT: 1.5 DIVISIONS OF OXYGEN FLOW
- EVENTS: C2H4, O2 EBV'S AND HCL, C2H4, O2 CONTROL VALVES WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: SUPPLY AN EXTERNAL SIGNAL TO FSC-2093 EQUIVALENT TO 4 UNITS. GRADUALLY DECREASE THE SIGNAL TO FSL-2093. THE REACTOR SHOULD TRIP WHEN THE SIGNAL IS EQUIVALENT TO 2 UNITS.
13. ___ SHUTDOWN: D202 LEVEL
- SETPOINT: 10 - 20%
- EVENTS: C2H4, OX EBV'S AND O2 CONTROL VALVE WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: BREAK THE CONTACTS ON LSL2123B.
14. ___ SHUTDOWN: C120 HI TEMPERATURE ON OH
- SETPOINT: 2 OUT 3 THERMOCOUPLES > -25 DEGC.
- EVENTS: C2H4, O2 EBV'S AND C2H4, OX, HCL CONTROL VALVES WILL CLOSE. AUTOMATIC N2 PURGE.
- PROCEDURE: LIFT THE LEAD TO INPUT CONVERTER 1402 AND 1403 AND CONTINUE WITH ALL POSSIBLE COMBINATIONS OF TSH 1402, 1403, AND 1404. ALL SWITCHES SHOULD HAVE BEEN PREVIOUSLY CALIBRATED.
15. ___ PROCEDURE: BE SURE THAT ALL INSTRUMENTATION IS RECONNECTED AND IN WORKING ORDER BEFORE OPERATIONAL STARTUP FOR EXAMPLE THE VENT EVV AND ALL PRESSURE AND FLOW TRANSMITTERS

CONFIDENTIAL

R&S149701

CONFIDENTIAL

REDACTED

R&S149702

C-220

CONFIDENTIAL

REDACTED

R&S149703

C-230

CONFIDENTIAL

REDACTED

R&S149704

C-235

SEJ
06/20/90

CONFIDENTIAL

REDACTED

R&S149705

S.E.J.
07/01/90

CONFIDENTIAL

REDACTED

R&S149706

VINYL 2 OXY VENT HEADER
MODIFIED SYSTEM

CONFIDENTIAL

REDACTED

R&S149707

12/14/89

K-320 AND K-330 CRITICAL INSTRUMENT LIST

	Frequency (Weeks)
FT-3139 - K-320 Suction Flow First Stage	12
FT-3135 - K-320 Suction Flow Second Stage	12
FT-3143 - K-320 Suction Flow Third Stage	12
FT-3161 - K-320 Suction Flow Fourth Stage	12
FT-3211 A/B - Water to MK-320	12
PT-3171 - K-320 Suction Pressure First Stage	12
PT-3172 - K-320 Suction Pressure Second Stage	12
PT-3173 - K-320 Suction Pressure Third Stage	12

CONFIDENTIAL

R8S149708

K-320 & K-330 Critical Instrument List (cont'd)

	Frequency (Weeks)
PT-3178 - K-320 Suction Pressure Fourth Stage	12
PT-3162 - K-320 Discharge Pressure	12
LSL-3165 - D-320 Low Level Switch	12
K-330	
FT-8317 - K-330 Suction Flow First Stage	12
FT-8311 - K-330 Suction Flow Second Stage	12
PT-8316 - K-330 Suction Pressure First Stage	12
PT-8312 - K-330 Suction Pressure Second Stage	12
PT-9866 - K-330 Discharge Pressure	12
LT-9872 - D-330 Level	12

CONFIDENTIAL

R&S 149709

R-400 SYSTEM

J.R.B.
8/30/81

CONFIDENTIAL

REDACTED

R&S149710

F-410/F420 SYSTEMS

J.R.B.
08/27/91

CONFIDENTIAL

REDACTED

R&S149711

ECOLOGY AREA CRITICAL INSTRUMENTS

R-400 (TOX) SYSTEM:

1. DRY QUENCH TEMPERATURE
2. WATER FLOW TO ABSORBER (D-401, J-402, J403)
3. SCRUBBER TEMPERATURE (C-404)
4. COMBUSTION AIR FLOW
5. LIQUID FEED FLOW
6. CONDENSATE FLOW TO DRY QUENCH
7. COMBUSTION AIR SUPPLY PRESSURE
8. FUEL GAS PRESSURE
9. ATOMIZING STEAM PRESSURE
10. SCRUBBER pH PROBES (C-404)
11. INSTRUMENT AIR PRESSURE
12. COMBUSTION CHAMBER TEMPERATURE
13. MAIN FLAME SCANNER
14. WATER FLOW TO SCRUBBER (C-404)
15. AUXILIARY FLAME SCANNER

JRB

9/4/91

CONFIDENTIAL

R&S149712

ECOLOGY AREA CHEMICAL REACTIONS

COMBUSTION REACTIONS:

SCRUBBER REACTIONS:

JRB 9/3/91

LAD CONSOLIDATED AUDIT

FOR

VINYL II

REVIEW OF PLANT/DEPARTMENT POLICIES,
PROCEDURES, AND COMMUNICATIONS

BY

CONFIDENTIAL

REDACTED

R&S 149714

POLICIES/PROCEDURES

1. Safety
2. Personnel Protective Equipment
3. Industrial Hygiene
4. Training
5. Safe Job Procedure Manual
6. Red Tag Procedure Manual
7. Operations Manual
8. Computerized Procedures/Checklist
9. Project Review

CONFIDENTIAL

R&S149715

VINYL II PLANT SAFETY POLICY

Our objective in Vinyl II is to produce at minimum cost that quantity of product necessary to meet the demand. The product quality must meet specifications at all times. This is to be accomplished while maintaining the highest morale and the highest standards of safety performance. Therefore, safety is equal in importance to production, cost, quality, and morale in the Vinyl II Plant.

Our safety objective is to eliminate accidents and injuries. Accidents can be very costly, both to you and the company. Proper knowledge of and utilization of the standards, procedures, and principals established by Dow and the Vinyl II Plant is the surest way to attain this objective.

The primary responsibility for safety is yours and your supervisor's. You will be held accountable. Our objective cannot be achieved without a dedicated and continuing effort by each and every one of you.

Approved by: _____

Plant Superintendent

CONFIDENTIAL

REDACTED

R&S 149716

Revised by:

Revision Date: 9/4/91

VINYL II PERSONAL PROTECTIVE EQUIPMENT POLICY

The following policy is established to set minimum standard safety equipment requirements for personal protection of personnel working in the Vinyl II block. These requirements shall apply to all personnel including Dow, contract maintenance, construction, and visitors.

All personal protective equipment (PPE) used must be approved by the Division PPE Committee. This committee ensures that all PPE is sufficient for the task and meets all applicable OSHA requirements.

As a minimum, the following PPE is required whenever personnel are within the Vinyl II operating area:

- * Hard Hat
- * Safety Glasses
- * Hearing Protection (in most areas unless specifically designated not required)
- * Monogoggles (in posted areas)
- * Nomex (in posted areas)

Nomex fire resistant clothing shall be worn at all times by Dow operations personnel assigned to that days working shift.

Personal protective equipment shall be inspected regularly by the individual to ensure that it is in good condition. PPE shall not be altered in any manner. Damaged or defective PPE shall be disposed of immediately.

For items in question or not covered in the above, refer to S&LP S-101.

Approved by: _____

Plant Superintendent

CONFIDENTIAL

REDACTED

R&S 149717

VINYL II INDUSTRIAL HYGIENE POLICY

The following policy is established to address industrial hygiene concerns and OSHA requirements in the Vinyl II block.

All job classifications in Vinyl II shall be evaluated and documented annually for potential exposure to chemical and physical agents in the block using current division IH guidelines. Any exposure monitoring warranted from this evaluation is mandatory and shall be documented and retained according to Dow Record Retention Schedules. Only approved sampling and analytical methods will be used. Timely feedback of monitoring results to the persons who were sampled shall be done and documented.

Plant hazards (chemical and physical) shall be communicated annually. Compliance with all of the requirements of the OSHA Hazard Communication Standard is mandatory. Compliance with all Division and OSHA guidelines/requirements for respiratory protection and hearing conservation is mandatory.

Good hygiene practices are essential for minimizing potential exposure to chemicals used in the block. No food is allowed in any area of the plant where personal protective equipment is required. No process materials or chemicals are allowed in eating areas (lunch rooms, control room, office areas). Any clothing or personal protective equipment that becomes contaminated must be properly cleaned or disposed of. No one is allowed to take contaminated articles home.

Approved by: _____

Plant Superintendent

CONFIDENTIAL

REDACTED

F&S149718

VINYL II TRAINING POLICY

The following policy is established to address training needs in the Vinyl II block for Dow personnel.

Proper and timely training is essential for the safe, smooth operation of the plant. New employees shall be properly trained and evaluated in all aspects of their job assignments before they are allowed to work alone. A program for retraining all employees on a regular basis shall be established and maintained. No one shall perform a job or operate a piece of equipment prior to receiving the proper training. Compliance with the above shall be the responsibility of the individual, immediate supervisor, and the Training Coordinator.

The Vinyl II training program shall develop and use the In-Plant Training (IPT) program to train employees in the future. This program ensures consistent and thorough training/evaluation for all personnel. This program shall include reviewing and updating the training modules to keep the program up-to-date. Primary responsibility for this program lies with the Training Coordinator.

Approved by: _____

Plant Superintendent

CONFIDENTIAL

REDACTED

R&S 149719

Revised by:
Revision Date: 9/4/91

PROPRIETARY INFORMATION RELEASED OUTSIDE OF DOW

The following policy is established to control the release of proprietary information to any individual or company outside of the Dow Chemical Company.

All information that is released to any individual or company outside of the Dow Chemical Company shall be reviewed and approved by the Plant Superintendent at Vinyl II. This includes documents, data, photographs, or videotape.

The Plant Superintendent must also approve any non-Dow photography or video, taping of any equipment in the Vinyl II plant before it is allowed to take place.

Approved by: _____
Plant Superintendent

CONFIDENTIAL

REDACTED

R&S 149720

VINYL II ALARM/TRIP SETPOINT CHANGES

The following policy is established to address changes in alarm setpoints and shutdown trip setpoints.

Any changes in alarm setpoints must be approved by the Shift Supervisor and the Area Engineer/Supervisor if they are available. If the Area Engineer/Supervisor is not available, the change must be communicated to them in writing.

Any changes in trip setpoints must be approved by the Shift Supervisor, Area Engineer/Supervisor and the Plant Superintendent or his designee.

Approved by: _____

Plant Superintendent

CONFIDENTIAL

REDACTED

R&S149721

SAFE JOB PROCEDURE MANUAL

The purpose of this manual is to collect in one location those policies and procedures, many of which are unique to the Vinyl II Plant which require special guidelines for being accomplished safely. Each operator should be ~~operator should be~~ knowledgeable of the details contained within. In addition, each Shift Supervisor should establish his own method of insuring that those SOS's who work Team Leader for him are knowledgeable as well.

We will maintain three copies of this manual.

- (1) Control Room
- (2) Safety & Training Coordinator
- (3) Secretary's Office

Plant Superintendent
Vinyl II

CONFIDENTIAL

REDACTED

R&S149722

Safe Job Procedure Manual

- A. Plant Safety Policies
- B. General Procedures
- C. Vinyl Area Procedures
- D. Ecology/Utilities Area Procedures
- E. EDC Area Procedures
- F. Emergency Procedures
- ✓G. Vinyl Lab Procedures
- ✓H. EDC Lab Procedures
- ✓I. Waste Area Lab Procedures
- ✓J. Chromatograph Procedures
- K. Safety Equipment and Rules in Lab
- ✓L. SQC Lab Procedures
- M. Vinyl Tank Car
- N. Vinyl Product Storage
- O. Vinyl Product Transfers
- P. Vinyl Ship Loading
- Q. Chlorothene VG

TABLE OF CONTENTS

	PAGE
I. GENERAL MANAGER'S LETTER ON SAFETY POLICY	1
INTRODUCTION	2
VINYL II SAFETY POLICY	3
PLANT EMERGENCY RESPONSE	4
II. VINYL II PLANT SAFETY POLICIES	
1. CHEMICAL EXPOSURE PREVENTION & RESPONSE	9
2. BREAKING INTO LINES & EQUIPMENT	10
3. UNPLUGGING LINES & EQUIPMENT	15
4. ADDITION TO VESSEL ENTRY	16
5. ISOLATING EQUIPMENT, PIPING, & VESSELS WITH AIR-OPERATED	17
6. INSPECTION OF LIFTING EQUIPMENT AFTER A SPILL	18
7. WASTE SEGREGATION	19
8. DISPOSAL OF ALL PRESSURIZED SPRAY CANS	20
9. SOAPS, SOLVENTS, & LUBRICANTS IN CHLORINE SERVICE	21
10. WORKING IN PIPERACK	23
11. WORKING OUT OF A BASKET	24
12. ELECTRICAL & INSTRUMENT CABLE TRAYS	25
13. COMPRESSED GAS CYLINDERS	26
14. PLUGGING AND/OR BLIND FLANGING QUICK-OPENING BLOCK VALVES	27
15. WORKING ON ELECTRICAL EQUIPMENT	28
16. CROSS-TIE 2300 VOLT SWITCHGEAR IN SUB 3	29
17. SAFE WORKING DISTANCE FROM POWER LINES FOR PEOPLE USING CONDOR LIFTS & OTHER SIMILAR EQUIPMENT	30
18. TEMPORARY SHEDS/SHELTERS	31
19. USE OF MOTORIZED LIFTING EQUIPMENT	32
20. USE OF RETENTION PINS & O-RINGS ON IMPACT WRENCHES	33
21. ASBESTOS GASKETS	34
22. MAINTENANCE OF BLOCK EQUIPMENT	35
23. PLUMBER PLUG	36
24. POLICY FOR ISSUING SAFE WORK PERMITS	37
III. GENERAL PROCEDURES	
1. BLOCK SCAFFOLDING PROCEDURE & CHECKLIST	100
2. LOUISIANA DIVISION SCAFFOLD GUIDELINES	102
3. HANDLING AIR MONITOR ALARMS	106
3A. VINYL AT THE COOLING TOWER ALARM	106A
4. HANDLING COMBUSTIBLE GAS MONITOR ALARMS	107
5. TIGHTENING LEAKING FLANGES	108
6. ENTERING ANALYZER HOUSES	109
7. TURNING PSV HAMMER BLINDS	110
8. INSTALLING RUPTURE DISCS ON PSV STACKS GOING TO FLARE HEADER	111
9. SWAPPING/PULLING SAFETY VALVES NOT TIED INTO FLARE HEADER	112

CONFIDENTIAL

R&S149724

POINTS GIVEN

NOTE: PLEASE REVIEW PROCEDURE AS A TEAM BEFORE SENDING FORWARD.

[illegible]

CONFIDENTIAL

H&S 149725

PROCEDURE

BLOCK SCAFFOLDING PROCEDURE & CHECKLIST

A SAFE WORK PERMIT IS REQUIRED TO ERECT A SCAFFOLD. ALL SCAFFOLDS MUST CONFORM TO THE DIVISION SCAFFOLD PROCEDURE (1990, SAFETY REFERENCE E-6). ANY DEVIATION FROM THIS PROCEDURE MUST BE APPROVED BY THE SHIFT SUPERVISOR.

CRAFTSMEN ERECTING SCAFFOLD IN AND AROUND FURNACES ARE REQUIRED TO WEAR NOMEX CLOTHING. AT THE SUPERVISOR'S DISCRETION, THEY MAY BE REQUIRED TO WEAR NOMEX IN OTHER AREAS IF HAZARDS EXIST. NOMEX CLOTHING WILL BE ISSUED TO CRAFTSMEN AS NEEDED BY THE MATERIAL CONTROLLER OR THE SHIFT SUPERVISOR. NOMEX CLOTHING MUST BE RETURNED BEFORE LEAVING THE BLOCK.

AFTER THE SCAFFOLD IS COMPLETED, MAINTENANCE SUPERVISOR OR HIS DESIGNEE WILL GO WITH CRAFT FOREMAN, INSPECT SCAFFOLD, AND FILL IN VINYL II PLANT SCAFFOLD CHECKLIST (NEXT PAGE). CHECKLIST MUST BE SIGNED BY BOTH PARTIES. MAINTENANCE SUPERVISOR WILL GIVE COMPLETE CHECKLIST TO SAFETY SUPERVISOR.

REVISED 8/91

CONFIDENTIAL

R&S149726

VINYL II PLANT SCAFFOLD CHECKLIST
(NOTE: REFER TO SCAFFOLD PROCEDURE 04-28-76)

DATE: _____

1. AREA WHERE SCAFFOLD IS ERECTED: _____

2. CIRCLE TYPE OF SCAFFOLD: FRAME OR BUCK TUBE OR COUPLER

ALL SCAFFOLDS:	YES	NO
1. IS SCAFFOLD BLOCKING/HINDERING ACCESS TO ANY SAFETY EQUIPMENT? (SAFETY SHOWERS/EYEWASH/FIRE EXTINGUISHER)	_____	_____
2. IS SCAFFOLD BLOCKING/HINDERING ACCESS TO ANY EMERGENCY EGRESS LADDERS?	_____	_____
3. IS SCAFFOLD BLOCKING ANY NORMAL WALKWAY AREAS? (IF SO, ROPE AREA OFF.)	_____	_____
4. IF SCAFFOLD IS BUILT IN A ROADWAY, IS IT BARRICADED OR ROPED OFF?	_____	_____

NOTE: TOE BOARDS MUST BE INSTALLED ON ALL PLATFORMS ON SCAFFOLDS ABOVE 13' UNLESS SCAFFOLD IS TO BE REMOVED IMMEDIATELY. BY IMMEDIATELY WE MEAN SAME DAY.

FRAME OR BUCK:	YES	NO
1. FOOTING STABLE?	_____	_____
2. SCAFFOLD LEVEL?	_____	_____
3. TOE BOARDS INSTALLED SECURELY?	_____	_____
4. GUARD RAILS INSTALLED WHERE REQUIRED?	_____	_____
5. SCAFFOLD BOARDS CLEATED AND TIED DOWN?	_____	_____
6. LADDER INSTALLED WITHOUT OBSTRUCTIONS & SECURED PROPERLY?	_____	_____
7. PLATFORM AREA FREE OF HAZARDS? (NO LOOSE OBJECTS, SHARP ENDS #9 WIRE, NAIL HEADS PROTRUDING, ETC.)	_____	_____
8. SCAFFOLD ANCHORED AND TIED OFF PROPERLY?	_____	_____

TUBE & COUPLER SCAFFOLD:	YES	NO
1. FOOTING STABLE?	_____	_____
2. SCAFFOLDING ANCHORED & TIED OFF PROPERLY?	_____	_____
3. POSTS, CROSS BRACES, DIAGONAL BRACES & RUNNERS INSTALLED PROPERLY? (REFER TO SCAFFOLD PROCEDURE, PAGE 100)	_____	_____
4. TOE BOARDS INSTALLED SECURELY?	_____	_____
5. SCAFFOLD BOARDS CLEATED AND TIED DOWN?	_____	_____
6. GUARD RAILS INSTALLED WHERE REQUIRED?	_____	_____
7. LADDER INSTALLED WITHOUT OBSTRUCTIONS & SECURED PROPERLY?	_____	_____
8. PLATFORM AREA FREE OF HAZARDS? (NO LOOSE OBJECTS, SHARP ENDS #9 WIRE, NAIL HEADS PROTRUDING, ETC.)	_____	_____

ROLLING & SUSPENDED SCAFFOLDS:	YES	NO
1. INSPECT THESE SCAFFOLDS USING POINTS THAT APPLY FROM CHECKLIST ABOVE AND FROM RULES SET FORTH IN SCAFFOLD PROCEDURE.	_____	_____

JANUARY 17, 1990

VINYL II SUPERVISION
5601 BUILDING

RE: RED TAG PROCEDURES MANUAL

TO PREPARE JOBS AND TO RED TAG JOBS CONSISTENTLY, WE HAVE STARTED
OUR RED TAG PROCEDURE MANUAL. LET'S START USING THE PROCEDURES.
OTHERS WILL BE ASSIGNED, EVALUATED, AND ISSUED TO YOU.

MAY I SUGGEST THAT YOU SIT DOWN WITH YOUR PEOPLE AND GO OVER THE
INTRODUCTION TO THIS MANUAL. MAKE EVERYONE AWARE OF WHAT OUR
ATTENTIONS ARE.

CHANGES OR ALTERATIONS SHOULD BE BROUGHT TO THE SAFETY SOS'S
ATTENTION.

SAFETY SOS
VINYL II

TABLE OF CONTENTS

VINYL II RED TAG PROCEDURES

	PAGE
I. INTRODUCTION	1
II. VINYL AREA	
A. T-160 SAFETY VALVES	11
B. DECOKE F-101	12
C. DECOKE F-102	13
D. DECOKE F-103	14
E. DECOKE F-104	15
F. DECOKE F-105	16
G. VESSEL ENTRY F-101	17
H. VESSEL ENTRY F-102	18
I. VESSEL ENTRY F-103	19
J. VESSEL ENTRY F-104	20
K. VESSEL ENTRY F-105	21
L. F-101 DECOKE/VESSEL ENTRY PROCEDURE	22
M. F-102 DECOKE/VESSEL ENTRY PROCEDURE	23
N. F-103 DECOKE/VESSEL ENTRY PROCEDURE	24
O. F-104 DECOKE/VESSEL ENTRY PROCEDURE	25
P. F-105 DECOKE/VESSEL ENTRY PROCEDURE	26
Q. DECKING (WATERBLAST) FURNACE	27
R. VESSEL ENTRY ON FURNACES	28
S. D-160 DECONTAMINATION	30
T. VENT RECOVERY HEADER	33
U. DRAINING P-112 A/B	35
V. WKM ISOLATION VALVE	36
W. VENT HEADER (C-120 TO D-160)	37
X. D-186	38
Y. P-186	39
Z. K-185	40
III. EDC AREA	
A. GETTING INCOMING EDC LINE READY FOR METERPROVING	50
B. PUTTING INCOMING EDC LINE BACK IN SERVICE AFTER METERPROVING	51
C. MK-216 ELECTRICAL SWITCHGEAR	52
D. K-270 SEAL REPAIR	53
E. K-584 SEAL REPAIR	54
F. R-201 VESSEL ENTRY	55
G. R-202 VESSEL ENTRY	58
H. OXY ACID RECOVERY	61
I. HYDROBLASTING RE-255	62

RED TAG PROCEDURE TO DECOKE F-103

	VALVE POSITION
EDC FEED STATION UPSTREAM BLOCK VALVE	CLOSED
2. EDC FEED STATION BYPASS BLOCK VALVE	CLOSED
3. COIL BLEED VALVE	*OPEN*
4. N2 TO COIL BLOCK VALVE	CLOSED
5. RADIANT FUEL GAS BLOCK VALVE U/S OF F.T.	CLOSED
6. SUPERCRITICAL FUEL GAS BLOCK VALVE U/S OF F.T.	CLOSED
7. NITROGEN TO SUPERCRITICAL P.C.V.	CLOSED
8. INSTRUMENT AIR TO QUENCH RETURN EBV	CLOSED
9. EDC PURGE TO ISOLATION VALVE	CLOSED
10. EDC PURGE TO ISOLATION VALVE	CLOSED
11. EDC PURGE TO QUENCH RETURN CONTROL VALVE	CLOSED
12. EDC PURGE TO QUENCH RETURN MANUAL BLOCK VALVE	CLOSED
13. QUENCH RETURN MANUAL BLOCK VALVE	CLOSED
COIL VENT TO D-102 BLOCK VALVE	CLOSED
5. VENT TO D-112 D/S BLOCK VALVE	CLOSED
6. VENT TO D-112 BYPASS BLOCK VALVE	CLOSED
7. QUENCH NOZZLE BLEED VALVE	*OPEN*
8. ISOLATION EBV SWITCH ON MOD V CAN (#314)	CLOSED
9. ISOLATION EBV SWITCH ON MOD V CAN (#334)	CLOSED

NOTE: PULL FUSES FOR ISOLATION EBV DO'S AND TAPE TO RED TAGS ON MOD V CAN.

1/21/90

PROCEDURE AUDIT/DEVELOPMENT STATUS SHEET

INSTRUCTIONS: LOCATE THE PROCEDURES ASSIGNED TO YOUR SHIFT ON THE VINYL II PROCEDURE LIST ON THE VINYL II P.C. IF THE PROCEDURE EXISTS, HAVE SOMEONE ON YOUR SHIFT WHO IS KNOWLEDGEABLE OF THE AREA GO THROUGH THE PROCEDURE TO DETERMINE IF IT IS STILL CURRENT. IF NO CHANGES ARE MADE, FILL OUT THIS FORM MAKING A NOTE THAT THERE ARE NO CHANGES AND SEND IT TO TRAINING CO-ORDINATOR. IF THE PROCEDURE IS UPDATED, OR A NEW PROCEDURE WRITTEN, FILL IN ALL COLUMNS ON THE FORM.

NOTE: PLEASE REVIEW PROCEDURE AS A TEAM BEFORE SENDING FORWARD.

[illegible]

REDACTED

CONFIDENTIAL

PR&S149731

Computerized Procedures/Checklist

A. PDP-11

B. Mod5

C. Plans to move procedures to Reference

Library on Mod Vax

D. Key Parameter Program

E. Red Tag Computer System Being Installed

CONFIDENTIAL

R&S 149732

KEY PARAMETER PROGRAM

- * PDP-11 BASED PROGRAM
- * IDENTIFIED 100 - 120 KEY INPUTS FROM PLANT
- * SET UPPER/LOWER LIMITS TO KEEP PLANT IN CONTROL
- * COMPUTER DISPLAY HIGHLIGHTS ANY INPUT OUT-OF-LIMITS
- * EXCEPTION PAGE SHOWING ONLY INPUTS OUT-OF-LIMIT
- * SYSTEM USED AS PRIMARY OPERATING DISCIPLINE TO KEEP PLANT IN CONTROL

CONFIDENTIAL

R&S149733

ONLINE OPERATING DISCIPLINE
CURRENT STATUS
10-MAY-91
09:32:49
AREA 1

TAG #	DESCRIPTION	CURRENT DATA	UPPER LIMIT	LOWER LIMIT
CR 101	F101 CALCULATED CRACKING RATE	53.772	57.500	0.000
CR 102	F102 CALCULATED CRACKING RATE	53.854	57.500	0.000
CR 103	F103 CALCULATED CRACKING RATE	53.861	57.500	0.000
CR 104	F104 CALCULATED CRACKING RATE	53.831	57.500	0.000
CR 105	F105 CRACKING RATE	0.000	57.000	0.000
CR 120	CRACKING RATE (C120 DVHD)	52.286	60.000	50.000
FTC 10151	F-101 EDC FEED FLOW	70041.937	92000.000	80000.000
FTC 10551	F-102 EDC FEED FLOW	70119.227	92000.000	80000.000
FTC 11001	F-103 EDC FEED FLOW	70041.937	92000.000	80000.000
FTC 11501	F-104 EDC FEED FLOW	70048.969	92000.000	80000.000
FTC 9510A	F105 EDC FEED FLOW	3.513	94000.000	40000.000
FAI 124	F-101 O2 IN STACK	5.441	4.900	3.900
FAI 224	F-102 O2 IN STACK	5.311	5.600	4.600
FAI 324	F-103 O2 IN STACK	5.222	4.400	3.700
FAI 424	F-104 O2 IN STACK	4.658	4.100	2.700
FAI 524	F-105 O2 IN STACK	19.656	6.200	5.100
FAI 115	F-101 RADIANT SECTION PRESS	258.621	400.000	0.000
FAI 215	F-102 RADIANT PRESSURE	246.286	400.000	0.000
FAI 315	F-103 RADIANT PRESSURE	228.210	400.000	0.000
FAI 415	F-104 RADIANT PRESSURE	266.712	400.000	0.000
FAI 515	F-105 RADIANT SECTION PRESS	19.766	400.000	0.000
AC 2	F-101 SUPERCRITICAL TEMP	291.025	292.000	290.000
AC 502	F-102 SUPERCRITICAL TEMP	291.910	292.000	290.000
AC 2	F-103 SUPERCRITICAL TEMP	291.940	292.000	290.000
AC 502	F-104 SUPERCRITICAL TEMP	290.933	292.000	290.000
AC 2	F-105 SUPERCRITICAL TEMP	21.851	292.000	290.000
AC 301	D-101 % LEVEL	47.713	80.000	40.000
AC 301	D-102 % MOD LEVEL	47.771	80.000	40.000
AC 301	D-103 LEVEL %	-0.793	80.000	40.000

CONFIDENTIAL

R&S149734

COMMUNICATIONS

1. Daily Production Meeting at 8 a.m.
2. Weekly Maintenance Planning
3. Weekly Project Reviews
4. Control Room Operations Logbook
5. Operations Instruction Logbook
6. Communications Manual
7. Daily Shift Tailgate Meetings
8. Safety Meetings
9. Bulletin Boards
10. Letters

CONFIDENTIAL

R&S149735

VINYL II
WEEKLY WISH LIST FOR MAINTENANCE AND PROJECTS

DATE: _____

AREA: _____

(LIST ONLY JOBS FOR WHICH MMR'S HAVE BEEN SUBMITTED!!!!)

[illegible]

CONFIDENTIAL

R&S 149736



DOW CHEMICAL COMPANY
CHLORINATED ORGANICS PLANTS
VINYL II DAILY MAINTENANCE PLAN

SUPERVISOR

DATE 09-05-91

JOB DESCRIPTION	WORK ORDER NO.	MATERIAL	TOOLS	TAGS		OBSV		CRAFT	HVV EQUIP	TIME		INSTRUCTIONS — COMMENTS	CONF
				Y	N	Y	N			EST	ACT		
1 Scope Painting					✓		✓						
2 Maintenance Painting					✓		✓						
3 Insulate					✓		✓						
4 Plant Clean up					✓		✓						
5 Build & Demo Scaffold					✓		✓						
6 Build New Rainwater Tanks T-460's					✓		✓					Permit & TLV's for 6 AM to SO.	
7 Hang tags on valves in EDC Service.					✓		✓	Team Inc					
8 Move Steam C.V. to Flare Further downstream of B.V. @ 2'					✓		✓					7 to SO. Hot work Permit & tag for 7 AM	
9 Prepare T-230 for V.E.					✓		✓					Already tagged	
10 Drill & Tap P-101A bowl					✓		✓					Tag for 7 AM	
11 Install EDC Samples OXY Area					✓		✓						
12 Build Platform C-III					✓		✓					to SO. Hot Work	
13 Fab Steel under tent at bldg 6650					✓		✓					Exit Sniff	
AVAILABLE MANHOURS (EDO/CONTR)				ACTUAL MANHOURS ON PLANNED JOBS					TOTAL BREAK-IN MANHOURS WORKED				
MANHOURS PLANNED EDO/CONTR				TOTAL "E" MANHOURS WORKED					TOTAL FILL-IN MANHOURS WORKED				WORKED

VINYL II PLANT
SAFETY-ENVIRONMENTAL-PROCESS SUGGESTIONS

LOCATION: Crude Vinyl - C-110

Evaluate

SUGGESTION: During heavy rains + major upsets in the crude vinyl system, we can't get enough btm. flow out of C-110 to level control. This causes the btm. diff. to go up + consequently rates are cut. We need to install pumps large enough to handle this added load with a discharge press. controller that controls to the btm. head of the RE-110 that's in service.

BENIFITS: Being able to with stand upsets without cutting rates.

PROX COST: LABOR COST (\$20/HR) _____, MATL COST _____, TOTAL _____

INITIATED BY: _____ DATE: P-2P-91

>FORWARD TO SUPERVISOR

ANSWER: At higher rates a pump with more capacity definitely will help. Please bring to project for discussion.

ANSWERED BY: _____ DATE: 8/28/91

EXPECTED COMPLETION DATE: _____ ESTIMATED COST: _____

>FORWARD TO PLANT SUPERINTENDENT

SUPERINTENDENT: _____ DATE: _____

PLETION DATE: _____

>RETURN FORM TO INITIATOR

CONFIDENTIAL

REDACTED

RS149738

R&S149739

REDACTED

CONFIDENTIAL

CONFIDENTIAL

3/20/91 ① REARRANGED THE C-120 STM MICROSPEC
AND CONTROL VAX SCHEMES TODAY
TO 10,760 #/HR. ANY PROBLEMS, PLS
CALL 296-2345.

② THE RCFA PERMIT FOR THE TOX DESCRIBES OUR
HAZARDOUS WASTE AS BEING STORED IN STORAGE
TANKS BEING FEED TO THE TOX. THESE
TANKS ARE LISTED AS T-400 AND T-410 ONLY. THEREFORE,
UNTIL THE PERMIT IS MODIFIED, WE CAN'T HAVE
A WASTE FEED DIRECTLY ON P-400.

③ C-230 BTMS Water Analyzer has
been replaced by a new F.R. which
we have been testing. Trip circuit AND
Alarms are the SAME AS WELL AS THE
INDICATION. Note: Sample normally runs
2-4 ppm. It will swap at 20 ppm

④ WE WILL RUN C-230 ON TOTAL REFLEX 0.6
DAYS TOMORROW AND CHANGE OUT THE
DISCHARGE B.V. ON P-231A - PLEASE
HAVE T-220 & T-221 LEVEL DOWN TO
ABOUT 35 TO FOR 7 A.M.

THANKS

⑤ C-100 Reflux B/V. from P-110B will be
changed out tomorrow. Please bleed
& purge this piping tonight. I left
a note on the table. I will be at the

R&S 149740

1991

ENTRIES FOR COMMUNICATIONS MANUAL

CONFIDENTIAL

DATE	NAME	TOPIC
1/28/91		F-105 MOD 5 PROGRAM CHANGES
30 Jan 1991		System G changes
11 Feb 1991		System G changes
11 Feb 1991		Checklist for MOD/COM communications
2/15/91		E-251 AND CHLORINE MIXER TRIPS
19 Feb 1991		System A changes
22 Feb 1991		More system A changes
2/26/91		AHCL QUALITY
2/27/91		R-400 MOD V CHANGES
12 March 1991		System B changes
3/22/91		R-400 MOD V CHANGES
3/22/91		Changes in controlling finish vinyl
3/26/91		BYPASSING E-251
2/2/91		WEEKLY Sample ANALYSIS
✓ 04 Apr 1991		System D changes
✓ 09 Apr 1991		Cracking rate controller information
✓ 4/11/91		R-400 MOD V CHANGES
✓ 17 Apr 1991		System B changes
18 Apr 1991		System C changes
4/19/91		BLOCK HOUSEKEEPING PLANS
21 Apr 1991		System A changes
07 May 1991		A, B & C changes
10 May 1991		Oxy Vent/HCL Vent Press HIC Tr
2 5/20/91		P-160 FIELD SWITCHES

REDACTED

R&S 149741

F-105 MOD 5 PROGRAM CHANGES

JANUARY 28, 1991

#1. A NEW F-105 DRAFT CONTROLLER, AO(505), HAS BEEN ADDED TO SYSTEM C MOD 5 PROGRAM. THIS CONTROLLER IS A MASTER/SLAVE WITH THE MASTER CONTROLLING THE FURNACE OXYGEN BY SETTING A DRAFT PRESSURE SET POINT. THE SLAVE CONTROLS THE DRAFT PRESSURE BY POSITIONING THE DAMPER ACCORDING TO THE OXYGEN CONCENTRATION. AIR ONTO THE FURNACE IS CONTROLLED BY TWO DIFFERENT METHODS (WITH ONLY THE SECOND ONE BEING A NEW METHOD) :

1) DRAFT PRESSURE CONTROLLER WHICH IS USED FOR MOST OF THE FURNACE OPERATIONS HAS A LOW DRAFT PRESSURE CONSTRAINT SO AS TO KEEP A LOW DRAFT PRESSURE FROM TRIPPING THE FURNACE (THE SAME METHOD AS BEFORE) .

2) AN OXYGEN CONCENTRATION MASTER WITH A DRAFT CONTROL SLAVE IS USED TO ACHIEVE OPTIMUM FURNACE EFFICIENCY. TO ENABLE THIS CONTROLLER :

A. MUST BE IN STEP(500) [AND]

B. SET AK(31) EQUAL TO A SPECIFIC O₂ CONC.

BETWEEN THE VALUES OF 6.2 AND 7.4 [AND]

C. SET DK(200) = 1

NOTE A VALUE OF 6.7 IS GIVEN TO THE MOD BY DEFAULT IN STEP(500) UNTIL THE ABOVE CRITERIA IS MET BY THE OPERATOR.

#2. A CRACKING RATE CONTROLLER IS ALSO INCLUDED IN THIS PROGRAM LOAD; HOWEVER, THIS CONTROLLER IS NOT READY TO BE ENABLED AT THIS POINT. A NEW PROGRAM FOR SYSTEM A MUST BE LOADED BEFORE A CCl₄ LEVEL CAN BE READ BY THIS CONTROLLER.

NOTE SETTING DK(107) = 1 ENABLES THIS CRACKING RATE CONTROLLER. PLEASE AVOID DOING SO UNTIL SYSTEM A RECEIVES A NEW LOAD.

CONFIDENTIAL

REDACTED

R&S149742



Dow U.S.A.

The Dow Chemical Company
P.O. Box 150
Plaquemine, Louisiana 70765-0150

February 15, 1991

Vinyl II Communications Manual

E-251 AND CHLORINE MIXER TRIPS

On Monday it was discovered that the North E-251 top bleed valve had formed an external leak, possibly a leaking gasket. In order to stop this leak two options were considered, the first was to by-pass E-251 and replace the valve and the second was to install a furmanite box around it.

After more evaluation of by-passing the exchanger, this option was ruled out for several reasons. First, Methanes' reactor cannot handle the acid at such a cold temperature. Second, the downstream piping between E-251 and Methanes is not cold service rated. By definition cold service is generally considered -20 deg C and below. It was determined that at -40 deg C the maximum pressure normal carbon steel could handle would be 52 psig. Although this exchanger had been by-passed once some years ago, chances were very good that the piping would probably not withstand this temperature this time. In fact, failure under these conditions is considered to be catastrophic, meaning that the piping would not just leak, but would shatter.

In the next plant shutdown we will be replacing the valve and modifying the piping on E-251 such that by-passing it under the current arrangement would not be possible.

Another item evolved from this evaluation. It was discovered that the Chlorine trip on MX-250 was set at 175 deg C, but that the alarm for the trip was set at 125 deg C. There were several concerns with this setup. First, the alarm and the trip should have been set for the same temperature. Second, nobody realized that the trip had been changed to 175 deg C, it was originally 125 deg C. After talking with _____ from the Reactive Chemicals Committee, he informed me that the latest data he has states that 155 deg C is considered to be the temperature for an Iron and Chlorine reaction. This temperature also has

CONFIDENTIAL

REDACTED

R&S 149743

REVIEW OF VINYL II PLANT/DEPARTMENT POLICIES,
PROCEDURES, AND COMMUNICATIONS

STRENGTHS

- * Safety Program
- * Employee Commitment
- * Safe Job Procedure Manual
- * Key Parameter Program
- * Project Review Program
- * Daily Tailgate Meetings
- * Goal Setting For All Employees

CONFIDENTIAL

R&S149744

REVIEW OF VINYL II PLANT/DEPARTMENT POLICIES,
PROCEDURES, AND COMMUNICATIONS

OPPORTUNITIES

- ✓ * Update Operations Manual
- ✓ * Procedures Located In Several Places (Manuals, Control Vax, Mod5 Vax, PDP-11, etc)
- ✓ * More Emergency Drills (Hands On)
- ✓ * Standardized Redtagging (In Progress)
- ✓ * Goal Setting Process Is Still New
- ✓ * No Mechanism Established To Ensure Communications Read By All Needed Personnel

LAD CONSOLIDATED AUDIT

FOR

VINYL II

REVIEW OF TRAINING AND RETRAINING
PROGRAMS

BY

CONFIDENTIAL

REDACTED

R&S149746

REVIEW OF TRAINING AND RETRAINING PROGRAMS

- * OPERATOR TRAINING
- * STAFF TRAINING
- * IPT PROGRAM
- * SUMMARY
- * STRENGTHS
- * OPPORTUNITIES

OPERATIONS TRAINING

1. Safety Orientation
 - A. Block Indoctrination Film
 - B. Environmental (SPC, SPCC, RCRA, HAZCOM, ETC)
 - C. New operator checklist
 - D. Walk through
2. Area Training
 - A. Plant Areas
 1. Load Rack
 2. Lab/Samples
 3. Oxy Area OS
 4. Vinyl Area OS
 5. EDO
 6. Oxy Area SOS
 7. Vinyl Area SOS
 - B. One on One Training
 - C. Training Checklist
 - D. Must Pass Board Review to Operate Alone
 1. Shift Supervisor
 2. Area Engineers/Supervisors
 3. Production Supervisor
 4. Other Experienced Staff
 - E. Classroom and hands-on for new equipment
3. Goal Setting with Periodic Reviews During the Year
4. Retraining
 - A. Protective Equipment
 - B. Combustible Gas and Oxygen Meters
 - C. JLG
 - D. Fork Truck
 - E. 5/15 Ton Cherry Picker
 - F. Hazard Communication Training
 - G. Environmental (SPC, SPCC, RCRA)
 - H. Retrained All Operations in last 5 years

NEW EMPLOYEE INDOCTRINATION (NON-EXEMPT)

1. Introduction to Staff and Personnel
2. Meeting with Supervisor
 - A. Job description/JPR/mileage/overtime/promotions/salaries
 - B. Chain of command
 - C. Brief description of other peoples job (ex. Bill & Freddie, Inst. people, Computer people, etc.)
 - D. Work schedule and necessary phone numbers/PI and FI
3. Meet with Superintendent
4. Meet with Block Safety & Training Coordinator
 - A. Quick overview of training program
 - B. Block Safety Program/ring policy/gloves
 - C. Make sure safety gear has been issued and proper care is taken/locker has been issued
 - D. Make sure Nomex is ordered
 - E. Individual Safety Responsibility
 - F. Accident Investigation/reporting
5. Block Indoctrination
 - A. Safety showers and eye wash
 - B. Major pieces of equipment/chemicals contained
 - C. Fire extinguishers and deluge guns
 - D. Sub stations/lab/analyzer houses/inst. junc. houses
 - E. Scott air pacs
 - F. Smoking areas/break areas/phones/intercoms
 - G. Review dictionary of terms and equipment
6. Review of hazardous Materials and Vinyl Standard. Inform new employee of the Right to Know Act. Let employee know we have a Hazardous Communication book located in the Environmental Specialist Office and that it contains Material Safety Data Sheets for all chemicals in our block and their purpose.
7. DOT Training
8. Review Safety and Loss Prevention Standard
 - A. Modules
9. Introduction to Safe Job Procedure Manual
10. Work Loading Job under Direct Supervision
 - A. Observe loading routine
 - B. Learn how to work ramps. valves, start and stop pumps

CONFIDENTIAL

R8S149749

11. Complete Load Rack Modules
12. Two Weeks of Plant Operator Training Basics
13. Complete Safety Observer Modules

CONFIDENTIAL

R&S149750

NAME _____

NEW EMPLOYEE EVALUATION SHEET

- ____ 1. COMPLETE DOW ORIENTATION
- ____ 2. EXPLAIN VINYL II CHAIN OF COMMAND
- ____ 3. COMPLETE SAFETY OBSERVER MODULES
- ____ 4. DRAW GENERAL PLANT LAYOUT
- ____ 5. CERTIFIED ON JLG AND FORKLIFT
- ____ 6. CERTIFIED ON EXPLOSIMETER AND BODY HARNESS
- ____ 7. COMPLETE NESHAP, LESHAP AND HAZMAT MODULES
- ____ 8. DRAW BASIC FLOWS OF THE FURNACES AND THE QUENCH DRUMS
- ____ 9. DRAW BASIC FLOWS OF HEAT RECOVERY
- ____ 10. DRAW BASIC FLOWS OF C-111, C-110, AND C-120
- ____ 11. DRAW BASIC FLOWS OF T-120 TO THE SPHERES
- ____ 12. DRAW BASIC FLOWS OF OXY
- ____ 13. DRAW BASIC FLOWS OF C-250 AND C-255
- ____ 14. DRAW BASIC FLOWS OF C-230, C-260, C-270 AND D-270
- ____ 15. DRAW BASIC FLOWS OF C-235 AND FEED TANKS
- ____ 16. DRAW BASIC FLOWS OF K-320 AND K-330
- ____ 17. DRAW BASIC FLOWS OF F-110 AND THE COOLING TOWER
- ____ 18. DRAW BASIC FLOWS OF R-400, F-410 AND F-420
- ____ 19. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR THE FURNACES, QUENCH DRUMS, AND HEAT RECOVERY
- ____ 20. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-111
- ____ 21. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-110
- ____ 22. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-100 AND C-120
- ____ 23. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR T-120 THROUGH C-140
- ____ 24. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR THE SPHERES
- ____ 25. DRAW INSTRUMENTATION, LIST TRIPS AND EXPLAIN BASIC
CONTROL SCHEME FOR R-201 AND R-202
- ____ 26. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-201, C-202, C-203, AND C-204
- ____ 27. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-211, C-212, AND D-214
- ____ 28. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-230 AND S-230
- ____ 29. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-260
- ____ 30. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-270 AND D-270
- ____ 31. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-250 AND C-255
- ____ 32. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR C-235
- ____ 33. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR K-320
- ____ 34. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME
FOR K-330

CONFIDENTIAL

R&S 149751

- _____ 35. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR F-110
- _____ 36. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR THE COOLING TOWER
- _____ 37. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR THE FUEL GAS SYSTEM
- _____ 38. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR THE VENT SYSTEM
- _____ 39. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR THE STEAM AND CONDENSATE SYSTEMS
- _____ 40. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR THE CHILLED EDC SYSTEM
- _____ 41. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR THE CHILLED WATER SYSTEM
- _____ 42. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR THE CELL EFFLUENT SYSTEM
- _____ 43. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR C-220
- _____ 44. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR C-240 AND PIT 430
- _____ 45. DRAW INSTRUMENTATION AND EXPLAIN BASIC CONTROL SCHEME FOR D-541
- _____ 46. EXPLAIN THE PLANT NITROGEN SYSTEM
- _____ 47. DRAW A TYPICAL LUBE OIL SKID INCLUDING INSTRUMENTATION AND EXPLAIN THE TRIPS ASSOCIATED WITH EACH SYSTEM
- _____ 48. DRAW INSTRUMENTATION AND LIST TRIPS FOR R-400
- _____ 49. DRAW INSTRUMENTATION AND LIST TRIPS FOR F-410 AND F-420
- _____ 50. DEMONSTRATE HOW TO MAKE THE OUTSIDE ROUND IN THE VINYL AREA
- _____ 51. DEMONSTRATE HOW TO MAKE THE OUTSIDE ROUND IN THE EDC AREA
- _____ 52. DEMONSTRATE HOW TO MAKE THE OUTSIDE ROUND IN THE OXY AREA
- _____ 53. DEMONSTRATE HOW TO MAKE THE OUTSIDE ROUND IN THE ECOLOGY AND THE UTILITIES AREA
- _____ 54. EXPLAIN THE PROPER WAY TO REPORT PROBLEM IN THE OUTSIDE ROUND
- _____ 55. DEMONSTRATE THE PROPER PROCEDURE FOR SWAPPING THE FEED TANKS
- _____ 56. DEMONSTRATE THE PROPER PROCEDURE FOR RESETTNG AMOTS AND LIGHTING BURNERS ON FURNACES
- _____ 57. EXPLAIN THE PROPER PROCEDURE FOR BLEEDING DOWN AND RED TAGGING EQUIPMENT
- _____ 58. DEMONSTRATE THE PROPER PROCEDURE FOR SWAPPING AIR DRYERS
- _____ 59. DEMONSTRATE THE PROPER PROCEDURE FOR SWAPPING THE OXY PURGE FILTERS
- _____ 60. DEMONSTRATE THE PROPER PROCEDURE FOR LINING UP THE T-590'S
- _____ 61. DEMONSTRATE THE PROPER PROCEDURE FOR LINING UP C-240
- _____ 62. DESCRIBE WHO TO CONTACT TO REPORT LEAKS AND THE PROPER PROCEDURE TO USE TO REPAIR THEM
- _____ 63. EXPLAIN THE PROPER WAY TO DO THE WEEKEND CHECKLIST AND WHEN TO DO THE WEEKEND CHECKLIST

CONFIDENTIAL

R&S149752

- ____ 64. DEMONSTRATE HOW TO SET UP THE SAMPLE ROUND IN THE LAB COMPUTER
- ____ 65. DEMONSTRATE HOW TO MAKE CHANGES IN THE COMPUTER LINE UP AND HOW TO ADD EXTRA SAMPLES
- ____ 66. DEMONSTRATE HOW TO CHANGE A SYRINGE AND SEPTUM ON THE CHROMOTOGRAPHS
- ____ 67. DEMONSTRATE HOW TO SHOOT A STANDARD AND PLOT THE RESULTS OF THE CHROMOTOGRAPH
- ____ 68. EXPLAIN WHEN TO CALL BILL OR FREDDIE TO WORK ON A CHROMOTOGRAPH OR ON THE COMPUTER
- ____ 69. DEMONSTRATE THE PROPER WAY TO CATCH VINYL SAMPLES, AND EXPLAIN WHEN TO CATCH THEM
- ____ 70. DEMONSTRATE THE PROPER WAY TO CATCH EDC SAMPLES, AND EXPLAIN WHEN TO CATCH THEM
- ____ 71. DEMONSTRATE THE PROPER WAY TO CATCH CONDENSATE AND WATER SAMPLES AND EXPLAIN WHEN TO CATCH THEM
- ____ 72. DESCRIBE PROPER SAMPLE CONFIGURATION AND EXPLAIN HOW TO REPAIR FAULTY SAMPLE POINTS
- ____ 73. DEMONSTRATE HOW TO RUN ALL VINYL CHROMOTOGRAPHS
- ____ 74. DEMONSTRATE HOW TO RUN ALL EDC CHROMOTOGRAPHS
- ____ 75. DEMONSTRATE HOW TO RUN EDC AND VINYL WATER ANALYSIS ON THE KARL FISCHER MACHINE
- ____ 76. DEMONSTRATE HOW TO RUN RECIPE AND UTILITY SAMPLES
- ____ 77. LIST ALL THE SAMPLE SPECS AND EXPLAIN WHY THEY ARE SET WHERE THEY ARE AT
- ____ 78. HAS COMPLETED BETZ WATER TREATING CLASS
- ____ 79. HAS COMPLETED ALL THE LAB MODULES
- ____ 80. HAS COMPLETED PILOT 1, UNITS 1&2
- ____ 81. HAS COMPLETED PILOT 3, UNITS 1&2 AND 3&4
- ____ 82. HAS COMPLETED PILOT 4, UNITS 1, 2, 3, AND 4
- ____ 83. HAS COMPLETED PILOT 6, UNIT 1 SECTIONS 1&2 AND SECTIONS 3 THROUGH 5
- ____ 84. HAS COMPLETED PILOT 7, UNIT 1
- ____ 85. HAS COMPLETED PILOT 14
- ____ 86. HAS COMPLETED PILOT 16
- ____ 87. HAS COMPLETED "RIGHT WAY TO OPERATE" CLASS

CONFIDENTIAL

R&S 149753

OS EDC TRAINING CHECKLIST

Chloroprene Removal

1. What is the purpose of C-250 and C-255? What are their feeds?
2. Be able to draw one line diagram of C-250 and C-255.
3. Give the locations of the following control valves, pumps and fans.

a. C-250 reflux C.V.	h. P-255's
b. C-250 bottoms C.V.	i. P-250's
c. Chlorine to MX-250 C.V.	j. P-251's
d. C-255 bottoms C.V.	k. ME-250's
e. C-255 reflux C.V.	l. ME-255's
f. CL2 to MX-255 C.V.	m. E-573
g. C-255 feed C.V.	n. E-256
4. Where does C-250 and C-255 bottoms go?
5. Where does the condensed liquid in D-250 and D-255 go?
6. Where do we vent D-250? D-255? E-256? E-573? Where else can these vents go?
7. What cooling do we use on E-256 and E-573?
8. What pressure steam do we use on RE-250 and RE-255?

EDC Finishing and Heavies Removal

1. What is the purpose of C-260? What are the feeds to C-260?
2. Be able to draw one line diagram of C-260.
3. Give the locations of the following equipment:

a. C-260 feed C.V.	e. ME-260's
b. P-261's	f. C-260 bottoms C.V.
c. P-260's	g. C-260 reflux C.V.
d. P-262's	h. D-260 L.C.V.
4. What is the purpose of D-260? E-261?

Date Completed

Trainee Signature

Trainer Signature

SOS - OXY & EDC AREA TRAINING CHECKLIST

	<u>Name</u>	<u>Dat</u>
<u>OXY Columns</u>		
1. What is the function of C201 and C203?	_____	_____
2. What is the difference between C201 and C203?	_____	_____
3. What should the pH run on C203 bottoms?	_____	_____
4. What should acid run on C201 bottoms?	_____	_____
5. Where does C201 and C203 bottoms go?	_____	_____
6. Where does the water to C201 and C203 come from?	_____	_____
7. List the locations of the following control valves: (a) water to C201 and C202, (b) C201 and C202 level control valves, (c) C211 reflux C/V	_____	_____
8. List the locations of the following control valves: (a) water to C203 and C204, (b) caustic to C203 and C204, (c) C203 and C204 bottoms level controller	_____	_____
9. Where does C203 overheads go?	_____	_____
10. C203 bottoms level is high and rising. The bottoms out control valve is wide open but showing a small flow. What is the problem and how can this be corrected?	_____	_____
11. Why do we use a purge on C201 & C203 instrumentation?	_____	_____
12. What kind of purge do we use on C201 and C203 instrumentation? What kind on C202 and C204?	_____	_____
13. What is the purpose of C211?	_____	_____
14. Why is the top of C211 cold and the bottom hot?	_____	_____
15. Where does C211 overheads go?	_____	_____
16. Where does C211 bottoms go?	_____	_____
17. Draw a diagram of the C211 system. Include pumps, exchangers, and control valves.	_____	_____
18. What is the coolant used on E213?	_____	_____
19. Draw a diagram of C212 system. Include pumps, exchangers, drums, and control valves.	_____	_____
20. Where does C212 overheads go? Where does D214 overheads go?	_____	_____
21. What are the tie-ins to the suction of C212 bottoms pumps and why should this be used very carefully?	_____	_____
22. What is the purpose of D214?	_____	_____
23. What trip is associated with D214?	_____	_____
24. What is the first thing to do when C203, C204, or T222 pH indications drop to zero during normal operation?	_____	_____
25. What should D214 overhead temperature run?	_____	_____
26. What does the temperatures on C211 middle and overhead usually run?	_____	_____
27. What are the major differences between Train I and Train II?	_____	_____

R&S 149755

CONFIDENTIAL

STAFF TRAINING

1. Safety Orientation
 - A. Block Indoctrination Film
 - B. Environmental (SPC, SPCC, RCRA, HAZCOM, ETC)
 - C. New Technical employee checklist
 - D. Walk through
2. Training Checklist
 - A. Safety
 - B. Environmental
 - C. Organization Review/Tour
 - D. Policies
 - E. Process
 - F. Division Tour
 - G. Miscellaneous Items (Phones, Computers, Mail, etc)
 - H. Job Assignment/Goal Setting
 - I. Training Curriculum Thru First 3 Years
3. One on One Training
4. Classroom Training
5. Goal Setting with Periodic Reviews During the Year
6. Retraining
 - A. Protective Equipment
 - B. Hazard Communication Training
 - C. Environmental (SPC, SPCC, RCRA)
 - D. Division S&LP's

VINYL II DEPARTMENT ORIENTATION FOR NEW TECHNICAL EMPLOYEES

PURPOSE

1. TO FAMILIARIZE THE NEW TECHNICAL EMPLOYEE WITH THE VINYL 2 DEPARTMENT.
2. TO INSTRUCT THE NEW EMPLOYEE IN THE THINGS THAT NEED TO BE LEARNED IMMEDIATELY.
3. TO REVIEW PROSPECTIVE JOB ASSIGNMENTS AND TRAINING PLANS.
4. TO PROVIDE THE NEW EMPLOYEE WITH BASIC MATERIALS NEEDED FOR TRAINING AND THE JOB.

RESPONSIBILITY

THE EMPLOYEE IS RESPONSIBLE TO SCHEDULE AND ATTEND ANY REQUIRED TRAINING, AND COMPLETE THE CHECKLIST IN THE TIME SPECIFIED. THE IMMEDIATE SUPERVISOR OF THE TECHNICAL EMPLOYEE IS RESPONSIBLE IN ASSISTING THE EMPLOYEE AS NEEDED BY PROVIDING TRAINING, DIRECTION TO THE APPROPRIATE PERSONNEL, ASSIST IN SCHEDULING AS NECESSARY, AND FOLLOW-UP TO ENSURE THE CHECKLIST IS COMPLETED ON TIME.

WHEN

ALL ITEMS IN THIS CHECKLIST MUST BE COMPLETED WITHIN 8 WEEKS OF EMPLOYEES START DATE AT VINYL II UNLESS OTHERWISE NOTED.

HOW

FOLLOW THE CHECKLIST. AS A SPECIFIC ITEM HAS BEEN COMPLETED, THE INSTRUCTOR OR SUPERVISOR MUST INITIAL AND DATE THE APPROPRIATE BLANKS. DURING USE, THE CHECKLIST SHOULD BE KEPT BY THE EMPLOYEE UNTIL ITEMS ARE COMPLETED DURING THE INITIAL EIGHT WEEK TRAINING PERIOD. AT THAT TIME, THE CHECKLIST SHOULD BE PLACED IN THE EMPLOYEE'S PERSONNEL FOLDER AND USED AT EACH GOAL REVIEW/PLANNING SESSION UNTIL THE ENTIRE CHECKLIST IS COMPLETED.

CONFIDENTIAL

R8S149757

VINYL II DEPARTMENT
NEW TECHNICAL EMPLOYEE ORIENTATION

CHECKLIST

EMPLOYEE: _____

SUPERVISOR: _____

HIRE/START DATE AT VINYL 2: _____

SAFETY

<u>DATE</u>	<u>BY</u>	
		1. ISSUE BASIC SAFETY EQUIPMENT:
_____	_____	A. HARD HAT
_____	_____	B. SAFETY GLASSES
_____	_____	C. MONOGOGGLES
_____	_____	D. NOMEX CLOTHING (ORDER)
_____	_____	E. RAIN SUIT & RUBBER BOOTS
_____	_____	F. HEARING PROTECTION
_____	_____	G. FULL FACE RESPIRATOR
_____	_____	H. RESPIRATOR LOCKER
_____	_____	2. DEMONSTRATE PROPER USE OF MONOGOGGLES
_____	_____	3. TAKE EMPLOYEE TO RESPIRATOR FITTING FACILITY TO CHECK RESPIRATOR FIT.
_____	_____	4. ISSUE A COPY OF BLOCK SAFETY RULES AND REVIEW WITH EMPLOYEE.
_____	_____	5. SEAT BELT POLICY
_____	_____	6. SPEED LIMIT
_____	_____	7. MOTOR CYCLE HELMETS
_____	_____	8. FACIAL HAIR POLICY

SAFETY (CONT)

- _____ 9. DRESS CODE
- _____ 10. SMOKING POLICY
- _____ 11. RED TAGS
- _____ 12. DIVISION SAFETY & LOSS PREVENTION
STANDARDS AND IPT MODULES. GIVE COPY
OF S&LP STD TO EMPLOYEE.
- _____ 13. EMERGENCIES
 - _____ A. 333
 - _____ B. BLOCK SPILL ALARM
 - _____ C. DIVISION EMERGENCY ALARM; DISCUSS
OUT OF BLOCK SPILLS THAT COULD
AFFECT THIS PLANT.
- _____ 14. SAFETY SHOWER AND EYE WASH FOUNTAINS;
DISCUSS LOCATION, SHOW HOW TO USE,
EXPLAIN ALARM SYSTEM.
- _____ 15. REPORTING INJURIES.
- _____ 16. INTERVENTION DURING AN UNSAFE ACT
- _____ 17. STAFF SAFETY PROGRAM
- _____ 18. DISCUSS HAZARDOUS CHEMICALS AND POINT
OUT ALL AREAS WHERE THEY EXIST.
- _____ 19. DISCUSS HAZARDS OF FLAMMABLES, LIQUIDS
AND VAPORS.
- _____ 20. DISCUSS HAZARDS OF INERT ATMOSPHERES
AND POTENTIAL HAZARD AREAS IN PLANT
(I.E. ANALYZER SHACKS)
- _____ 21. DISCUSS HAZARDS OF HOT WATER AND STEAM.
- _____ 22. REACTIVE CHEMICALS PROGRAM
- _____ 23. INDUSTRIAL HYGIENE: REVIEW COPY OF
BLOCK'S HAZCOM MANUAL.
- _____ 24. MINIMUM REQUIREMENTS: BRIEFLY REVIEW
AND ISSUE COPY OF BOOKLET.

SAFETY (CONT)

25. FIRE FIGHTING EQUIPMENT:

- _____ **A. SPRINKLER**
- _____ **B. DELUGE GUNS**
- _____ **C. EXTINGUISHER**
- _____ **D. DIESEL PUMPS**
- _____ **E. FOAM, ETC.**
- _____ **26. OTHER SAFETY EQUIPMENT, FIRE BLANKETS, AIR PACS, SCOTT AIR PAC (DEMONSTRATE USE).**
- _____ **27. DEMONSTRATE USE OF SAFETY HARNESS.**
- _____ **28. PRESSURE VESSEL PROGRAM**
- _____ **29. CRITICAL INSTRUMENT PROGRAM**
- _____ **30. PSV PROGRAM**
- _____ **31. SAFE JOB PROCEDURE MANUAL**
- _____ **32. REVIEW WCM SAFE HANDLING GUIDE**

ENVIRONMENTAL

- _____ **1. REVIEW EXPECTATIONS.**
- _____ **2. REVIEW ENVIRONMENTAL GUIDELINES AND REFERENCE.**
- _____ **3. REVIEW ENVIRONMENTAL CHECKLIST.**
- _____ **4. ENVIRONMENTAL SERVICES (INTERACTION WITH PLANT).**
- _____ **5. ENVIRONMENTAL REDBOOK (REVIEW)**

ORGANIZATION REVIEW AND BUILDING TOUR

- _____ **1. REVIEW DIVISION ORGANIZATION.**
- _____ **2. REVIEW PLANT ORGANIZATION.**

- _____ A. HOW TO GET THINGS DONE IN THE PLANT.
- _____ B. HOW TO GET THINGS DONE IN THE
ENGINEERING DEPARTMENT.
- _____ 3. TOUR OFFICE BUILDING, LAB, CONTROL
ROOM, AND WAREHOUSE.
- _____ 4. SHOW EMPLOYEE HIS/HER OFFICE.

PROCESS

- _____ 1. REVIEW GENERAL PROCESS (NOT TOO MUCH
DETAIL).
- _____ 2. MAKE OUTSIDE TOUR OF PLANT.
- _____ 3. GIVE EMPLOYEE FLOW SHEETS AND P&ID'S
- _____ 4. SPEND 1 DAY WITH OUTSIDE VINYL OS
- _____ 5. SPEND 1 DAY WITH OUTSIDE EDC OS
- _____ 6. SPEND 1 DAY WITH LAB/SAMPLE OS
- _____ 7. SPEND 1 DAY WITH I/E GROUP IN PLANT
- _____ 8. SPEND 1 DAY WITH EDO/MAINT (ATTEND 7 AM
CONTRACTOR SAFETY MEETING, GO WITH
PERMIT WRITER AS HE/SHE ISSUES PERMITS,
SPEND REST OF DAY WITH MILLWRIGHTS).
- _____ 9. SPEND 1 DAY WITH LOADING CREW LOADING
TANK CARS, OR SHIP.
- _____ 10. SPEND 1 DAY WITH SOS IN CONTROL ROOM
(ATTEND 6:30 AM TAILGATE MEETING. SPEND
1/2 DAY WITH VINYL SOS, 1/2 DAY WITH
EDC SOS).

POLICIES

- _____ 1. SAFETY/ENVIRONMENTAL
- _____ 2. WORK HOURS
- _____ 3. REPORTING ABSENCE
- _____ 4. VACATION
- _____ 5. PERSONAL ILLNESS
- _____ 6. FAMILY ILLNESS

- | | | |
|-------|-------|--|
| _____ | _____ | 7. FUNERAL LEAVE |
| _____ | _____ | 8. WEEKEND CALL |
| _____ | _____ | 9. PLANT SHIFT SCHEDULE |
| _____ | _____ | 10. OVERTIME |
| _____ | _____ | 11. INSURANCE |
| _____ | _____ | 12. EMPLOYEE'S INFORMATION FILE (GREEN BOOK) |
| _____ | _____ | 13. PASSOUT'S |
| _____ | _____ | 14. VISITORS (SALES PEOPLE, FAMILY, SIGN-IN LOG, ETC.) |

DIVISION TOUR

- | | | |
|-------|-------|---|
| _____ | _____ | 1. CREDIT UNION |
| _____ | _____ | 2. CAFETERIA |
| _____ | _____ | 3. MEDICAL DEPARTMENT |
| _____ | _____ | 4. STOCK |
| _____ | _____ | 5. MACHINE/FAB. SHOP |
| _____ | _____ | 6. MTS BUILDING |
| _____ | _____ | 7. LAS&TL |
| _____ | _____ | 8. CONFERENCE CENTER |
| _____ | _____ | 9. DOW LEARNING CENTER |
| _____ | _____ | 10. DOW STORE |
| _____ | _____ | 11. ENGINEERING |
| _____ | _____ | 12. R&D LIBRARY (GET COPY <u>FLOW OF FLUIDS</u> BY CRANE) |
| _____ | _____ | 13. VARIOUS GATES AVAILABLE FOR EMPLOYEE USE |
| _____ | _____ | 14. PURCHASING |

CONFIDENTIAL

R&S149762

MISCELLANEOUS

- | | | |
|-------|-------|--|
| _____ | _____ | 1. FILL OUT PAPERWORK(ATTENDANCE SHEETS, TIME, COST CENTER, PERSONAL INFO, ETC). |
| _____ | _____ | 2. ISSUE OFFICE SUPPLIES/TELEPHONE BOOKS, SHOE TICKETS, ETC. |
| _____ | _____ | 3. TELEPHONE - ASSIGN NUMBER AND HOW TO USE. |
| _____ | _____ | 4. INTERCOM - HOW TO USE. |
| _____ | _____ | 5. COPY MACHINE - HOW TO USE. |
| _____ | _____ | 6. MAIL SYSTEM - ASSIGN MAILBOX AND HOW TO USE. |
| _____ | _____ | 7. LOCATION OF EQUIPMENT FILES. |
| _____ | _____ | 8. TIME CARDS/ATTENDANCE RECORDS. |
| _____ | _____ | 9. PAY DAY |
| _____ | _____ | 10. LOCATION OF FORMS AND SUPPLIES. |
| _____ | _____ | 11. HOW TO USE VOICE MAIL. |
| _____ | _____ | 12. COMPUTER SYSTEMS - GET ACCOUNTS AND HOW TO USE |
| _____ | _____ | 13. NAMEPLATES FOR OFFICE AND MAILBOX |
| _____ | _____ | 14. FRANKLIN DAY PLANNER - ORDER AND HOW TO USE |
| _____ | _____ | 15. GENERAL PLANT COMMUNICATIONS |
| _____ | _____ | A. MORNING STAFF MEETING |
| _____ | _____ | B. WEEKLY PROJECT REVIEW |
| _____ | _____ | C. MONTHLY MAJOR MANAGER REVIEW |
| _____ | _____ | D. LOGBOOK, OPERATIONS COMMUNICATIONS MANUAL, INSTRUCTION LOGBOOK, ETC) |
| _____ | _____ | 16. BUSINESS CARDS (ORDER) |
| _____ | _____ | 17. REVIEW COPY OF PRODUCTION SECTION OF RECORDS RETENTATION BOOKLET |

CONFIDENTIAL

R&S149763

JOB ASSIGNMENT

- | | | |
|-------|-------|---|
| _____ | _____ | 1. MEET WITH PLANT SUPERINTENDENT
(DISCUSS WHAT IS EXPECTED OF
ENGINEERS) . |
| _____ | _____ | 2. ASSIGN AREA/PROJECT OF RESPONSIBILITY. |
| _____ | _____ | 3. SET 3 TO 5 GOALS BASED ON AREA/PROJECT
OF RESPONSIBILITY, SAFETY,
ENVIRONMENTAL, AND TRAINING NEEDS. |
| _____ | _____ | 4. MEET WITH MAJOR MANAGER
(DISCUSS WHAT IS EXPECTED OF
ENGINEERS) . |

CONFIDENTIAL

R&S149764

TRAINING CURRICULUM

FIRST MONTH TRAINING

- | | | |
|-------|-------|---|
| _____ | _____ | 1. VINYL 2 BLOCK INDOCTRINATION FILM(FIRST WEEK ON THE JOB) |
| _____ | _____ | 2. VINYL 2 HAZCOM TRAINING |
| _____ | _____ | 3. VINYL 2 RCRA TRAINING |
| _____ | _____ | 4. VINYL 2 SPC AND SPCC TRAINING |
| _____ | _____ | 5. VINYL 2 VINYL STANDARD TRAINING |
| _____ | _____ | 6. VINYL 2 HAZARDOUS WASTE OPERATION AND EMERGENCY RESPONSE (HAZWOPER) TRAINING |
| _____ | _____ | 7. VINYL 2 CPAI TRAINING |
| _____ | _____ | 8. MSDS SHEETS (SHOW LOCATION AND EXPLAIN USE) . |

FIRST YEAR TRAINING

- | | | |
|-------|-------|---|
| _____ | _____ | 1. ORIENTATION (DPS-6397) |
| _____ | _____ | 2. DOCUMENT CREATION & RETENTION(DPS-6796) |
| _____ | _____ | 3. ENVIRONMENTAL COMPLIANCE (DPS-7097) |
| _____ | _____ | 4. SAFE WORKING STYLES (DPS-5128) |
| _____ | _____ | 5. ENGINEERING TRAINING (DPS-7210) |
| _____ | _____ | 6. MECHANICAL WORKSHOP (DPS-7102) |
| _____ | _____ | 7. SHARING DOW'S VISION (DPS-7106) |
| _____ | _____ | 8. QUALITY PERFORMANCE REQUIREMENTS FOR SUCCESS (DPS-7114) |
| _____ | _____ | 9. INTRODUCTION TO COMPUTERS AT DOW (DPS-7489) |
| _____ | _____ | 10. INTRODUCTION TO THE VAX (DPS-6283) |
| _____ | _____ | 11. BASIC INSTRUMENTATION AND METERING FOR TECHNICAL EMPLOYEES (DPS-7118) |
| _____ | _____ | 12. TSCA TRAINING (DPS-6157) |

CONFIDENTIAL

RS149765

- _____ 13. EXISTING FOR THE CUSTOMER (DPS-7107)
- _____ 14. PERSONAL LEADERSHIP (DPS-7110)
- _____ 15. TIME MANAGEMENT (DPS-8701)
- _____ 16. ENVIRONMENTAL AMBASSADOR TRAINING
(DPS-9044)
- _____ 17. MICROSOFT WINDOWS
- _____ 18. MICROSOFT WORD FOR WINDOWS
- _____ 19. MICROSOFT EXCEL
- _____ 20. HARVARD GRAPHICS
- _____ 21. MOD5 USERS PART 1
- _____ 22. MOD5 USERS PART 2
- _____ 23. MOD5 PROGRAMMERS CLASS (IF PROGRAMMING)
- _____ 24. MOD5 HARDWARE (IF MOD5 PROGRAMMING)
- _____ 25. DSS USERS CLASS (IF MOD5 PROGRAMMING)
- _____ 26. FIRE FIGHTING TRAINING

SECOND YEAR TRAINING

- _____ 1. DOWVILLE SAFETY WORKSHOP (DPS-722)
- _____ 2. ELECTRICAL EQUIPMENT AND DISTRIBUTION
(DPS-4741)
- _____ 3. SPC - INTRO FOR TECHNICAL EMPLOYEES
(DPS-5136)
- _____ 4. COMMUNICATIONS SKILLS WORKSHOP
(DPS-6348)
- _____ 5. CAPITAL OVERVIEW (DPS-7288)

THIRD YEAR TRAINING

- _____ 1. ENHANCING VERSATILITY SKILLS (DPS-5400)
- _____ 2. TURNAROUND PLANNING (DPS-429)
- _____ 3. CAPITAL PROJECT MANAGEMENT (DPS-6081)

IPT TRAINING PROGRAM STATUS

- * Development Complete And In Use

 - Loading Area

 - Gold Hat Safety Training

- * Operations

 - Personnel Trained on Development

 - IPT Flowsheet Developed

 - 5% of Modules Complete

- * Lab

 - Program Under Development

CONFIDENTIAL

R&S149767

VINYL II IPT FLOWSHEET

BASICS		PILOT COURSES	DATE IN	DATE IN CHECK	DATE COMPLETE
INDOCTRINATION	D				
BLOCK SAFETY	B				
RESPONSIBILITY	C				
PLANT KNOWLEDGE	A				
BASIC SECTION TEST					
GENERAL PROCESS					
PROCESS FLOWS & EQUIPMENT	C				
UTILITIES	C				
ELECTRICAL	A				
ENVIRONMENTAL					
VALVES, IDENTIFICATION	B				
VALVES, OPERATION	B				
TERMINOLOGY	B				
CENTRIFUGAL PUMPS	A				
BLOWERS					
COMPRESSORS	B				
FIN FAN COOLERS					
GENERAL PROCESS SECTION TEST					
PROCESS FAMILIARIZATION					
CRUDE VINYL					
FURNACES					
F-101-106					
MECHANICAL EQUIPMENT					
FURNACE TUNING					
AREA HAZARDS					
CONTROL SENSING					
ANALYZERS					
OPERATION DISCIPLINE					
PROCEDURES					
FURNACE FEED PUMPS					
P-100, P-107, E-112					
MECHANICAL EQUIPMENT					
CONTROL SENSING					
OPERATION DISCIPLINE					
AREA HAZARDS					
PROCEDURES					

CONFIDENTIAL

R&S 149768

BASIC EXPECTATIONS

PURPOSE: TO FAMILIARIZE THE SAFETY OBSERVER/NEW HIRE WITH THE EXPECTATIONS OF THE VINYL II PLANT DURING VESSEL ENTRY JOBS.

RESOURCES: ASSIGNED TRAINER, SAFETY AND LOSS PREVENTION STANDARDS, AND SAFETY REFERENCE

REQUIRED LEVEL OF PERFORMANCE: 100% CORRECT

OBJECTIVES:

1. BEFORE ENTRY INTO THE VESSEL, WHAT SHOULD YOU CHECK?
 - A. MAKE SURE THERE IS ADEQUATE BREATHING AIR EQUIPMENT LOCATED ON THE JOBSITE.
 - B. CHECK FOR THE PROPER EQUIPMENT USED IN REMOVING A PERSON FROM THE VESSEL (HARNESS, ROPE, TAG LINE)
 - C. GOOD VENTILATION
 - D. SNIFF INSIDE OF VESSEL FOR OXYGEN AND COMBUSTIBLES.
2. WHAT ACTION SHOULD BE TAKEN IN CASE OF THE FOLLOWING PROBLEMS?
 - A. SPILL INSIDE THE VINYL II BLOCK
 1. IF THE VESSEL IS DOWN STREAM OF THE SPILL, THE VESSEL SHOULD BE CLEARED. AFTER VESSEL IS CLEARED, CONTACT CONTROL ROOM FOR UPDATE ON SPILL.
 2. IF YOU ARE NOT SURE, CLEAR THE VESSEL AND CONTACT THE CONTROL ROOM FOR MORE INFORMATION.
 3. AFTER THE ALL CLEAR IS GIVEN, AN AIR SAMPLE SHOULD BE TAKEN AND ANALYZED BEFORE GOING BACK INTO THE VESSEL.
 - B. VENTILATION SHUTDOWN
 1. CLEAR VESSEL UNTIL VENTILATION IS RESTORED AND SNIFF VESSEL AGAIN.
 - C. SUPPLIED AIR RUNS OUT
 1. CLEAR VESSEL
 - D. LIGHTING MALFUNCTION
 1. CLEAR VESSEL

CONFIDENTIAL

R&S149769

REVIEW OF VINYL II TRAINING AND RETRAINING PROGRAMS

SUMMARY

Vinyl II in the past has been very strong in operations. We had many operations personnel here in plant since it started up in the late 70's. Everyone knew their job and operations training was not a major focus because of this high level of knowledge. During the last three years, promotions and new plants/positions have given these experienced people opportunities and has led to a major decrease in job knowledge at Vinyl II. We feel a good training program is in place but it can be improved. A major shift is underway to swap to the IPT Training System to improve this training effort and to update all our training materials. We have recently developed a new technical employee training checklist that is currently being implemented.

STRENGTHS

Excellent Teamwork and spirit to help each other

Strong experienced SOS personnel

Excellent new operations personnel with will to learn

Set Goals with all Vinyl II Personnel

Load Rack, Gold Hat Safety Training, IPT System In Place

CONFIDENTIAL

REVIEW OF VINYL II
TRAINING AND RETRAINING PROGRAMS

OPPORTUNITIES

Complete Development and Implement the IPT Training System in
Operations and Lab

Update Training Materials

Swap back from Outside Exception Rounds to Written Rounds (In Progress)

Continue Improving the Goal Setting Process

Update and Resume Use of Operator Training Checklist

Implement Technical Training Checklist

Begin Testing after Safety Orientation for Block (In Progress)

Retraining on S&LP Standards

Fire Fighting Retraining

Asbestos Retraining

Reactive Chemical Training Program

CONFIDENTIAL

R&S149771

SIGNIFICANT INCIDENTS/MAJOR CONCERNS

CONFIDENTIAL

R8S149772

Vinyl II Incident Review

- Current Statistics
- Significant Incidents from 1990-1991
- Repetitive Incident Causes
- Areas of Concern

SRC:8/91

CONFIDENTIAL

R&S149773

PERILLOUX AREA SAFETY DATA

TO:

PLANT	VINYL II
MONTH	JULY
YEAR	1991

ON THE JOB INJURIES MID YTD GOAL QTD 3YTD 5YTD

INDUSTRIAL INJURIES	
OSHA RECORDABLE INJURIES	
DAW'S	
TOTAL INJURIES	
INJURIES CLASSIFIED AS A PSA	
LIGHT DUTY DAYS DUE TO AN INJURY	
LOST DAYS DUE TO AN INJURY	

ON THE JOB INJURIES/CONTRACTORS

CONTRACTOR INJURIES (BANDAID CASES)	
CONTRACTOR OSHA RECORDABLE INJURIES	
DAW'S	
TOTAL INJURIES	

OFF THE JOB INJURIES

OFF THE JOB DAW'S	
LIGHT DUTY DAYS DUE TO A OTJI	
DAW'S DUE TO A OTJI	

INCIDENTS (NOTIFIED/INVOLVED)

INCIDENTS CLASSIFIED AS A PSI/PSA	
INCIDENTS CLASSIFIED AS NOT PSI/PSA	

REASON FOR LOSS OF INCIDENTS

REACTIVE CHEMICAL	
ENVIRONMENTAL NOT REPORTED OUTSIDE	
ENVIRONMENTAL REPORTED OUTSIDE	
OTHER	
INCIDENTS WITH FOLLOWUP ACTION OVERDUE	

INCIDENTS INVOLVING PROCEDURE VIOLATION

ALL (INJURY AND NON-INJURY)	
-----------------------------	--

UNSAFE CONDITION REPORTS MONTH YTD

UNSAFE CONDITION REPORTS WRITTEN	
NUMBER CORRECTED ON THE SPOT	
FROM PREV. YRS	
NUMBER OF ACTIVE REPORTS	
NUMBER PAST EXPECTED COMPLETION DATE	

C/A CHECKLIST ITEMS YEAR

TOTAL ITEMS ON LIST	
TOTAL NOT IN COMPLIANCE	

SAFETY MEETING ATTENDANCE

NUMBER OF PEOPLE ELIGIBLE	
NUMBER OF PEOPLE ATTENDED	
PERCENT ATTENDANCE	

RED TAG MASTERS

NUMBER WRITTEN	
NUMBER OF ERRORS	
PERCENT COMPLETION	

REDACTED

CONFIDENTIAL

R&S149774

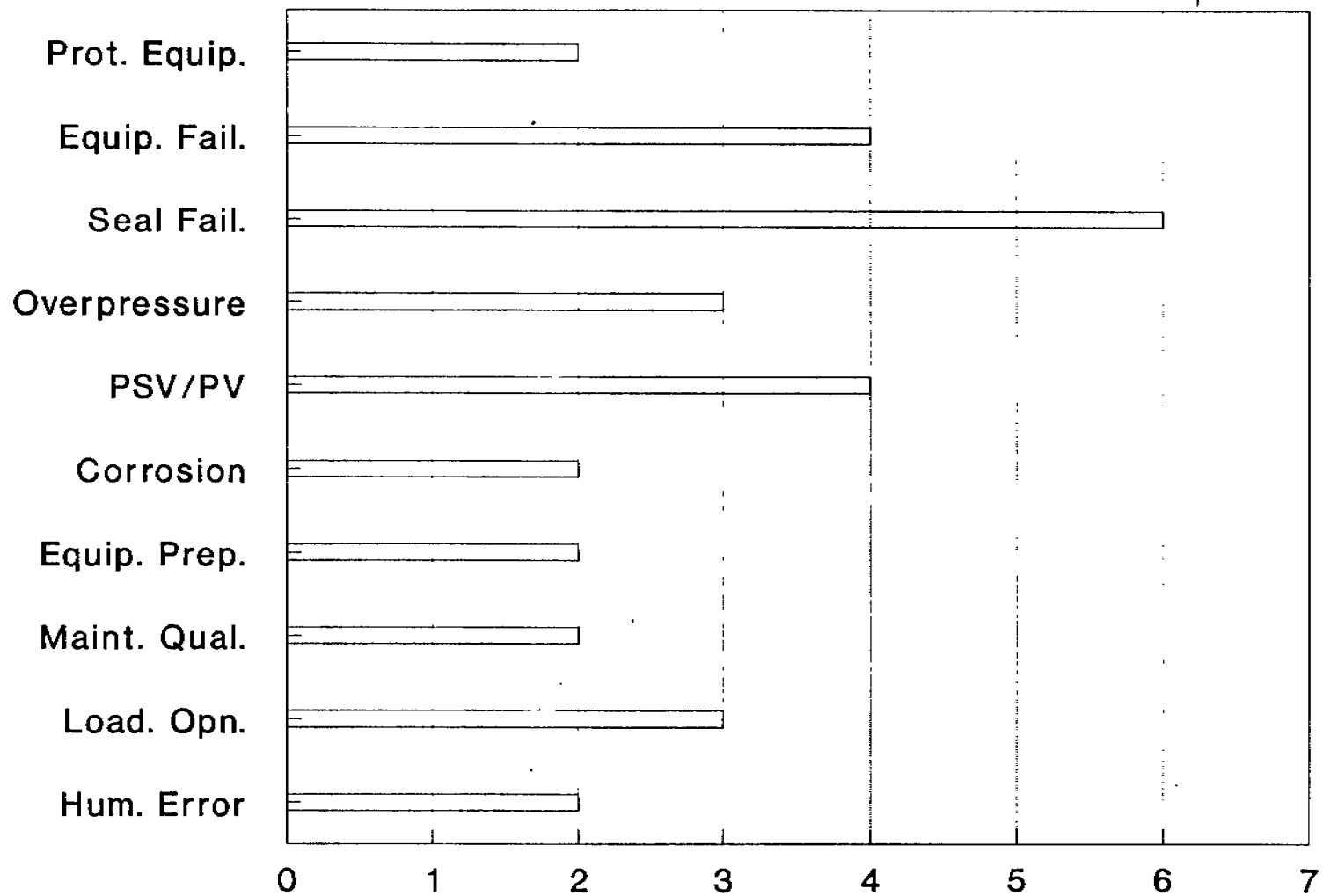
VINYL II SAFETY COORDINATOR

QUALITY PERFORMANCE IMPROVEMENT INDEX

PERFORMANCE VARIABLES	PERIOD	RESULTS										TOTAL	WEIGHT	VALUE
		1	2	3	4	5	6	7	8	9	10			
INDUSTRIAL INJURIES														
OSHA RECORDABLE INJURIES														
OFF THE JOB DAW'S														
INCIDENTS NOT PSI/PSA														
INCIDENTS PSA/PSI														
SAFETY MEETING ATTENDANCE														
C-9 COMPLIANCE														
RED TAGS COMPLETION														
CONTRACTOR INJURIES														
(BANDAID CASES)														
CONTRACTOR RECORDABLE INJ.														
(OSHA RECORDABLES)														
PLANT: VINYL II														
		BASE LINE										TOTAL		

DATE: JULY 91

Vinyl II 1990-1991 Significant Incidents



src:8:91

CONFIDENTIAL

R&S149776

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY _____ S&LP STD. VIOLATION _____ ENVIRON. <u>XX</u> RxCHEM. _____	DATE OF ACCIDENT: <u>04/27/91</u>
() D-RWC#	() C-RWC#		TIME OF ACCIDENT: <u>04:45 PM</u>
() D-DAW#	() C-DAW#		DATE INVESTIGATED: <u>4/29/91</u>
() PSA#	() \$50000PD		DATE REP SUBMITTED: <u>05/01/91</u>

BLOCK AND LOCATION OF ACCIDENT VINYL II, F105 SYSTEM--P103B ON D103

NAME OF INJURED/INVOLVED EMPLOYEE -- CLASS. --

TIME AT DOW (Mos.) -- MASTER No. -- TIME ON JOB (Mos.) --

CONTRACTOR INVOLVED/SUPERVISOR --

CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) ETHYLENE DI CHLORIDEAMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 881 #'S TO GRADE, 434 #'S TO ATM.ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) SEAL FAILURE P103B

ACCIDENT/INCIDENT DESCRIPTION (FULL) AT 4:45 PM OUTSIDE OPERATOR CALLED IN SEAL LEAK ON P103B. BLOCK VALES ON PUMP WOULD NOT HOLD TO ISOLATE, ISOLATED PUMP WITH EBV'S AND HOOKED UP N2 TO SEAL PURGE OUTLET AND BLEW BACK INTO PUMP TO STOP LEAK WHILE PRESSURING OUT D103 TO D112. NOTIFIED SECURITY AND REPORTED CALCULATED QUANTITY TO ENVIRONMENTAL PERSON ON CALL (ADDITIONAL INFO ATTACHED).

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT

INJURY

BODY PART

300 EQUIPMENT FAILURE355 AIR RELEASE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

200 OPERATION/NON-ROUTINE999 D103 DECONT.095 OPERATION/PRODUCT TRANSFER

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

810 EQUIPMENT FAILURE010 IMPROPER INSTALL/MAINT.800 PROCEDURES NOT FOLLOWED401 INATTENTION982 INADEQUATE JOB PLANNING

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: REVIEW WITH ALL TEAMSRESPONSIBILITY: _____ EXPECTED COMPLETION: 5/17/91 ACTUAL COMPLETION: 5/17/91ACTION: CHANGE OUT SEATS ON ALL BLOCK VALVES INVOLVED IN INCIDENTRESPONSIBILITY: _____ EXPECTED COMPLETION: 5/30/91 ACTUAL COMPLETION: 5/24/91

ACTION: _____

RESPONSIBILITY: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

F&S149777

**DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT**

() OSHA# _____ () COSHA# _____	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY _____ S&LP STANDARD VIOLATION _____ ENVIRON. <u>X</u> RxCHEM. _____	DATE OF ACCIDENT: <u>8/9/90</u>
() O-RES# _____ () CO-RES# _____		TIME OF ACCIDENT: <u>3:25 P.M.</u>
() O-DAW# _____ () CO-DAW# _____		INVESTIGATED: <u>8/10/90</u>
(X) PSA# _____ () \$50000PD		REPORT DATE: <u>8/10/90</u>

CONFIDENTIAL

LOCK AND LOCATION OF ACCIDENT VINYL 2 BLOCK 66 FURNACE AREA
 NAME OF INJURED/INVOLVED EMPLOYEE _____ CLASS. _____
 TIME AT DOW (Mos.) _____ MASTER No. _____ TIME ON JOB (Mos.) _____
 CONTRACTOR INVOLVED/SUPERVISOR _____
 ENVIRONMENTAL IMPACT: YES No AIR X WATER OTHER

ACCIDENT/INCIDENT DESCRIPTION: OPERATOR WAS PREPARING THE F-103 FEED STATION TO
PUT IT BACK IN SERVICE AFTER A PIPING MODIFICATION WHEN HE WAS INTERRUPTED AND
WATER RETURNED TO JOB. THE BLEED VALVE AND BLIND FLANGE WERE LEFT OPEN AND THE
FEED STATION WAS PUT IN SERVICE. WHEN THE FIRST BLOCK VALVE WAS CRACKED OPEN,
EDC SPILLED OUT THE BLEED ONTO THE GROUND. 12,500 LBS. EDC WAS SPILLED AND
CONTAINED BEFORE THE BLOCK VALVE COULD BE CLOSED. 200# EDC WAS ESTIMATED
RELEASED TO THE AIR. NATIONAL RESPONSE CENTER WAS NOTIFIED OF THIS RELEASE.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)
 ACCIDENT/INCIDENT _____ INJURY _____ BODY PART _____

50 SPILL _____

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

00 OPERATION/ROUTINE _____
75 OPERATION START-UP _____

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)
 ON SITE _____ PRE-EXISTING _____

01 INATTENTION _____

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: REVIEW INCIDENT WITH ALL SHIFTS EMPHASIZING TAKE 2 AND SWS.

RESPONSIBILITY _____ EXPECTED COMPLETION: 8/24/90 ACTUAL COMPLETION: comp
 ACTION: CHECK FIRE SPRINKLER NOZZLES FOR PROPER OPERATION.
 RESPONSIBILITY: _____ EXPECTED COMPLETION: 8/20/90 ACTUAL COMPLETION: comp
 ACTION: INSTALL ADDITIONAL SPILL BUTTON IN NEW CONTROL ROOM AREA.
 RESPONSIBILITY: _____ EXPECTED COMPLETION: 9/1/90 ACTUAL COMPLETION: comp

REDACTED

R&S149778

SUPERVISOR'S SIGNATURE_____
INVESTIGATED BY_____
SIGNATURE OF INJURED

VINYL 2 EDC RELEASE

OLD FEED STATION

NEW FEED STATION

REDACTED

CONFIDENTIAL

R&S149779

**DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT**

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: 6/18/91
() D-RWC#	() C-RWC#	INJURY	TIME OF ACCIDENT: 11:30 P.M.
() D-DAW#	() C-DAW#	S&LP STD. VIOLATION	DATE INVESTIGATED: 6/21/91
() PSA#	() \$50000PD	ENVIRON. <u>XX</u> RxCHEM.	DATE REP SUBMITTED: 6/21/91

BLOCK AND LOCATION OF ACCIDENT VINYL II COOLING TOWER
NAME OF INJURED/INVOLVED EMPLOYEE _____ CLASS. _____
TIME AT DOW (Mos.) _____ MASTER No. _____ TIME ON JOB (Mos.) _____
CONTRACTOR INVOLVED/SUPERVISOR _____
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) VINYL CHLORIDE MONOMER
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 28.5 LBS.
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) VINYL CONDENSER TUBE LEAK
INTO COOLING TOWER WATER

ACCIDENT/INCIDENT DESCRIPTION (FULL) SOUTHWEST COOLING TOWER AIR MONITOR ALARM WAS ACTIVATED AT 11:30 P.M. ON VINYL CHLORIDE. OPERATIONS BEGAN INVESTIGATING WITH HNU AT THE TOWER. NO VINYL WAS REGISTERED, BUT WHEN THE WATER WAS SAMPLED IT SHOWED 5 PPM VINYL. FURTHER SAMPLING ON OUTLET OF VINYL COOLING TOWER EXCHANGERS USING MASS SPEC INDICATED VINYL LEAK OCCURRING AT E-140. SHUTDOWN E-140 AND FOUND ONE TUBE LEAKING.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

[illegible]

355 AIR RELEASE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

100 OPERATION/ROUTINE

035 NO TASK

CAUSES (List ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

810 EQUIPMENT FAILURE

015 INADEQUATE DESIGN

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: SHUT PLANT DOWN & FIX TUBE LEAK.

RESPONSIBILITY: EXPECTED COMPLETION: 6/20/91 ACTUAL COMPLETION: 6/20/91

ACTION: EVALUATE NEW EXCHANGER DESIGN FOR INSTANTANEOUS HIGH RATES.

RESPONSIBILITY: _____ EXPECTED COMPLETION: 11/1/91 ACTUAL COMPLETION: 7/31/91

ACTION: IMPROVE HEAT RECOVERY & STEAM CONTROL ON C-140.

RESPONSIBILITY: _____ EXPECTED COMPLETION: 7/21/91 ACTUAL COMPLETION: _____

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S 149780

D-RMTC# <u> </u> () C-RMTC# <u> </u>	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: <u>6/15/91</u>
() D-RWC# <u> </u> () C-RWC# <u> </u>	INJURY <u> </u> NON-INJURY <u> </u>	TIME OF ACCIDENT: <u>9:10 A.M.</u>
() D-DAW# <u> </u> () C-DAW# <u> </u>	S&LP STD. VIOLATION <u> </u>	DATE INVESTIGATED: <u>6/15/91</u>
	ENVIRON. <u> </u> RxCHEM. <u> </u>	DATE REP SUBMITTED: <u>6/16/91</u>
() PSA# <u>XX</u> () \$50000PD <u> </u>		

ACCIDENT/INCIDENT DESCRIPTION (FULL) SEE ATTACHED

[illegible]

EQUIPMENT FAILURE

100	OPERATION ROUTINE	075	OPERATION/STARTUP
-----	-------------------	-----	-------------------

ON SITE	PRE-EXISTING
----------------	---------------------

<u>310</u>	<u>EQUIPMENT FAILURE</u>	<u>015</u>	<u>IMPROPER DESIGN</u>
		<u>010</u>	<u>IMPROPER INSTALL/MAINT</u>

ACTION: CHECK VALVE FOR PROPER DESIGN.

RESPONSIBILITY: EXPECTED COMPLETION: 6/17/91 ACTUAL COMPLETION: 6/17/91

RESPONSIBILITY: EXPECTED COMPLETION: 6/21/91 ACTUAL COMPLETION: 6/21/91

ACTION: EVALUATE MECHANICAL STOPS.

RESPONSIBILITY: EXPECTED COMPLETION: 6/17/91 ACTUAL COMPLETION: 6/17/91

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S 149781

JUNE 15, 1991

F-106 INVESTIGATION OF INCIDENT

WHILE BRINGING UP F-106, WE WERE AT A POINT OF HAVING EDC FEED AT 50,000 LBS./HR. FLOWING THROUGH THE FURNACE. THE BOTTOM ROW OF LOWER RADIANT BURNERS HAD BEEN LIT AND WE WERE WAITING FOR THE SUPERCRITICAL PRESSURE TO RAMP UP. WE HAD INCREASED THE FEED RATE FROM 20,000 TO 50,000 TO GET THE PRESSURE UP AFTER WAITING ABOUT FORTY MINUTES. WE HAD ALSO CLOSED THE SUPERCRITICAL VALVE BACK MANUALLY TO TRY AND GET THE PRESSURE UP AND VERIFIED THE VALVE POSITION AS NOT BEING COMPLETELY CLOSED. AT THIS POINT, IT WAS DECIDED TO LIGHT FOUR MORE BURNERS TO ASSIST AS WELL. THE PRESSURE SEEMED TO WANT TO EASE UP SOME BUT FELL RIGHT BACK OFF (200#). WE THEN STARTED LOWERING THE FEED BACK TO 20,000 LBS./HR. BECAUSE THE LEVEL IN D-108 HAD COME UP PRETTY HIGH. SHORTLY THEREAFTER, THE SUPERCRITICAL PRESSURE STARTED GOING UP AS IT SHOULD HAVE IN THE FIRST PLACE. IT WAS THEN THAT THE SUPERCRITICAL CONTROL VALVE HAD GONE CLOSED AND WOULD NOT COME BACK OPEN. THE EDC FEED FELL OFF TO ZERO AS THE SUPERCRITICAL PRESSURE WENT ABOVE 1000 PSIG. F-106 TRIPPED ON LOW FEED FLOW AND WE COULD NOT CLOSE THE FEED CONTROL VALVE TO STOP THE FLOW NOR COULD WE OPEN THE SUPERCRITICAL CONTROL VALVE TO RELIEVE THE PRESSURE ON THE COIL. THE FEED EBV WAS CLOSED TO STOP THE FLOW INTO THE FURNACE AND THE ABORT KEY WAS USED TO TRY TO OPERATE THE FEED AND SUPERCRITICAL CONTROL VALVES. MEANWHILE, THE FURNACE BEGAN TO PRESSURE UP FROM ALL OF THE HEAT PRESENT IN THE FIREBOX. THE OUTSIDE OPERATOR ATTEMPTED TO SLOWLY BLEED THE AIR PRESSURE FROM THE SUPERCRITICAL CONTROL VALVE, BUT THE VALVE DID NOT FAIL OPEN AS IT SHOULD HAVE. THE FURNACE AREA WAS CLEARED AND SECURITY WAS ALERTED THAT THE PLANT WAS IN AN UNSTABLE CONDITION. WE THEN SWAPPED TO THE LOWER PRESSURE P-100 AND OPENED THE FEED EBV AND CONTROL VALVE TO RELIEVE THE PRESSURE FROM THE COIL. WE ALSO OPENED THE DAMPER TO 100 % TO HELP COOL THE FIREBOX. WE ALSO OPENED THE P-100 DISCHARGE PRESSURE CONTROL VALVE BACK TO THE FEED TANKS BEFORE SWAPPING THE P-100'S AND INCREASED THE FEED TO THE OTHER FURNACES TO HELP LOWER THE PRESSURE. THE PRESSURE GOT AS HIGH AS 1471 PSIG ON THE COIL. WE IMMEDIATELY DROPPED THE PRESSURE TO 950 PSIG AND FROM THAT POINT ON THE PRESSURE CONTINUED TO EASE DOWN. INSTRUMENT PERSONNEL WERE CALLED OUT TO CHECK THE VALVE AND THEY

CONFIDENTIAL

R&S 149782

DISCOVERED THAT THE VALVE HAD BEEN TUBED UP WRONG. THE SUPPLY PRESSURE WAS SET AT 25 PSIG AND SHOULD HAVE BEEN 110 PSIG. THE AIR TO THE I/P WAS SET AT 83 PSIG AND SHOULD HAVE BEEN 25 PSIG. THE VALVE WAS RETUBED AND TESTED BY PUTTING EDC THROUGH THE COIL WITHOUT LIGHTING ANY BURNERS. THE SUPERCRITICAL VALVE WAS OPENED TO 15% AND PUT ON MANUAL. WHEN THE FLOW WAS STARTED, THE VALVE WOULD OPEN AND CLOSE ON ITS OWN SWINGING THE PRESSURE FROM 100 TO 900 PSIG. THE CONTROL VALVE RESPONDED IN THIS SAME MANNER ON THE ORIGINAL FURNACE STARTUP BACK IN MARCH. IT WAS REPAIRED THEN, BUT IT IS DOING THE SAME THING AGAIN.

CONFIDENTIAL

R&S 149783

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC# <u> </u> () C-RMTC# <u> </u>	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: <u>03/09/91</u>
() D-RWC# <u> </u> () C-RWC# <u> </u>	INJURY <u> </u> NON-INJURY <u>XX</u>	TIME OF ACCIDENT: <u>2:19 PM</u>
() D-DAW# <u> </u> () C-DAW# <u> </u>	S&LP STD. VIOLATION <u> </u>	DATE INVESTIGATED: <u>03/11/91</u>
() PSA# <u> </u> () \$50000PD <u> </u>	ENVIRON. <u>XX</u> RxCHEM. <u> </u>	DATE REP SUBMITTED: <u>03/12/91</u>

BLOCK AND LOCATION OF ACCIDENT VINYL II F101

NAME OF INJURED/INVOLVED EMPLOYEE CLASS.
TIME AT DOW (Mos.) MASTER No. TIME ON JOB (Mos.)
CONTRACTOR INVOLVED/SUPERVISOR
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) VINYL AND EDC
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 3.7 LB VCM, 43.5 LB EDC (PAST FLARE)
ACCIDENT/INCIDENT DESC. (10 WORDS OR LESS) F101 TAILPIPE PSV FAILED PREMATURELY

ACCIDENT/INCIDENT DESCRIPTION (FULL) At 2:19 we received an alarm of vinyl in the flare at V260 of 2060 ppm. Shortly thereafter outside operator called in to say the outlet of F101 tailpipe PSV was very warm and was relieving. The pressure guage upstream of PSV was reading 160# before PSV failed. PSV setting 212#. Furnace was shutdown and PSV isolated and changed out.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT

INJURY

BODY PART

300 EQUIPMENT FAILURE355 AIR RELEASE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

100 OPERATION ROUTINE

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

310 EQUIPMENT FAILURE999 INVESTIGATING PSV FOR DEFECTS

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: INSPECT PSV FOR PREMATURE FAILURERESPONSIBILITY: EXPECTED COMPLETION: 03/15/91 ACTUAL COMPLETION: ACTION: BASED ON PSV FINDINGS--DECIDE IMMEDIATE S/D OF EQUIPMENTRESPONSIBILITY: EXPECTED COMPLETION: ACTUAL COMPLETION: ACTION: RESPONSIBILITY: EXPECTED COMPLETION: ACTUAL COMPLETION:

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

R&S149784

REDACTED

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC# <u> </u> () C-RMTC# <u> </u>	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: <u>05/15/91</u>
() D-RWC# <u> </u> () C-RWC# <u> </u>	INJURY <u> </u> NON-INJURY <u> </u>	TIME OF ACCIDENT: <u>1:30 PM</u>
() D-DAW# <u> </u> () C-DAW# <u> </u>	S&LP STD. VIOLATION <u> </u>	DATE INVESTIGATED: <u>05/15/91</u>
() PSA# <u> </u> () \$50000PD <u> </u>	ENVIRON.XX RxCHEM. <u> </u>	DATE REP SUBMITTED: <u>05/16/91</u>
<u>REPORTABLE</u>		

CONFIDENTIAL

BLOCK AND LOCATION OF ACCIDENT VINYL II, T/C LOADING RACK
NAME OF INJURED/INVOLVED EMPLOYEE CLASS.
TIME AT DOW (Mos.) MASTER No. TIME ON JOB (Mos.)
CONTRACTOR INVOLVED/SUPERVISOR
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) VINYL CHLORIDE
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 149.122 LBS.
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) PUT VINYL TO ATMOSPHERE

ACCIDENT/INCIDENT DESCRIPTION (FULL) LOADING RACK OPERATOR WAS IN THE PROCESS OF SETTING UP T/C TO LOAD AFTER REPAIRING SMALL LEAK. ATMOSPHERIC VENT VALVE WAS MISTAKENLY LEFT CRACKED OPEN AND LIQUID VALVE FROM CAR WAS OPENED RELEASING VINYL TO VENT FOR A FEW MINUTES. OPERATOR IMMEDIATELY ISOLATED LINE AND CALLED CONTROL ROOM. SECURITY WAS NOTIFIED AND CALCULATIONS REPORTED TO ENVIRONMENTAL.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT

INJURY

BODY PART

355 AIR RELEASE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

100 OPERATION ROUTINE030 PRODUCT LOAD/UNLOAD025 VALVE OPERATION

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

800 PROCEDURE NOT FOLLOWED999 PRE-OCCUPIED TRAINING NEW401 INATTENTIONLOADING RACK PERSONNEL

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: REVIEW IN DETAIL WITH ALL LOADING PERSONNEL.RESPONSIBILITY: EXPECTED COMPLETION: 05/25/91 ACTUAL COMPLETION: 5/24/91ACTION: EVALUATE SPRING CLOSED VALVES FOR VENT SYSTEM.RESPONSIBILITY: EXPECTED COMPLETION: 07/04/91 ACTUAL COMPLETION: 6/27/91ACTION: BRAINSTORM WITH LOADING RACK CREW ON SYSTEM IMPROVEMENTS.RESPONSIBILITY: EXPECTED COMPLETION: 07/04/91 ACTUAL COMPLETION: 5/24/91

REDACTED

R&S149785

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() OSHA# _____ () COSHA# _____	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY ☒ S&LP STANDARD VIOLATION _____ ENVIRON. ☒ RxCHEM. _____	DATE OF ACCIDENT: <u>9/14/90</u> TIME OF ACCIDENT: <u>15:35</u> INVESTIGATED: <u>09/14/90</u> REPORT DATE: <u>09/14/90</u>
() O-RES# _____ () CO-RES# _____		
() O-DAW# _____ () CO-DAW# _____		
() PSA# ☒ () \$50000PD		

LOCK AND LOCATION OF ACCIDENT: VINYL II D-186
NAME OF INJURED/INVOLVED EMPLOYEE: N/A **CLASS.** _____
TIME AT DOW (Mos.): _____ **MASTER No.** _____ **TIME ON JOB (Mos.):** _____
CONTRACTOR INVOLVED/SUPERVISOR: _____
ENVIRONMENTAL IMPACT: YES NO AIR ☒ WATER _____ OTHER _____

ACCIDENT/INCIDENT DESCRIPTION: At 3:35 PM A HIGH PRESSURE ALARM SOUNDED ON AN
DC/WATER TANK. UPON INVESTIGATING, THE PRESSURE ON THE TANK HAD RACHED FULL
SCALE. AT THIS TIME THE LOADING RACK WAS CALLED TO STOP WASHING A VINYL
CHLORIDE TANK CAR. THE CROSS-TIE FROM THIS SYSTEM TO OUR FLARE WAS OPENED
AT 3:40 PM TO TO LOWER THE PRESSURE ON THE T-220/T-221 SYSTEM. BY 3:45 PM THE
TANK PRESSURE WAS BACK TO NORMAL. WHAT WAS FOUND UPON INVESTIGATION WAS THE
VINYL TANK CAR STILL HAD LIQUID VINYL CHLORIDE IN IT WHICH WAS TRANSFERRED TO
THE T-220/T-221 SYSTEM CAUSING THE OVER-PRESSURE AND THE PVRV TO RELIEVE.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART
<u>50 SPILL</u>	_____	_____
<u>70 PROCEDURE VIOLATION</u>	_____	_____

JOBS BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

<u>10 OPERATIONS ROUTINE</u>	<u>095 OPERATION PROD. TRANSFER</u>
<u>30 PRODUCT LOAD/UNLOAD</u>	_____

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE	PRE-EXISTING
<u>20 POOR COMMUNICATIONS</u>	<u>200 POOR COMMUNICATIONS</u>
<u>70 PROCEDURE NOT FOLLOWED</u>	<u>980 INADEQUATE ENFORCEMENT</u>

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: FOLLOW AND ENFORCE EXISTING PROCEDURE.
RESPONSIBILITY: _____ **EXPECTED COMPLETION:** 09/21/90 **ACTUAL COMPLETION:** 10/14/90
ACTION: COMMUNICATE INCIDENT TO ALL SHIFTS.
RESPONSIBILITY: _____ **EXPECTED COMPLETION:** 09/30/90 **ACTUAL COMPLETION:** 10/14/90
ACTION: _____ **EXPECTED COMPLETION:** _____ **ACTUAL COMPLETION:** _____

PERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S149786

**DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT**

() OSHA# _____ () COSHA# _____	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY <u>X</u> S&LP STANDARD VIOLATION _____ ENVIRON. <u>X</u> RxCHEM. _____	DATE OF ACCIDENT: <u>8/25/90</u>
() O-RES# _____ () CO-RES# _____		TIME OF ACCIDENT: <u>11:00 A.M.</u>
() O-DAW# _____ () CO-DAW# _____		INVESTIGATED: _____
() PSA# _____ () \$50000PD		REPORT DATE: _____

CONFIDENTIAL

BLOCK AND LOCATION OF ACCIDENT VINYL II C-120
 NAME OF INJURED/INVOLVED EMPLOYEE _____ CLASS. _____
 TIME AT DOW (Mos.) _____ MASTER No. _____ TIME ON JOB (Mos.) _____
 CONTRACTOR INVOLVED/SUPERVISOR _____
 ENVIRONMENTAL IMPACT: YES NO AIR X WATER X OTHER _____

ACCIDENT/INCIDENT DESCRIPTION: WE WERE PREPARING TO DRY RE-120C WITH EDC, USING EDC FROM E-112. RE-120C IS A NEW PIECE OF EQUIPMENT THAT HAS NOT BEEN PUT IN SERVICE. RE-120C WAS TUBED UP TO PURGE TO T-225 AND THE EDC PURGE WAS STARTED. AREA WAS INSPECTED AND PURGE WAS STOPPED AND A SMALL TUBING LEAK WAS REPAIRED. PURGE WAS RESTARTED AND NO LEAKS WERE FOUND. APPROXIMATELY 10 MINUTES AFTER OPERATORS LEFT AREA THE CONTROL ROOM GOT A COMBUSTIBLE ALARM AT C-120 AREA. OUTSIDE OPERATOR WENT TO CHECK AND FOUND EDC COMING OUT THE TOP OF RE-120C. PURGE WAS BLOCKED IN AND REBOILER DRAINED TO T-225. AFTER INSPECTING WE FOUND A SPLIT GASKET HAD BEEN PLACED BETWEEN THE VAPOR OUTLET SPOOL AND THE BLIND. APPROXIMATELY 30 GALLONS OF EDC WAS SPILLED.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT _____ INJURY _____ BODY PART _____

150 SPILL _____

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

00 OPERATIONS/NON-ROUTINE _____
99 DRYING REBOILER _____

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE		PRE-EXISTING
<u>20</u> <u>POOR COMMUNICATION</u> _____	<u>982</u> <u>INADEQUATE PRE-JOB PLAN</u> _____	
<u>01</u> <u>INATTENTION</u> _____		

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: BLOCK POLICY TO PRESSURE TEST WITH H2O OR NITROGEN BEFORE PUTTING ANY EQUIPMENT IN SERVICE.

RESPONSIBILITY: _____ EXPECTED COMPLETION: 8/27/90 ACTUAL COMPLETION: 8/27/90

ACTION: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

RESPONSIBILITY: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

REDACTED

R&S149787

DOW CHEMICAL U.S.A. - LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY _____ S&LP STD. VIOLATION _____ ENVIRON.XX RxCHEM _____	DATE OF ACCIDENT: 2/1/91
() D-RWC#	() C-RWC#		TIME OF ACCIDENT: 1:58 P.M.
() D-DAW#	() C-DAW#		DATE INVESTIGATED: 2/2/91
() PSA#	() \$50000PD		DATE REP SUBMITTED: 2/2/91

CONFIDENTIAL

BLOCK AND LOCATION OF ACCIDENT VINYL II - T-220
 NAME OF INJURED/INVOLVED EMPLOYEE N/A CLASS _____
 TIME AT DOW (Mos.) _____ MASTER No. N/A TIME ON JOB (Mos.) _____
 CONTRACTOR INVOLVED/SUPERVISOR N/A
 CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) SEE ATTACHMENT
 AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) SEE ATTACHMENT
 ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) PVRV RELEASE ON T-220

ACCIDENT/INCIDENT DESCRIPTION (FULL) OPERATOR PRESSURING OUT D-108 TO THE WET HEADER THROUGH A 2" LINE INTO THE 4" HEADER TO T-220. D-108 HAD BEEN PRESSURED UP TO 60# TO DO THIS. D-108 WENT EMPTY AND A SURGE OF NITROGEN PRESSURED UP T-220 LIFTING THE PVRV. THE VALVE TO THE FLARE WAS OPENED 50% FOR 2 MINUTES THEN CLOSED. THE PVRV HUNG OPEN FOR 5 MINUTES AND 15 SECONDS BEFORE IT WAS UNSTUCK AND CLOSED. THE SPARE K-210 DIDN'T COME ON (K-210 B).

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT _____ INJURY _____ BODY PART _____

355 AIR RELEASE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

100 OPERATION/ROUTINE

065 OPERATION/PRESS-DEPRESS

030 PRODUCT LOAD/UNLOAD

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

810 EQUIPMENT FAILURE

015 IMPROPER DESIGN

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: WRITE UP A PROCEDURE FOR USING WET HEADER

RESPONSIBILITY: _____

EXPECTED COMPLETION: 2/18/91 ACTUAL COMPLETION: 2/15/91

ACTION: EVALUATE EXISTING WET HEADER SYSTEM

RESPONSIBILITY: _____

EXPECTED COMPLETION: 8/1991 ACTUAL COMPLETION: _____

ACTION: WORK ON K-210 B AUTO START-UP PROBLEM

RESPONSIBILITY: _____

EXPECTED COMPLETION: 2/8/91 ACTUAL COMPLETION: 2/1/91

REDACTED

R&S149788

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

DOW CHEMICAL U.S.A. - LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC# <u> </u> () C-RMTC# <u> </u>	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: <u>10/19/90</u>
() D-RWC# <u> </u> () C-RWC# <u> </u>	INJURY <u> </u> NON-INJURY <u> </u>	TIME OF ACCIDENT: <u>11:00 AM</u>
() D-DAW# <u> </u> () C-DAW# <u> </u>	S&LP STD. VIOLATION <u> </u>	DATE INVESTIGATED: <u>10/19/90</u>
() PSA# <u> </u> () \$50000PD <u> </u>	ENVIRON. <u>X</u> RxCHEM. <u> </u>	DATE REP SUBMITTED: <u> </u>

CONFIDENTIAL

BLOCK AND LOCATION OF ACCIDENT VINYL II P-104NAME OF INJURED/INVOLVED EMPLOYEE CLASS. TIME AT DOW (Mos.) MASTER No. TIME ON JOB (Mos.) CONTRACTOR INVOLVED/SUPERVISOR CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) EDCAMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 30 POUNDSACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) P-104B SEAL FAILURE (DOUBLE MECHANICAL SEAL)ACCIDENT/INCIDENT DESCRIPTION (FULL) WE WERE IN THE PROCESS OF DECONTAMINATING THE PLANT. ONE OF THE OUTSIDE OPERATORS FOUND P-104B SEAL LEAKING, THE OPERATOR SWAPPED THE PUMPS AND MANUALLY BLOCKED THE LEAKING PUMP.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT

INJURY

BODY PART

300 EQUIPMENT FAILURE N/A N/A

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

200 OPERATION/NON-ROUTINE

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

810 EQUIPMENT FAILURE 999 UNDER INVESTIGATION

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: REPAIR SEAL, TEST, REINSTALL AND IDENTIFY CAUSE FOR FAILURE.RESPONSIBILITY: EXPECTED COMPLETION: 10/19/90 ACTUAL COMPLETION: 10/20/90ACTION: EXPECTED COMPLETION: ACTUAL COMPLETION: RESPONSIBILITY: EXPECTED COMPLETION: ACTUAL COMPLETION: ACTION: EXPECTED COMPLETION: ACTUAL COMPLETION: RESPONSIBILITY: EXPECTED COMPLETION: ACTUAL COMPLETION:

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

REDACTED

R&S149789

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION INJURY <u>NON-INJURYXX</u> S&LP STD. VIOLATION <u>ENVIRON.XX</u> RxCHEM. <u>---</u>	DATE OF ACCIDENT: <u>11/06/90</u>
() D-RWC#	() C-RWC#		TIME OF ACCIDENT: <u>2:15 AM</u>
() D-DAW#	() C-DAW#		DATE INVESTIGATED: <u>11/07/90</u>
() PSA#	() \$50000PD		DATE REP SUBMITTED: <u>---</u>

BLOCK AND LOCATION OF ACCIDENT VINYL II
NAME OF INJURED/INVOLVED EMPLOYEE N/A **CLASS.** ---
TIME AT DOW (Mos.) --- **MASTER No.** --- **TIME ON JOB (Mos.)** ---
CONTRACTOR INVOLVED/SUPERVISOR ---
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) EDC
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 15 GALLONS
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) E-110 DRAIN GASKET LEAK

ACCIDENT/INCIDENT DESCRIPTION (FULL) BOILING C-111 AND C-110 TO DRY. E-110 DRAIN LINE AT BUBBLE STARTED LEAKING AT FLANGE. 15 GALS. OF EDC WAS SPILLED TO THE GROUND AND CONTAINED WITH OIL ABSORB PADS. C-111 OH PRESSURE WAS SHOWING 26# AT TIME OF LEAK. PRESSURE GAUGE WAS THEN INSTALLED ON C-110 AND PRESSURE SHOWED 74# C-111 OH CHECK VALVE HAD CHECKED AND WAS NOT ALLOWING US TO GET A GOOD READING.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART
<u>360 RELEASE TO SOIL</u>	<u>---</u>	<u>---</u>
<u>300 EQUIPMENT FAILURE</u>	<u>---</u>	<u>---</u>

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

<u>200 OPERATION/Non-ROUTINE</u>	<u>---</u>
<u>075 OPERATION/START-UP</u>	<u>---</u>

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE ON SITE PRE-EXISTING)

<u>310 EQUIPMENT FAILURE</u>	<u>010 IMPROPER INSTALLATION/MAINT.</u>
------------------------------	---

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: <u>CHANGE OUT OLD GASKETS, BEFORE START UP</u>	EXPECTED COMPLETION: <u>11/14/90</u>	ACTUAL COMPLETION: <u>11/14/90</u>
RESPONSIBILITY: <u>---</u>	EXPECTED COMPLETION: <u>---</u>	ACTUAL COMPLETION: <u>---</u>
ACTION: <u>---</u>	EXPECTED COMPLETION: <u>---</u>	ACTUAL COMPLETION: <u>---</u>
RESPONSIBILITY: <u>---</u>	EXPECTED COMPLETION: <u>---</u>	ACTUAL COMPLETION: <u>---</u>
ACTION: <u>---</u>	EXPECTED COMPLETION: <u>---</u>	ACTUAL COMPLETION: <u>---</u>
RESPONSIBILITY: <u>---</u>	EXPECTED COMPLETION: <u>---</u>	ACTUAL COMPLETION: <u>---</u>

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S149790

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC# <u> </u> () C-RMTC# <u> </u>	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: <u>1/11/91</u>
() D-RWC# <u> </u> () C-RWC# <u> </u>	INJURY <u> </u> NON-INJURY <u>XX</u>	TIME OF ACCIDENT: <u>7:30 AM</u>
() D-DAW# <u> </u> () C-DAW# <u> </u>	S&LP STD. VIOLATION <u> </u>	DATE INVESTIGATED: <u>1/11/91</u>
() PSA# <u> </u> () \$50000PD <u> </u>	ENVIRON. <u>XX</u> RxCHEM. <u> </u>	DATE REP SUBMITTED: <u>1/11/91</u>

CONFIDENTIAL

BLOCK AND LOCATION OF ACCIDENT BLOCK 66, VINYL II
NAME OF INJURED/INVOLVED EMPLOYEE -- CLASS. --
TIME AT DOW (Mos.) -- MASTER No. -- TIME ON JOB (Mos.) --
CONTRACTOR INVOLVED/SUPERVISOR --
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) EDC, VINYL, HCL
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 15 GAL EDC, 1000 PPM VCM, 1 LB HCL
ACCIDENT/INCIDENT DESCRIPTION (10 Words or Less) P-101 B BLOWN SEAL

ACCIDENT/INCIDENT DESCRIPTION (FULL) P-101 B DEVELOPED A BAD SEAL LEAK SPRAYING EDC, HCL, AND SOME VINYL. THE A PUMP WAS TAGGED TO INSTALL THE SAME TYPE SEAL AND DESIGN AS THE B PUMP. P-101 B HAD JUST THE DAY BEFORE HAD A NEW TYPE SEAL AND DESIGN INSTALLED. CALLED THE FRONT GATE AND ENVIRONMENTAL CONCERNING THE SPILL. INVESTIGATION SHOWED THAT THE BELLOWS FOR THIS SEAL WAS MARGINAL FOR THE PRESSURE OF THIS SYSTEM WHICH PROBABLY CAUSED THE SEAL FAILURE

RESULTS CLASSIFICATION (List all that apply with code number and description from back page)

ACCIDENT/INCIDENT

INJURY

BODY PART

00 EQUIPMENT FAILURE51 AIR RELEASE

OBS BEING PERFORMED (List one from Group I and all that apply from Group II)

00 OPERATION ROUTINE

CAUSES (List all that apply with code number and description from back page)

ON SITE

PRE-EXISTING

10 EQUIPMENT FAILURE010 IMPROPER INSTALL/MAINT.015 IMPROPER DESIGN

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: CHANGE DESIGN AND GO TO CARTRIDGE PUSH TYPE SEAL WITH FLOW THROUGH SEAL URGE.RESPONSIBILITY: EXPECTED COMPLETION: 2/14/91 ACTUAL COMPLETION: 2/14/91ACTION: EXPECTED COMPLETION: ACTUAL COMPLETION: RESPONSIBILITY: EXPECTED COMPLETION: ACTUAL COMPLETION: ACTION: EXPECTED COMPLETION: ACTUAL COMPLETION: RESPONSIBILITY: EXPECTED COMPLETION: ACTUAL COMPLETION:

SUPERVISOR'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

REDACTED

R&S149791

DOW CHEMICAL U.S.A. -LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

CONFIDENTIAL

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: 07/06/91
() D-RWC#	() C-RWC#	INJURY _____ NON-INJURY <u>xx</u>	TIME OF ACCIDENT: 2:38
() D-DAW#	() C-DAW#	S&LP STD. VIOLATION _____	DATE INVESTIGATED: 07/08/91
() PSA#	() \$50000PD	ENVIRON. _____ RxCHEM. _____	DATE REP SUBMITTED: 07/08/91

BLOCK AND LOCATION OF ACCIDENT VINYL II, F-106NAME OF INJURED/INVOLVED EMPLOYEE -- CLASS. --TIME AT DOW (Mos.) -- MASTER No. -- TIME ON JOB (Mos.) --CONTRACTOR INVOLVED/SUPERVISOR --CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) --AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) --ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) PRESSURE CONTROL VALVE FAILED AND TRIPPED FURNACE

ACCIDENT/INCIDENT DESCRIPTION (FULL) THE STEM ON THE PRESSURE CONTROL VALVE BROKE AND SINCE THE FLOW ENTERS THE PCV FROM THE TOP, THE VALVE WAS SHUT. NO FLOW COULD PASS THROUGH THE VALVE AND THE PRESSURE INCREASED TO THE TOP OF THE SCALE (0-1000#). BLED THE PRESSURE OF THE S.C. SECTION THROUGH TUBING TO THE WET HEADER. ACTUAL PRESSURE ON COIL WAS UP TO 1300# BECAUSE OF THE P-100 SWINGING UP.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT

INJURY

BODY PART

300 EQUIPMENT FAILURE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

100 OPERATION ROUTINE075 OPERATION START-UP

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

810 EQUIPMENT FAILURE015 IMPROPER DESIGN

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: PULL PCV TO INVESTIGATE FAILURERESPONSIBILITY: _____ EXPECTED COMPLETION: 07/08/91 ACTUAL COMPLETION: 7/8/91

ACTION: _____

RESPONSIBILITY: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

ACTION: _____

RESPONSIBILITY: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

REDACTED

R&S149792

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC# ___ () C-RMTC# ___	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: 01/18/91
() D-RWC# ___ () C-RWC# ___	INJURY ___ NON-INJURY XX	TIME OF ACCIDENT: 10:00 AM
() D-DAW# ___ () C-DAW# ___	S&LP STD. VIOLATION ___	DATE INVESTIGATED: 01/21/91
(X) PSA# ___ () \$50000PD ___	ENVIRON. ___ RxCHEM. ___	DATE REP SUBMITTED: 01/21/91

BLOCK AND LOCATION OF ACCIDENT VINYL II C-270 SYSTEM
NAME OF INJURED/INVOLVED EMPLOYEE -- CLASS. --
TIME AT DOW (Mos.) -- MASTER No. -- TIME ON JOB (Mos.) --
CONTRACTOR INVOLVED/SUPERVISOR --
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) --
MOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) --
ACCIDENT/INCIDENT DESCRIPTION (10 Words or Less) HIGH OXYGEN IN C-270

ACCIDENT/INCIDENT DESCRIPTION (FULL) A FLANGE CORRODED ON K584 SUCTION HEADER AND A PARTIALLY OPEN BLEED ON D583 RUPTURE DISC ALLOWED OXYGEN AND WATER TO BE SUCKED INTO THE C-270 SYSTEM WHICH RUNS UNDER A VACUUM. THE OXYGEN GOT AS HIGH AS 17% AND THIS VENTED INTO THE VENT HEADER PRODUCING AN EXPLOSIVE MIXTURE

RESULTS CLASSIFICATION (List all that apply with code number and description from back page)

ACCIDENT/INCIDENT	INJURY	BODY PART
-------------------	--------	-----------

99 FIRE/EXPLOSION POTENTIAL

JOB BEING PERFORMED (List one from Group I and all that apply from Group II)

30 OPERATION/ROUTINE

35 NO TASK

CAUSES (List all that apply with code number and description from back page)

ON SITE

PRE-EXISTING

10 EQUIPMENT FAILURE

010 IMPROPER INSTALL/MAINT

10 PROCEDURE NOT FOLLOWED

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: REVIEW WITH TECH CENTER ON HOW TO OPERATE COLUMN OUTSIDE FLAMABLE LIMIT

RESPONSIBILITY: _____ EXPECTED COMPLETION: 2/21/91 ACTUAL COMPLETION: 2/21/91

ACTION: EVALUATE OXYGEN ANALYZER FOR C-270

RESPONSIBILITY: _____ EXPECTED COMPLETION: 3/21/91 ACTUAL COMPLETION: 3/91

ACTION: CHECK FOR OXYGEN TWICE A WEEK UNTIL LONG TERM SOLUTION IS REACHED

RESPONSIBILITY: _____ EXPECTED COMPLETION: 6/1/91 ACTUAL COMPLETION: 4/23/91

PERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S149793

SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT - S-305
 DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
 SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

L-63 (REV. 1-90)

() OSHA# _____ () COSHA# _____	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY <u>X</u> S&LP STANDARD VIOLATION _____ ENVIRON. _____ RxCHEM. _____	DATE OF ACCIDENT: <u>6/22/90</u>
() O-RES# _____ () CO-RES# _____		TIME OF ACCIDENT: <u>4:30 P.M.</u>
() O-DAW# _____ () CO-DAW# _____		INVESTIGATED: <u>6/22/90</u>
() PSA# _____ () \$50000PD		REPORT DATE: <u>6/23/90</u>

BLOCK AND LOCATION OF ACCIDENT VINYL II K-185
 NAME OF INJURED/INVOLVED EMPLOYEE N/A CLASS. N/A
 TIME AT DOW (Mos.) N/A MASTER No. N/A TIME ON JOB (Mos.) N/A
 CONTRACTOR INVOLVED/SUPERVISOR RENE TASSIN
 ENVIRONMENTAL IMPACT: YES NO AIR X WATER OTHER

ACCIDENT/INCIDENT DESCRIPTION: D-185 GOT A HIGH LEVEL DUE TO LIQUID IN THE VENT LINE. TRIED TO PRESSURE LIQUID OUT OF 1" LINE TO D-160, BUT 1" BLOCK VALVE WAS PLUGGED. PRESSURE WAS RAISED TO TRY TO DISLodge THE PLUG. WHILE TRYING TO DO SO THE RUPTURE DISC ON THE DISCHARGE OF K-185 RELIEVED PREMATURELY AT 70# AND THE DISC HAD A BURST PRESSURE OF 80 TO 87.5#. THE RUPTURE DISC RELIEVED TO THE FLARE HEADER, RELEASING ENOUGH VINYL TO REQUIRE REPORTING TO DEQ.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART
<u>150 SPILL</u>	<u>N/A</u>	<u>N/A</u>
	<u>N/A</u>	<u>N/A</u>

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

<u>100 OPERATION NON-ROUTINE</u>	<u>065 OPERATION/PRESS-DEPRESSURE</u>
----------------------------------	---------------------------------------

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE	PRE-EXISTING
<u>110 EQUIPMENT FAILURE</u>	<u>015 IMPROPER DESIGN</u>
	<u>985 INADEQUATE PROCEDURES</u>

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: INSTALL NITROGEN REGULATOR TO PREVENT OVERPRESSURE.
 RESPONSIBILITY: _____ EXPECTED COMPLETION: 7/25/90 ACTUAL COMPLETION: 7/25/90
 ACTION: INSTALL SAFETY VALVE INSTEAD OF RUPTURE DISC.
 RESPONSIBILITY: _____ EXPECTED COMPLETION: 10/1/90 ACTUAL COMPLETION: 10/22/90
 ACTION: WRITE A PROCEDURE FOR REMOVING LEVEL FROM D-185.
 RESPONSIBILITY: _____ EXPECTED COMPLETION: 6/26/90 ACTUAL COMPLETION: 6/26/90

SUPERINTENDENT'S SIGNATURE _____

INVESTIGATED BY _____

SIGNATURE OF INJURED _____

CONFIDENTIAL

REDACTED

F&S149794

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC# <u> </u> () C-RMTC# <u> </u>	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: <u>10/28/90</u>
() D-RWC# <u> </u> () C-RWC# <u> </u>	INJURY <u> </u> NON-INJURY <u> </u>	TIME OF ACCIDENT: <u>11:45 AM</u>
() D-DAW# <u> </u> () C-DAW# <u> </u>	S&LP STD. VIOLATION <u> </u>	DATE INVESTIGATED: <u>10/28/90</u>
() PSA# <u> </u> () \$50000PD <u> </u>	ENVIRON.XX RxCHEM. <u> </u>	DATE REP SUBMITTED: <u> </u>

BLOCK AND LOCATION OF ACCIDENT VINYL II E-112 EXCHANGER
NAME OF INJURED/INVOLVED EMPLOYEE CLASS.
TIME AT DOW (Mos.) MASTER No. TIME ON JOB (Mos.)
CONTRACTOR INVOLVED/SUPERVISOR
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) ETHYLENE DICHLORIDE
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 15 LBS. EDC
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) HYDRAULIC PRESSURE CAUSED HEAD TO LEAK

ACCIDENT/INCIDENT DESCRIPTION (FULL) P-263 DISCHARGE LINE TO E-112 WAS SHUTDOWN DURING PLANT OUTAGE. *ALTHOUGH B/V'S WERE LEFT OPEN ON DISCHARGE OF PUMPS, THE CHECK VALVES SEATED CAUSING HYDRAULIC PRESSURE TO BUILD AND LEAK OUT E-112 HEAD PRESSURE WAS RELIEVED BY WAY OF COPPER TUBING FROM DISCHARGE OF PUMP TO SUCTION AND LEAK STOPPED. *ABOUT 1 1/2 GALLONS EDC

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)
ACCIDENT/INCIDENT INJURY BODY PART

361 AIR RELEASE
999 RELEASE TO CONCRETE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

200 OPER/NON-ROUTINE
035 NO-TASK

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE PRE-EXISTING
300 PROCEDURE NOT FOLLOWED 980 INADEQUATE ENFORCEMENT

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: COMMUNICATE TO ALL SHIFTS

RESPONSIBILITY:

EXPECTED COMPLETION: 10/29/90 ACTUAL COMPLETION:

ACTION: TAG VALVE BY P-263 OPEN TO KEEP PRESSURE OFF LINE

RESPONSIBILITY:

EXPECTED COMPLETION: 10/29/90 ACTUAL COMPLETION: 10/29/90

ACTION:

RESPONSIBILITY:

EXPECTED COMPLETION: ACTUAL COMPLETION:

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

F&S149795

DOW CHEMICAL U.S.A. - LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURYXX S&LP STD. VIOLATION _____ ENVIRON.XX RxCHEM. _____	DATE OF ACCIDENT: 01/01/91
() D-RWC#	() C-RWC#		TIME OF ACCIDENT: 5:15 AM
() D-DAW#	() C-DAW#		DATE INVESTIGATED: 01/04/91
() PSA#	() \$50000PD		DATE REP SUBMITTED: 01/07/91

BLOCK AND LOCATION OF ACCIDENT P-102 B VINYL II

NAME OF INJURED/INVOLVED EMPLOYEE -- CLASS. --

TIME AT DOW (Mos.) -- MASTER No. -- TIME ON JOB (Mos.) --

CONTRACTOR INVOLVED/SUPERVISOR --

CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) EDCAMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 5 GALS.

ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) --

ACCIDENT/INCIDENT DESCRIPTION (FULL) P-102 B HAD JUST BEEN INSTALLED AFTER INSTALLING A NEW TYPE OF SEAL. THIS SEAL LASTED ABOUT 5 MINUTES SPILLING ABOUT 5 GALLONS OF EDC ON THE GROUND. INVESTIGATION SHOWED THAT THE NEW SEAL COULD NOT HANDLE THE SYSTEM PRESSURE SO WE WENT BACK TO THE OLD SEAL. INSTALLED OLD SEAL WITH FLUSH IN AND OUT.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT

INJURY

BODY PART

300 EQUIPMENT FAILURE361 AIR RELEASE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

300 MAINTENANCE075 OPERATION STARTUP080 EQUIPMENT REPAIR

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

310 EQUIPMENT FAILURE015 IMPROPER DESIGN

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: FIND OUT WHAT CAUSED THE SEAL TO FAIL.RESPONSIBILITY: _____ EXPECTED COMPLETION: 01/04/91 ACTUAL COMPLETION: 01/04/91

ACTION: _____

RESPONSIBILITY: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

ACTION: _____

RESPONSIBILITY: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL REDACTED

R&S149796

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY _____ S&LP STD. VIOLATION _____ ENVIRON.XX RxCHEM. _____	DATE OF ACCIDENT: <u>12/21/90</u>
() D-RWC#	() C-RWC#		TIME OF ACCIDENT: <u>11:10 AM</u>
() D-DAW#	() C-DAW#		DATE INVESTIGATED: <u>12/21/90</u>
() PSA#	() \$50000PD		DATE REP SUBMITTED: <u>12/28/90</u>

BLOCK AND LOCATION OF ACCIDENT VINYL II P-160B

NAME OF INJURED/INVOLVED EMPLOYEE -- CLASS. --

TIME AT DOW (Mos.) -- MASTER No. -- TIME ON JOB (Mos.) --

CONTRACTOR INVOLVED/SUPERVISOR --

CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) VINYLAMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 5.8 LBS VCMACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) P-160 B SEAL LEAK

ACCIDENT/INCIDENT DESCRIPTION (FULL) P-160 B SEAL STARTED LEAKING TO THE
ATMOSPHERE. LEAK CALLED IN TO SECURITY AT 11:10 AM AND P-160 B WAS ISOLATED
BY 11:15 AM. THE CONTENTS OF THE PIPING BETWEEN ISOLATING BLOCK VALVES WAS
RELEASED TO ATMOSPHERE.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT

INJURY

BODY PART

300 EQUIPMENT FAILURE355 AIR RELEASE

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

100 OPERATION/ROUTINE035 No Task

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

810 EQUIPMENT FAILURE

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: COMMUNICATE PROCEDURE FOR INNER SEAL FAILURE.RESPONSIBILITY: _____ EXPECTED COMPLETION: 1/4/91 ACTUAL COMPLETION: 1/4/91ACTION: COMMUNICATE WHAT IS CONSIDERED AS A SEAL LEAK.RESPONSIBILITY: _____ EXPECTED COMPLETION: 1/4/91 ACTUAL COMPLETION: 1/4/91ACTION: CLASS ON MECHANICAL SEALS.RESPONSIBILITY: _____ EXPECTED COMPLETION: 3/15/91 ACTUAL COMPLETION: 3/15/91

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S149797

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION INJURY <u>NON-INJURY</u> XX S&LP STD. VIOLATION ENVIRON. <u>XX</u> RxCHEM.	DATE OF ACCIDENT: <u>11/23/90</u>
() D-RWC#	() C-RWC#		TIME OF ACCIDENT: <u>7:35 PM</u>
() D-DAW#	() C-DAW#		DATE INVESTIGATED: <u>12/03/90</u>
() PSA#	() \$50000PD		DATE REP SUBMITTED: <u>12/03/90</u>

BLOCK AND LOCATION OF ACCIDENT VINYL II, D-104
NAME OF INJURED/INVOLVED EMPLOYEE --- CLASS. ---
TIME AT DOW (Mos.) --- MASTER No. --- TIME ON JOB (Mos.) ---
CONTRACTOR INVOLVED/SUPERVISOR ---
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) EDC
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) ONE HALF GALLON EDC
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) P-104B SEAL FAILURE

ACCIDENT/INCIDENT DESCRIPTION (FULL) OPERATOR MAKING A ROUND OUTSIDE FOUND P-104B SEAL LEAKING TO THE SLAB. HE PUT OIL RAGS DOWN TO CATCH THE EDC AFTER SWAPPING PUMPS AND BLOCKING THE LEAKING PUMP IN. THE PUMP WAS REPAIRED AND IT WAS PUT IN SERVICE. MAY HAVE BEEN A VICTIM OF THE RECENT TURNAROUND. HISTORY, THOUGH, HAS SHOWN THIS PUMP TO BE A PROBLEM.

RESULTS CLASSIFICATION (List all that apply with code number and description FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART
<u>180 CHEMICAL EXPOSURE</u>		
<u>361/3 INTERNAL PLANT REPORTABLE</u>		

JOB BEING PERFORMED (List one from Group I and all that apply from Group II)

100 OPERATION ROUTINE

CAUSES (List all that apply with code number and description FROM BACK PAGE)
ON SITE PRE-EXISTING

310 EQUIPMENT FAILURE

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: EVALUATE NEW SEAL DESIGN FOR P-104 PUMPS

RESPONSIBILITY: --- EXPECTED COMPLETION: 3/91 ACTUAL COMPLETION: ---

ACTION: ---
RESPONSIBILITY: --- EXPECTED COMPLETION: --- ACTUAL COMPLETION: ---

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S149798

SIGNATURE OF INJURED

DOW CHEMICAL U.S.A. -LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() OSHA# _____ () COSHA# _____	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY <u>X</u> S&LP STANDARD VIOLATION _____ ENVIRON. <u>X</u> RxCHEM. _____	DATE OF ACCIDENT: <u>09/15/90</u>
() O-RES# _____ () CO-RES# _____		TIME OF ACCIDENT: <u>12:03 AM</u>
() O-DAW# _____ () CO-DAW# _____		INVESTIGATED: <u>09/17/90</u>
() PSA# _____ () \$50000PD		REPORT DATE: <u>09/19/90</u>

BLOCK AND LOCATION OF ACCIDENT VINYL 2 T-220 AREA
 NAME OF INJURED/INVOLVED EMPLOYEE N/A CLASS. _____
 TIME AT DOW (Mos.) _____ MASTER NO. _____ TIME ON JOB (Mos.) _____
 CONTRACTOR INVOLVED/SUPERVISOR N/A
 ENVIRONMENTAL IMPACT: YES No Air X WATER _____ OTHER _____

ACCIDENT/INCIDENT DESCRIPTION: AFTER RECEIVING VINYL ALARMS IN OUR EDC WASH AREA SEVERAL OPERATORS INVESTIGATED THE AREA AND FOUND NOTHING. VINYL ALARMS CONTINUED AND OPERATORS BROUGHT AN HNU WITH THEM TO HELP LOCATE LEAK SOURCE. AFTER OVER 4 HOURS OF INVESTIGATING, A NUT WAS FOUND MISSING ON THE VACUUM DISC RETAINER BOLT ON ONE OF THE WASH TANKS PVRV'S ALLOWING GAS TO PASS OUT OF THE PVRV TO THE ATMOSPHERE. THIS RESULTED IN 3.75 POUNDS OF VINYL CHLORIDE EMISSIONS TO THE AIR.

ULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART
<u>300 EQUIPMENT FAILURE</u>	_____	_____
<u>350 SPILL</u>	_____	_____

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

100 OPERATION ROUTINE

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE	PRE-EXISTING
<u>810 EQUIPMENT FAILURE</u>	<u>015 IMPROPER DESIGN</u>

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: DOUBLE NUT VACUUM DISK RETAINER BOLT ON ALL PVRV'S IN THE BLOCK.
 RESPONSIBILITY: _____ EXPECTED COMPLETION: 10/15/90 ACTUAL COMPLETION: _____
 ACTION: COVER INCIDENT WITH ALL SHIFTS.
 RESPONSIBILITY: _____ EXPECTED COMPLETION: 09/30/90 ACTUAL COMPLETION: _____

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S 149800

**DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT**

() D-DMTC#	() C-DMTC#	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: 02/17/91
() D-RWC#	() C-RWC#	INJURY _____ NON-INJURYXX	TIME OF ACCIDENT: 17:00
() D-DAW#	() C-DAW#	S&LP STD. VIOLATION _____	DATE INVESTIGATED: 02/18/91
() PSA#	() \$50000PD	ENVIRON. _____ RxCHEM. _____	DATE REP SUBMITTED: 02/18/91

BLOCK AND LOCATION OF ACCIDENT VINYL II RAILCAR LOADING RACK
NAME OF INJURED/INVOLVED EMPLOYEE _____ CLASS. OS TRAINEE
TIME AT DOW (MOS.) 6 _____ MASTER NO. _____ TIME ON JOB (MOS.) 6 _____
CONTRACTOR INVOLVED/SUPERVISOR -- _____
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) -- _____
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) -- _____
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) T/C WASH WATER ENTERED SYSTEM

ACCIDENT/INCIDENT DESCRIPTION (FULL) A DECONTAMINATED, WATER WASHED RAILCAR WAS LEFT WITH 60#'S NITROGEN PRESSURE. THE CAR WAS RETURNED TO THE LOADING DACK AT A LATER DATE AND TREATED LIKE A CAR UNDER VINYL VAPOR. WHEN THE CAR WAS DEPRESSEDURED TO THE VINYL PROCESS, FREE WATER WAS INTRODUCED TO THAT SYSTEM CAUSING THE CONTENTS TO BE OUT OF SPEC IN WATER AND IRON. ABOUT 1/2 OF A RAILCAR OF VINYL WAS CONTAMINATED.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART

10	PRESSURE VIOLATION	_____	_____	_____	_____
0	PLANT UPSET/TRIP	_____	_____	_____	_____

JOBS BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

10	OPERATION/ROUTINE		
15	OPERATION/PRESSURE/DEPRESSURE		

USES (List all that apply with code number and description from back page)	
ON SITE	PRE-EXISTING

0	PROCEDURE NOT FOLLOWED	985	INADEQUATE PROCEDURES
0	POOR COMMUNICATION		

LOW UP ACTION TO PREVENT RECURRENCE:

ION: TAG RAILCAR VALVES WHEN OPENED TO INTRODUCE WATER INTO THE RAILCAR:
TER IN RAILCAR.

RESPONSIBILITY: _____ EXPECTED COMPLETION: 02/20/91 ACTUAL COMPLETION: 2/17/91

STATION: COMPLETE IR, DEW POINT AND O2 ANALYSIS ON ALL RAILCARS BEFORE EVACUATION

ABILITY: _____ EXPECTED COMPLETION: 02/20/91 ACTUAL COMPLETION: _____

ION: REVIEW THIS INCIDENT WITH THE LOADING TEAM.

RESPONSE: REVIEW THIS INCIDENT WITH THE LEADING TEAM.
 POSSIBILITY: EXPECTED COMPLETION: 02/18/91 ACTUAL COMPLETION: 02/18/91

DOW CHEMICAL U.S.A. - LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY XX S&LP STD. VIOLATION _____ ENVIRON. XX RxCHEM _____	DATE OF ACCIDENT: 01/12/91
() D-RWC#	() C-RWC#		TIME OF ACCIDENT: 7:50 AM
() D-DAW#	() C-DAW#		DATE INVESTIGATED: 01/14/91
() PSA#	() \$50000PD		DATE REP SUBMITTED: 01/15/91

BLOCK AND LOCATION OF ACCIDENT VINYL II
NAME OF INJURED/INVOLVED EMPLOYEE -- CLASS. --
TIME AT DOW (Mos.) -- MASTER No. -- TIME ON JOB (Mos.) --
CONTRACTOR INVOLVED/SUPERVISOR --
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) VINYL
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 1144 PPM VCM IN FLARE HEADER
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) RUPTURE DISC FAILURE & PSV LEAK

ACCIDENT/INCIDENT DESCRIPTION (FULL) F101 HAD BEEN SHUTDOWN FOR A NUMBER OF HOURS. F101 ISOLATION VALVE STUCK OPEN. N2 WAS HOOKED UP TO ISOLATION VALVE. THE VALVE BROKE FREE & WENT CLOSED. UPON CLOSURE OF VALVE, TWO ALARMS SOUNDED IN MOD V CAN--ISOLATION VALVE POSITION PROBLEM--RUPTURE DISC FAILURE F101/F102. THESE CAME ON AT 7:48 AM AND WERE 4 SECONDS APART. FURNACE CONDITION PRIOR TO THIS--EDC FEED & QUENCH LIQUID MANUALLY Clocked. N2 WAS OFF, COIL OPEN TO D101. COIL PRESSURE EQUALIZED WITH DRUM PRESSURE. AFTER THE ALARMS, THE 150# GAUGE REMOVED FROM PSV/RUPTURE DISC ASSEMBLY AND LIQUID WAS FOUND. FLARE HEADER VINYL ALARMS WERE V260 MAIN 392 PPM AT 8:12 AM, V260 BACK UP 114 PPM AT 8:21 AM, V260 948 PPM AT 8:28 AM.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT INJURY BODY PART

00 EQUIPMENT FAILURE

61 AIR RELEASE

JOBS BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

00 OPERATION/Non-Routine

25 VALVE OPERATION

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

10 EQUIPMENT FAILURE

999 OTHER

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: CHECK WITH ENGINEERING ON RUPTURE DISC FAILURE & PSV TO BE SENT TO SHOP
RESPONSIBILITY: _____ EXPECTED COMPLETION: 2/14/91 ACTUAL COMPLETION: _____

ACTION: CHECK COMPANION FURNACE RUPTURE DISC
RESPONSIBILITY: _____ EXPECTED COMPLETION: 1/26/91 ACTUAL COMPLETION: _____

PERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

F&S149802

DOW CHEMICAL U.S.A. - LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION INJURY NON-INJURY S&LP STD. VIOLATION ENVIRON.X RxCHEM.	DATE OF ACCIDENT: 10/06/90
() D-RWC#	() C-RWC#		TIME OF ACCIDENT: 8:15 AM
() D-DAW#	() C-DAW#		DATE INVESTIGATED: 10/06/90
() PSA#	() \$50000PD		DATE REP SUBMITTED:

BLOCK AND LOCATION OF ACCIDENT VINYL 2 OXY STORAGE AREA
NAME OF INJURED/INVOLVED EMPLOYEE N/A CLASS.
TIME AT Dow (Mos.) MASTER No. TIME ON JOB (Mos.)
CONTRACTOR INVOLVED/SUPERVISOR N/A
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) 30 POUNDS OF OXY STORAGE TANK VENTS
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) 30 POUNDS
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) PVRV MALFUNCTION

ACCIDENT/INCIDENT DESCRIPTION (FULL) A NUT HAD WORKED OFF OF THE PVRV FOR T-220 ALLOWING THE BOLT THAT OPERATES THE VRV TO MOVE UP AND RELEASE VAPOR THROUGH A 1/16" GAP. THIS TOOK APPROXIMATELY 1 HR. TO CORRECT. NONE OF THE COMPONENTS WERE HIGH ENOUGH IN WEIGHT TO BE REPORTABLE.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)
ACCIDENT/INCIDENT INJURY BODY PART
300 EQUIPMENT FAILURE N/A N/A

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)
100 OPERATION/ROUTINE 035 NO TASK

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)
ON SITE PRE-EXISTING
310 EQUIPMENT FAILURE 983 SAFETY DEVICE INOPRATIVE
987 LACK OF MAINTENANCE

FOLLOW UP ACTION TO PREVENT RECURRENCE:
ACTION: INSTALLED DOUBLE NUTS WITH SELASTIC
RESPONSIBILITY: SHIFT EXPECTED COMPLETION: 10/06/90 ACTUAL COMPLETION: 10/06/90
ACTION: EXPECTED COMPLETION: ACTUAL COMPLETION:
RESPONSIBILITY: EXPECTED COMPLETION: ACTUAL COMPLETION:
ACTION: EXPECTED COMPLETION: ACTUAL COMPLETION:
RESPONSIBILITY: EXPECTED COMPLETION: ACTUAL COMPLETION:

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S149803

**DOW CHEMICAL U.S.A. -LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT**

() D-RMTC#	() C-RMTC#	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: 03/19/91
() D-RWC#	() C-RWC#	INJURY <u>XX</u> NON-INJURY	TIME OF ACCIDENT: 1:55 PM
() D-DAW#	() C-DAW#	S&LP STD. VIOLATION	DATE INVESTIGATED: 03/20/91
() PSA#	() \$50000PD	ENVIRON. RxCHEM.	DATE REP SUBMITTED: 03/20/91

CONFIDENTIAL

BLOCK AND LOCATION OF ACCIDENT VINYL II--OLD CHLOROTHENE AREA
NAME OF INJURED/INVOLVED EMPLOYEE _____ **CLASS.** _____
TIME AT DOW (Mos.) _____ **MASTER No.** _____ **TIME ON JOB (Mos.)** _____
CONTRACTOR INVOLVED/SUPERVISOR NATIONAL MAINTENANCE, _____
CHEMICAL RELEASED (ENVIRON/RxCHEM ONLY) -- _____
AMOUNT/UNIT OF MEASURE (ENVIRON/RxCHEM ONLY) -- _____
ACCIDENT/INCIDENT DESCRIPTION (10 WORDS OR LESS) CHEMICAL EXPOSURE _____

ACCIDENT/INCIDENT DESCRIPTION (FULL) _____ WAS PREPARING TO DEMO. OLD 2" LINE IN RACK BY D531 THAT HE THOUGHT WAS A STEAM LINE AND WAS OPEN ON ONE END. WHILE CUTTING INTO LINE (COLD CUT); CL2 GAS ESCAPED AND WAS BREATHED BY _____ JOB WAS SHUTDOWN AND _____ I SENT TO MEDICAL TO BE CHECKED. HE RETURNED TO WORK APPROXIMATELY 3:20 PM BACK ON FULL DUTY. THERE WAS A COMMUNICATION BREAKDOWN BETWEEN THE PERMIT WRITER AND CRAFTSMAN.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART
-------------------	--------	-----------

<u>180</u>	<u>CHEMICAL EXPOSURE</u>	<u>500</u>	<u>RESPIRATORY</u>		
		<u>999</u>	<u>FIRST AID</u>		

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

500	DEMOLITION		
040	CUTTING (COLD CUTTING)		

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE	PRE-EXISTING
---------	--------------

300	PROCEDURE NOT FOLLOWED	200	POOR COMMUNICATION
040	UNAUTHORIZED PRACTICE	040	UNAUTHORIZED PRACTICE
320	POOR COMMUNICATION		

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: CRAFT REVIEW DEMOLITION PROCEDURES AND LINE IDENTIFICATION PROC.
RESPONSIBILITY: EXPECTED COMPLETION: 3/21/91 ACTUAL COMPLETION: 3/21/91
ACTION: ALL SHIFTS REVIEW DEMOLITION PROCEDURES AND LINE IDENTIFICATION PROC.
RESPONSIBILITY: EXPECTED COMPLETION: 4/11/91 ACTUAL COMPLETION:

REDACTED

R&S 149804

SUPERINTENDENT'S SIGNATURE

INVESTIGATED BY

SIGNATURE OF INTIMID.

**DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT**

() OSHA# _____	() COSHA# _____	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY _____ S&LP STANDARD VIOLATION _____ ENVIRON. <u>X</u> RxCHEM. _____	DATE OF ACCIDENT: <u>6/5/90</u>
() O-RES# _____	() CO-RES# _____		TIME OF ACCIDENT: <u>8:48 A.M.</u>
() O-DAW# _____	() CO-DAW# _____		INVESTIGATED: <u>6/5/90</u>
() PSA# <u>X</u>	() \$50000PD		REPORT DATE: <u>6/5/90</u>

BLOCK AND LOCATION OF ACCIDENT BLOCK 66 F-101
 NAME OF INJURED/INVOLVED EMPLOYEE _____ CLASS. _____
 TIME AT DOW (Mos.) _____ MASTER No. _____ TIME ON JOB (Mos.) _____
 CONTRACTOR INVOLVED/SUPERVISOR _____
 ENVIRONMENTAL IMPACT: YES No Air _____ WATER _____ OTHER _____

ACCIDENT/INCIDENT DESCRIPTION: ONE OF THE SUPERCRITICAL TRANSMITTERS WAS TAKEN OUT OF SERVICE BECAUSE IT WAS READING INCORRECTLY. THEN THE COMBUSTIBLE ANALYZER DRIFTED OFF "0" UNTIL WE GOT THE HIGH ALARM. HAD THE ANALYZER MAN CALIBRATE THE ANALYZER. WHEN THE ANALYZER WENT UP SCALE THE FURNACE TRIPPED DUE TO ONE SUPERCRITICAL TRANSMITTER SHOWING LOW AND THE COMBUSTIBLE SHOWING HIGH. WHEN THE FURNACE TRIPPED THE ISOLATION VALVE CLOSED, THE FURNACE PRESSURED UP AND THE TAILPIPE SAFETY LIFTED. BECAUSE THE TAILPIPE VENT EBV FAILED TO OPEN - CAUSING THE TAILPIPE SAFETY LIFT.

ULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART
<u>350 SPILL</u>	<u>N/A</u>	<u>N/A</u>
<u>450 PLANT UPSET/TRIP</u>		

JOB BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

300 MAINTENANCE 060 COMPUTER/INSTRUMENT WORK

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ON SITE

PRE-EXISTING

810 EQUIPMENT FAILURE 981 INADEQUATE TRAINING
800 PROCEDURE NOT FOLLOWED

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: NEED TO PUT TRANSMITTERS/ANALYZERS IN MANUAL WHEN WORKING ON THESE INSTRUMENTS. IF IT TAKES 2 OUT OF 3 THEN YOU CAN SELECT & PUT 2 ON MANUAL.

RESPONSIBILITY: _____ EXPECTED COMP: 7/5/90 ACTUAL COMPLETION: Comp 56

ACTION: HAVE MOD V STROKE VENT EBV EVERY 7 DAYS OR ON A PRESCRIBED TIME FRAME.

RESPONSIBILITY: _____ EXPECTED COMP: 7/5/90 ACTUAL COMPLETION: _____

ACTION: REVIEW PROCEDURE FOR MAINTENANCE ON INSTRUMENTATION.

RESPONSIBILITY: _____ EXPECTED COMP: 7/5/90 ACTUAL COMPLETION: Comp 5.6

SUPERINTENDENT'S SIGNATURE _____

INVESTIGATED BY _____

SIGNATURE OF INJURED _____

CONFIDENTIAL

REDACTED

R&S149805

DOW CHEMICAL U.S.A. - LOUISIANA DIVISION

SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() OSHA ☒ () COSHA ☐	ACCIDENT CLASSIFICATION INJURY ☐ NON-INJURY ☐ S&LP STANDARD VIOLATION ☐ ENVIRON ☒ RxCHEM ☐	DATE OF ACCIDENT: <u>3/27/90</u>
() O-RES ☐ () CO-RES ☐		TIME OF ACCIDENT: <u>13:45</u>
() O-DAW ☐ () CO-DAW ☐		INVESTIGATED: _____
() PSA ☐ () \$50000PD		REPORT DATE: <u>3/29/90</u>

CONFIDENTIAL

Block and Location of Accident Vinyl 2 Block 66

Name of Injured/Involved Employee _____ Class. _____

Time at Dow (Mos.) _____ Master No. _____ Time on Job (Mos.) _____

Contractor Involved/Supervisor _____

Environmental Impact: Yes ☐ No ☐ Air ☒ Water ☐ Other ☐

ACCIDENT/INCIDENT DESCRIPTION: On 3/27/90 at 10:00 a.m., an air monitor at the cooling tower indicated VCM was present in area. Samples were caught and possible sources were evaluated. At 1:45 p.m., a leak was confirmed present in E-140 (VCM finishing column condenser) from water samples taken on the water inlet and outlet of the exchanger. The column was shutdown and the leak was stopped at 9:30 p.m. that night. The heads were removed and one tube was found leaking. This tube was plugged and the entire exchanger was leak checked. No other leaks were found. The exchanger was reassembled and started back up.

RESULTS CLASSIFICATION (List all that apply with code number and description from back page)

ACCIDENT/INCIDENT

INJURY

BODY PART

300 Equipment Failure350 Spill

JOB BEING PERFORMED (List one from Group I and all that apply from Group II)

100 Routine Operations

CAUSES (List all that apply with code number and description from back page)

ON SITE

PRE-EXISTING

810 Equipment Failure

FOLLOW UP ACTION TO PREVENT RECURRENCE:

Action: Test entire tube sheet for leaks, plug/repair leaks.Responsibility: _____ Expected Completion Date: 3/29/90 Actual Completion Date: 3/29/90Action: Review exchanger design for possible vibration/design problems & plug high risk tubesResponsibility: _____ Expected Completion Date: 3/29/90 Actual Completion Date: 3/29/90Action: Pull failed tube for failure evaluation during next shutdownResponsibility: _____ Expected Completion Date: 9/15/90 Actual Completion Date: _____Action: Implement any required design changes from engineering study.Responsibility: _____ Expected Completion Date: 9/15/90 Actual Completion Date: 9/15/90

REDACTED

R&S149806

**DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT**

() OSHA#	() COSHA#	ACCIDENT CLASSIFICATION INJURY _____ NON-INJURY <u>X</u> S&LP STANDARD VIOLATION _____ ENVIRON. <u>X</u> RxCHEM. _____	DATE OF ACCIDENT: <u>8/16/90</u>
() O-RES#	() CO-RES#		TIME OF ACCIDENT: <u>7:30 A.M.</u>
() O-DAW#	() CO-DAW#		INVESTIGATED: <u>8/17/90</u>
() PSA#	() \$50000PD		REPORT DATE: _____

3 BLOCK AND LOCATION OF ACCIDENT VINYL II BLOCK 66
NAME OF INJURED/INVOLVED EMPLOYEE _____ CLASS. _____
TIME AT DOW (Mos.) _____ MASTER No. _____ TIME ON JOB (Mos.) _____
CONTRACTOR INVOLVED/SUPERVISOR _____
ENVIRONMENTAL IMPACT: YES No AIR X WATER _____ OTHER _____

ACCIDENT/INCIDENT DESCRIPTION: AT 7:30 A.M. A LEAK WAS DISCOVERED IN THE EDC URGE HEADER. THE LEAK WAS CAUSED BY EXTERNAL CORROSION NEAR A U-BOLT CLAMP. SEAL AND INSTRUMENT PURGES WHICH ORIGINATED FROM THIS HEADER WERE SUPPLIED FROM AN ALTERNATE SOURCE IN ORDER TO DEPRESSURE THE HEADER. A CLAMP WAS INSTALLED TO STOP THE LEAK AND A FURMANITE BOX INSTALLED OVER THE CLAMP. ABOUT 25 GALLONS LEAKED (CONTAINED) WITH 25 LBS. TO THE AIR AT 10% VAPORATIVE LOSS (REPORT LIMIT - 100 LBS).

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)		
ACCIDENT/INCIDENT	INJURY	BODY PART
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

00	EQUIPMENT FAILURE				
150	SPILL				

WORK BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

00	OPERATION ROUTINE	035	NO TASK
----	-------------------	-----	---------

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

	ON SITE	PRE-EXISTING
310	EQUIPMENT FAILURE	987 LACK OF MAINTENANCE

FOLLOW UP ACTION TO PREVENT RECURRENCE:

CTION: INSTITUTE AREA RESPONSIBILITY FOR CORROSION AUDITS.

RESPONSIBILITY: _____ EXPECTED COMPLETION: 8/20/90 ACTUAL COMPLETION: 8/20/90

CTION: _____

RESPONSIBILITY: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

CTION: _____

RESPONSIBILITY: _____ EXPECTED COMPLETION: _____ ACTUAL COMPLETION: _____

SUPERINTENDENT'S SIGNATURE INVESTIGATED BY SIGNATURE OF INJURED

CONFIDENTIAL

REDACTED

R&S 149807

DOW CHEMICAL U.S.A.-LOUISIANA DIVISION
SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

OSHA# _____ () COSHA# _____	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: 9/17/90
() O-RES# _____ () CO-RES# _____	INJURY _____ NON-INJURY _____	TIME OF ACCIDENT: 9:30 AM
() O-DAW# _____ () CO-DAW# _____	S&LP STANDARD VIOLATION _____	INVESTIGATED: 9/19/90
() PSA# _____ () \$50000PD	ENVIRON.X _____ RxCHEM. _____	REPORT DATE: 9/19/90

CONFIDENTIAL

BLOCK AND LOCATION OF ACCIDENT VINYL II CHLOROTHENE PIPELINE AT BLOCK 6
NAME OF INJURED/INVOLVED EMPLOYEE _____ CLASS. _____
TIME AT DOW (Mos.) _____ MASTER No. _____ TIME ON JOB (Mos.) _____
CONTRACTOR INVOLVED/SUPERVISOR _____
ENVIRONMENTAL IMPACT: YES No AIR _____ WATER _____ OTHER _____

ACCIDENT/INCIDENT DESCRIPTION: PIPEFITTERS CUT 1/3 OF THE WAY THROUGH THE 8" CHLOROTHENE(R) PIPELINE BETWEEN VINYL II AND THE OLD DOCK. CHLOROTHENE(R) STARTING DRAINING FROM THE CUT INDICATING THE PIPELINE STILL CONTAINED LIQUID CHLOROTHENE(R). 2 GALLONS SPILLED BEFORE THE LEAK WAS CONTAINED. GRAY TAPE AND THEN AN ADAMS CLAMP WAS USED TO STOP THE LEAK. THE LINE HAD BEEN DRAINED BEFORE STARTING BUT APPARENTLY SOME DEBRIS HAD PLUGGED THE DRAIN VALVE AFTER SOME HAD DRAINED OUT. THE VALVE WAS OPEN DURING THE CUT.

RESULTS CLASSIFICATION (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE)

ACCIDENT/INCIDENT	INJURY	BODY PART
50 SPILL		

JOBS BEING PERFORMED (LIST ONE FROM GROUP I AND ALL THAT APPLY FROM GROUP II)

00 DEMOLITION	020 LINE/EQUIPMENT OPENING
40 WELDING/CUTTING	

CAUSES (LIST ALL THAT APPLY WITH CODE NUMBER AND DESCRIPTION FROM BACK PAGE ON SITE)

PRE-EXISTING
982 INADEQUATE JOB PLAN

FOLLOW UP ACTION TO PREVENT RECURRENCE:

ACTION: ADD "ROD LOW POINT BLEED NEAREST POINT OF LINE OPENING BEFORE COLD COLD CUTTING OR DRILLING A HOLE IN A PIPELINE AND CONFIRM THAT A VACUUM DOES NOT EXIST" TO MODIFY BREAKING INTO LINES PROCEDURE.

RESPONSIBILITY: _____ EXPECTED COMPLETION: 10/15/90 ACTUAL COMPLETION: 10/15/90

REDACTED

R&S149808

PERINTENDENT'S SIGNATURE _____ INVESTIGATED BY _____ SIGNATURE OF INJURED _____

DOW CHEMICAL U.S.A. - LOUISIANA DIVISION

SUPERVISOR'S INVESTIGATION OF ACCIDENT/INCIDENT

() D-RMTC	(X) C-RMTC	ACCIDENT CLASSIFICATION	DATE OF ACCIDENT: 11/03/90
() D-RWCF	(X) C-RWCF	INJURY	TIME OF ACCIDENT: 8:10 A.M.
() D-DAW	() C-DAW	S & LP STANDARD VIOLATION	DATE INVESTIGATED: 11/03/90
() PSA	() S50000PD	ENVIRON	DATE REP SUBMITTED: 11/05/90

Block and Location of Accident: VINYL LL - Shutdown Tool in trailer

Name of Injured/Involved Employee: [redacted] Class: Laborer

Time at D w (Mos.): 8 Master No.: N/A Time on Job (Mos.): 3 Weeks

Contractor Involved/Supervisor: National Maintenance/Dominic Crouillat (JEM)

Chemical Released (Environ/RxChem only): N/A

Amount/Unit of Measure (Environ/RxChem only): N/A

Accident/Incident Description (10 Words or Less): Cut inside of left hand below thumb.

ACCIDENT/INCIDENT DESCRIPTION (Full): was opening a cardboard box of paper suits with a utility knife. While making the last cut on the box, the knife slipped and cut her left hand just below the thumb.

RESULTS CLASSIFICATION (List all that apply with code number and description from back page)

ACCIDENT/INCIDENT	INJURY	BODY PART
010 Stuck By/Against	170 Cut/Scrape	05 Hand

JOB BEING PERFORMED (List one from Group I and all that apply from Group II)

300 Maintenance	0045 Matl/Eq. Handling (Manual)
070 Using Hand Tool	

CAUSES (List all that apply with code number and description from back page)

ON SITE	PRE-EXISTING
800 Procedures Not Followed	N/A
200 Poor Communications	

FOLLOW UP ACTION TO PREVENT RECURRENCE:

Action: Will cover accident in tailgate next safety meeting throughout the Division
 Responsibility: [redacted] Expected Completion Date: 11/04/90 Actual Completion Date: Comp

Action: Require the use of a butcher's glove when using razor knives.
 Responsibility: [redacted] Expected Completion Date: 11/03/90 Actual Completion Date: Comp

Action: [redacted]
 Responsibility: [redacted] Expected Completion Date: [redacted] Actual Completion Date: [redacted]

CONFIDENTIAL

REDACTED

R&S 149809

REPETITIVE INCIDENT CAUSES

1990 - 1991

- **Weeping PSV's; Failed Rupture Disks**
- **Pump Seal Failures**
- **Loading Operations**
- **Corrosion**
- **Scrubber Stack Excursions**
- **Unintentional Equipment Overpressure**

CONFIDENTIAL

R&S149810

AREAS OF CONCERN

- Furnace Coil Pressure Protection
- PSV System Improvements
- Pump Seal Performance
- Corrosion; High Point Bleeds
- Ecology Area Reliability

SRC:8/91

CONFIDENTIAL

R&S149811

Areas of Concern Possible Opportunities

Concern: Equipment Overpressure

Opportunities:

- **Furnace Supercritical Coil Protection**
- **Mod5 Redundant Instrumentation**

Areas of Concern Possible Opportunities

Concern: PSV System Reliability

Opportunities:

- Define and correct deficiencies found in engineering study during 1992 shutdown
- Review PSV/rupture disk setpoints vs. operating pressures
- Review PSV materials of construction
- Define appropriate applications for rupture disks under PSV's and implement during 1992 shutdown

VINYL 2 PSV STUDY

SURVEY RESULTS

RECOMMENDATIONS

DEVICE	LOCATION	INLET DP % OF SET	OUTLET DP % OF SET	HAZARD PRIORITY	FLARE ?	
104 AR, BR	C-100	7.40 <i>* Follows</i>	17.90	12	YES	<i>Valve OK, Change inlet to 10" and outlet to 12"</i>
117 AR, BR	C-140 OVHD	29.50 <i>Follows</i>	48.70	9	YES	VALVE OK, CHANGE INLET TO 10" AND OUTLET TO 12" <i>Cons 6x8 (8x12) WCB 0256802</i>
130 A, B	T-160	11.00 <i>CONVENTIONAL</i>	2.00	9	NO	REPLACE 4P6 WITH 6R10 AND MODIFY PIPING TO FIT <i>Cons 2x3 (AG 403338-2) SIOS</i>
149 A, B, S	T-130	10.90 <i>STD</i>	18.30 <i>CONVENTIONAL</i>	9	YES	REPLACE 2J3 WITH 4P6, CHANGE INLET TO 6" AND OUTLET TO 10", RUN LEVEL < 8.5 FT <i>Cons 2x3 (AG 403338-2) SIOS</i>
216; 217	V-260 A/B	14.00 <i>CONVENTIONAL</i>	16.00	9	NO	REPLACE 2J3 WITH 4M6, CHANGE INLET TO 6" <i>Cons 2x3 (AG 8441 02 6448)</i>
315 A, B	E-325	36.40 <i>4.7 WITH AG SEL VALVE</i>	38.10 <i>PILOT</i>	9	YES	VALVE OK, CHANGE INLET TO 6" AND OUTLET TO 10" <i>Looks like AG PILOT</i>
541 A, B	D-541	21.60 <i>CONVENTIONAL</i>	3.40	9	NO	REPLACE 4N6 WITH 6Q8, CHANGE INLET AND OUTLET TO 8", RUN LEVEL < 8.5 FT <i>Cons 4x6 WCB 0364102</i>
133 A, B	D-165	12.00 <i>CONVENTIONAL</i>	7.30	6	NO	REPLACE 2J3 WITH 4M6, CHANGE INLET TO 4", RUN LEVEL < 5.5 FT <i>2x3 AC B10511 B105123 WCB</i>
172 A, B	E-181	7.00 <i>CONVENTIONAL</i>	20.10	6	NO	VALVE OK, CHANGE INLET TO 3" AND OUTLET TO 4", RUN LEVEL < 1.5 FT <i>2x3 (AG 7043 50)</i>
113 A, B	T-120	9.20 <i>* Follows</i>	48.70	3	YES	REPLACE 3L4 WITH 6Q8, CHANGE INLET TO 8" AND OUTLET TO 12" <i>3x4 (Cons) 03558-02 1216 9m y/f WCB</i>

Areas of Concern Possible Opportunities

Concern: Corrosion

Opportunities:

- Dedicated painting funds
- Repair/Replace cold service insulation during 1992 shutdown
- High/Low point bleed audit with corrective actions implemented during 1992 shutdown
- Reinsulate R-202 OXY reactor in 1992

Areas of Concern Possible Opportunities

Concern: Ecology Area Reliability

Opportunities:

- Minimize VCM in flare header by addressing PSV system problems
- Replace R400 dry quench section (1992 planned)
- Provide liquid feed stability for R-400
- F410/420 improvements including:
 - Improved combustion control
 - Increased instrumentation
 - Direct stack flow measurement
 - Automatic start-up control
 - Mod5 control

Dow U.S.A.

Louisiana Division
Consolidated Audit Program Attendance

Plant: Vinyl 2
Date: 9/10/91
Session: REACTIVE Chemicals

	<u>Plant/Department</u>	<u>Functional Area</u>
1.	<u>Vinyl 2</u>	<u>Prod Supervisor</u>
2.	<u>Vinyl 2</u>	<u>Prod Sup.</u>
3.	<u>Vinyl 2</u>	<u>Area Eng.</u>
4.	<u>Vinyl 2</u>	<u>Eng.</u>
5.	<u>R&D</u>	<u>Rx Chemicals</u>
6.	<u>R&D</u>	<u>C&PP Research</u>
7.	<u>Cep Tech Center</u>	
8.	<u>VINYL II</u>	
9.	<u>CEP Tech Center</u>	
10.	<u>SA/Consol Audit</u>	<u>Occup Health/Consol Audit</u>
11.	<u>Safety</u>	<u>Safety</u>
12.	<u>VINYL II</u>	<u>OXY/IDL</u>
13.	<u>Vinyl II</u>	
14.	<u>Plastics/Spec. Prod/Engng</u>	<u>Rx Chem</u>
15.	<u>R&D</u>	" "
16.	<u>ice Vinyl II</u>	
17.	<u>Proc. Engin Support</u>	<u>Loss Prev.</u>
18.	<u>SAFETY</u>	<u>SAFETY</u>
19.	<u>Vinyl II</u>	<u>LAB/LOAD</u>
20.	<u>LAD Consolidated Audit Group</u>	

CONFIDENTIAL

REDACTED

R&S149817

REACTIVE CHEMICAL REVIEW

R&S149818

LOUISIANA DIVISION
REACTIVE CHEMICAL REVIEW CHECKLIST

PROCESS VINYL II
LDING 66601

REVIEW DATE 9/10/91
PRESENTER

ADMINISTRATIVE

- ☒ Review scheduled through 389-1601
☐ Mini or (Full) review (Circle one)
☐ Type of review - New Super., 2 year Process change, Project (Circle one)
☐ 10 copies of Review package (copy of slides) sent to 7 days
prior to review
☒ Safety Superintendent and Environmental Superintendent invited to review
☒ R&D contact, process engineer, Tech Center contact etc., invited to review
☒ Appropriate supervision invited to review

DATA

- ☐ Appropriate interpretation of data ☒ Physical Properties
☐ Screening tests complete ☐ Literature data
☒ Reactive Chem Global database searched ☐ Unusual properties
☒ Calculated thermodynamic data

CHEMISTRY

- ☒ Equations for each reaction (side and main)
☒ Comparison of Calculated vs. Measured heats of reaction
☐ Reactivity matrix (inter-reactivity of all process materials)
☒ Impurities

SYSTEM

- ☒ Pressure relief system design ☒ Critical instruments
☒ Process conditions (temp, press.) ☒ Materials of Construction
☐ Quantities ☐ Equipment size

MISC.

- ☒ Recommendation from last review ☒ Tech Center input
☐ History of related R.C. incidents ☒ F&E Index complete
☒ Waste storage and disposal ☐ Training activities
☒ Worst case scenarios/lines of defense determined
☐ Discussions with Safety Superintendent, R.C. Personnel or other resources

PACKAGE COMPLETENESS

- ☐ Statement of purpose
☒ Summary of major reactive chemicals concerns
☒ Process chemistry--include kinetic and thermodynamic data (Measured vs. calculated) *FURNACE OPERATION; DATA BEING COLLECTED ON OXY REACTORS*
☒ Physical property summary for all chemicals handled (Boiling point, vapor pressure, flammable limits, flash point, auto ignition temperature,
☒ Materials Handling- Include how the Plant receives, identifies, stores handles and disposes of materials. *Covered in Questionnaire*
☐ Simplified Process Flow Sheet - include control schemes, monitoring and relief devices, points where there is reactive chem data, equipment size and location, process conditions and quantities.
☐ Summary table of Reactive Chemical data - include raw materials, intermediates, products, by-products and wastes.
☒ Reactive Chemical concerns for each step - include concerns for each step in the process and worst case scenarios and calculations. Cover the steps taken to prevent an incident, or lines of defense. (see attachment A)
☐ One copy of actual Reactive Chemicals Report (i.e. ARC traces) at meeting.

REDACTED

R&S149819

Vinyl II Reactive Chemicals Review

- Chemical Data
- Concerns
- Recommendations from Last Review
- Self Evaluation Questionnaire

VINYL II PLANT

TABLE OF PHYSICAL PROPERTIES

COMPOUND	BOIL POINT (DEG C)	VAPOR PRESS (ATM)	FLAMMABILITY IN AIR (V/V% IN AIR)	FLASH POINT (DEG C)	AUTO IGNITION (DEG C)
	- 252.7	1021.7	4.0 - 75.0	*	580
	- 195.8	1134.6	-	*	*
	- 191.5	998.4	12.0 - 75.0	*	650
	- 183.0	949.9	-	*	*
	- 161.6	406.3	5.0 - 15.0	- 136.1	460
	- 102.4	69.7	3.0 - 34.0	- 136.1	543
	- 85.0	47.1	-	*	*
	- 84.0	48.1	2.5 - 80.0	- 17.8	335
	- 78.5	63.5	-	*	*
	- 48.0	11.4	2.0 - 11.1	*	455
	- 24.2	5.7	8.1 - 17.4	- 45.0	556
	- 4.4	2.8	2.0 - 11.5	*	*
	8.0	1.6	-	*	*
	12.2	1.4	3.6 - 14.8	*	519
	16.0	3.9	3.6 - 33.0	- 78.0	472
	31.7	0.8	5.6 - 11.4	- 28.0	570
	39.8	0.6	8.1 - 17.4	*	556
	48.0	0.4	5.6 - 12.8	*	*
	59.4	0.3	4.0 - 20.0	-20.0	*
	60.5	0.3	5.6 - 12.8	*	*
	61.0	0.2	-	*	*
	74.1	0.1	8.0 - 10.5	*	537
	76.8	0.1	-	*	*
	80.0	0.1	1.3 - 7.1	-11.1	498
	83.5	0.1	6.2 - 15.9	13.0	413
	87.0	0.1	8.0 - 10.5	*	410
	97.8	0.1	-	*	*
	100.0	0.0	-	*	*
	109.0	0.0	-	*	*
	114.0	0.0	-	*	*
	121.0	0.0	-	*	*
	140.0	0.0	-	*	*
	146.0	0.0	-	*	*
	275.0	0.0	0.5 - 6.2	124.0	>1000F
	301.0	0.0	1.2 - 3.3	305.0	>1030F
	993.0	0.0	-	*	*

CONFIDENTIAL

REDACTED

R&S149821

Dow Confidential

23-JUL-91

23-JUL-91

NOTES FOR

REACTIVE CHEMICALS CONSOLIDATED AUDIT

REACTIVE CHEMICALS DATA

THE RINGED-BINDER THAT CONTAINS PERTANENT REACTIVE CHEMICALS INFORMATION ON VINYL CHLORIDE/ETHYLENE DICHLORIDE PROCESSES HAS BEEN EXAMINED. THE MOST RECENT ARTICLES/REPORTS IN THIS FOLDER ARE DATED 1982 OR EARLIER. WE WILL HAVE TO GO THROUGH THE "GUIDELINES FOR UPDATING REACTIVE CHEMICAL DATA".

I HAVE PERFORMED A SEARCH OF THE REACTIVE CHEMICALS DATA BASE ON VINYL CHLORIDE, ETHYLENE DICHLORIDE AND HYDROGEN CHLORIDE. ALTHOUGH THIS DATA BASE IS NOT COMPLETE, MANY ARTICLES WERE FOUND IN THE 1980-1990 TIME FRAME WHICH SHOULD BE REVIEWED AND POSSIBLY INCLUDED IN THE MANUAL.

IS THERE AN AUDIT PROGRAM IN PLACE AT THE VINYL II PLANT TO PERIODICALLY REVIEW AND/OR UPDATE THE INFORMATION IN THE BINDER? THE RETENTION PERIOD FOR ARTICLES IN THIS BINDER SHOULD ALSO BE TAKEN INTO CONSIDERATION.

SHOULD MSDS SHEETS BE INCLUDED IN THIS MANUAL OR DO WE HAVE A HAZARDOUS COMMUNICATIONS MANUAL IN PLACE AT THE PLANT DEDICATED FOR THIS PURPOSE? ALL "KNOWN" COMPOUNDS WHICH ARE HANDLED AT THE PLANT SHOULD HAVE MSDS SHEETS AVAILABLE, AS WELL AS PHYSICAL PROPERTY AND THERMODYNAMIC DATA.

OTHER COMMENTS: I THINK WE OUGHT TO POINT OUT THE FACT THAT WE HAVE A WEAKNESS IN THIS AREA BUT WE ARE COMMITTED TO SPENDING THE APPROPRIATE TIME TO MAINTAIN GOOD REACTIVE CHEMICALS RECORDS. THEY ARE INTERESTED IN US REALIZING OUR WEAKNESSES. WE COULD SHOW THEM A COPY OF A PAGE OF OUR DATA BASE SEARCH TO STRENGTHEN THE COMMITMENT ISSUE. (I'M SURE THAT NOT MANY PLANTS WILL DO THIS).

CONFIDENTIAL

REDACTED

R&S 149822

FURNACE F-101
HEATING REQUIREMENTS

MEASURED VERSUS THEORETICAL PERFORMANCE
=====

F-101 OPERATION (29-JUN-91):

}

MEASURED RESULTS:

=====

THEORETICAL RESULTS:

=====

FURNACE EFFICIENCY:

==

Dow Confidential

29-JUL-91

CONFIDENTIAL

REDACTED

R&S 149823

VINYL II

EDC CRACKING CHEMISTRY

Major Secondary Reactions

Minor Secondary Products

9/3/91 AER

Dow Confidential

CONFIDENTIAL

REDACTED

R8S149824

VINYL II PSV GUIDE

PSV #	LOCATION	SETTING
101 A/B/S	D-101	195
101 QA/QB/QC/QD/QS	WKM ISOLATION VALVES	400
101 AR/BR	D-102	195
103 A/B/C/D/E	FURNACE TAILPIPS	212
104 AR/BR	C-100	150
105 A/B	E-106	250
106 A/B/S	C-111	159
109 A/B	E-120	250
110 A/B	E-121	25
111 A/B/S	C-120	150
112 A/B	E-122	150
113 A/B/S	T-120	120
114 AR/BR	C-130	225
115 A/B	D-103 WKM	400
117 A/B	C-140	185
122 A/B	E-142	250
123 A/B	E-143	250
124 A/B	E-165	250
125 AR/BR	T-160S	25
126 A/B	VCM TRANSFER	250
127 A/B	P-161 SUCTION	250
128 A/B	P-162 SUCTION	250
129 A/B	T-160S	25
130 A/B/S	T-160S	25
131 A/B/S	D-160	100
132 A/B	E-164	250
133 A/B/S	D-165	50
134 A/B/S	D-130	180
149 A/B/S	T-130	125
151 A/B	D-112	150
152 A/B	VCM PUMP SUCTION	250
156 A/B	N2 HEADER	260
161 A/B	E-143 TO T-120	250
162 A/B	TANK CAR LOAD HDR	250
163 A/B/C/D/E/F/G/H	SPHERE PUMP SUCTION	250
164 A/B	OCCIDENTAL TRANSFER	210
169 A/B/C/D	P-180 SUCTION	250
169 E/F	T-162 SUCTION	250
169 H/G	T-162 FILL	250
169 J/K	E-169	250
169 L/M	DOCK RECIR	250
169 N/V	12" HIC AT LEVEE	250
169 P/S	12" HIC AT LEVEE	250
169 Q/U	6" EBV AT LEVEE	250
169 R/T	12" AT LEVEE	250
170 A/B	D-181	150
171 A/B	E-169 C3H6	275
172 A/B	E-181 C3H6	250
173 A/B	METER PROVING	250

Page 1

PSV #	LOCATION	SETTING
174 A/B	METER PROVING	250
175 A/B	BLK 43 LINE	250
205 A/B/C	D-200	195
211 A/B	C-111	150
212 A/B	C-212	150
215 A/B	D-260	75
216 A/B	P-216 A/B	200
216 C/D	V-260A	250
217 A/B	V-260B	250
220/221	O2 TO BLOCK	260
230	S-230	44
235 A/B	P-215 A/B	111
250 A/B	C-250	50
251 A/B	R-250	285
252 A/B	HEAT RECOVERY	150
300 A/B	D-300	250
302 A/B	90# STEAM	140
304 A/B	D-310	100
311 A/B	D-320	300
315 A/B	E-325	175
320 LOA/LOB/LOD	P-322	366
320 LOC	K-320 SEAL OIL	45
325 A/B	S-325	230
332 A/B	E-332	250
334 A/B	D-330	300
335 A/B	E-331	250
336 A/B	E-332-2	250
176 A/B	D-541 TO SOLVENTS	250
350 A/B/C	D-350	150
350 KA2/KA3/KA4	K-350	140
410 A/B	THROX	300
420 A/B	T-420	50
421 A/B/C/D	THROX	300
502 A/B	D-63B	205
531 A/B/C	D-531	150
541 A/B	D-541	75

Page 2

DISTILLATION

REACTIVE CHEMICALS

CHLORINATION OF RECYCLE EDC:

A.

B. SIDE REACTION (UNDESIRE):

DOW CONFIDENTIAL

DJH
9/2/91

R201 & 202 (cont'd)

CONFIDENTIAL

REDACTED

R&S149827

R-201 AND 202

MAIN REACTION

SECONDARY REACTIONS

CONFIDENTIAL

REDACTED

RS149828

WASH COLUMNS C-203 & C-204 REACTIONS

CONFIDENTIAL

REDACTED

R&S149829

ECOLOGY AREA

CHEMICAL REACTIONS

COMBUSTION REACTIONS:

SCRUBBER REACTIONS:

JRB 9/3/91

VCM Area Concerns

Concern: Coke Cycle Length

Improvements:

- CCl₄ levels reduced to 1300 ppm resulting in 6-9 month cycles
- Cracking rate Mod5 control on all six furnaces

Opportunities:

- Relocate CCl₄ addition point, control improvements
- Decoke shot recycle (disposal cost savings)

VCM Area Concerns

Concerns: Valve Reliability in Furnace Area

Improvements:

- WKM valve trials

Opportunities:

- Replace unreliable valves during 1992 shutdown

VCM Area Concerns

Concern: Coke Induced Control Valve Sticking

Improvements:

- Slower coke formation due to CCl₄ reductions
- Mod5 control

Opportunities:

- Define appropriate stroking frequencies and implement a PM program

VCM Area Concerns

Concern: Furnace Temperature/ Cracking Control

Improvements:

- Redundant instrumentation (ex. tail pipe temp.)
- Mod5 Control
- Fuel to EDC Feed Ratio control

VCM Area Concerns

Concern: Corrosion/ Erosion Problem Areas

Improvements:

- Manurite furnace coils (radiant)
- Coil thickness checks performed during decokes
- Decoke sandjet runs minimized
- Monel stems on quench loop ball valves & isolation valves
- Alloy piping in critical high wear areas in quench loop

Opportunities:

- Painting in furnace area
- Evolve to Manurite 900D coils

VCM Area Concerns

Concern: Seal Leaks

Improvements:

- Seal failure monitoring has helped identify some root failure causes
- Training on installation, operation and maintenance of seals
- Seal selections better suited to process application

Opportunities:

- Evaluate canned/mag-drive pumps
- Continue failure analysis

VCM Area Concerns

Concern: Tarpot Column (C-270)
Fouling

Improvements:

- O2 Analyzers
- Pressure testing maintenance

Opportunities:

- Clean/inspect column and associated equipment during 1992 shutdown
- Install equipment to remove solids

VCM Area Concerns

Concern: Secondary Chloroprene Removal
Column (C-255) Fouling

Improvements:

- Reboiler replaced with 2 larger ones

Opportunities:

- Cleaning 3Q91
- Mod5 Control
- Aspen simulation to identify optimum operating conditions

OXY-EDC Concerns

Concern: Catalyst Activity & Deterioration

Improvements:

- Recharge R-201 during 2Q91

Opportunities:

- Recharge R-202 in 1992
- Continued R&D assistance to evaluate new catalyst
- Communicate with Ft. Saskatchewan on catalyst performance problems

VCM Area Concerns

Concern: Tube leaks on VCM finishing
column overhead condenser
E-140

Improvements:

- Study to determine cause of failures
- Plugged much of suspected high risk zone
- New exchanger engineered

Opportunities:

- Replace during 1992 shutdown
- Study to identify control improvements to minimize column upsets

Other VCM Area Improvements

- RE-120C Heat Recovery in service

Dual Tank Bottoms- EDC tanks T-260, 261, T-230

F-106 VCM Furnace started up

P-100 EDC Furnace Feed Pumps Rewheeled

- C-111 Quench Tarpot replaced- higher pressure rating - put on Mod5 control

Replaced D-531 Cl₂ pot and header- higher pressure rating & electric tracing

Installed higher efficiency trays in C-120 VCM/HCl Splitter (bottom half)

- ✓ New seats to minimize coke buildup in Neles quench loop ball valves
- CO analyzers on VCM furnaces & F-110 along with O₂ control
- 3-Way valve at E-143 to prevent contamination of VCM spheres
- Mod5 control on dowtherm furnace F-110

src:8/91

CONFIDENTIAL

R&S 149841

OXY-EDC Area Concerns

Concern: Ethylene Quality Consistency

Improvements:

- PM and improved reliability of incoming ethylene analyzer
- Cross plant ethylene quality team & cross plant operator visits

Measures in Place:

- % Ethylene controlled in reactor recycle
- Incoming ethylene analysis with alarming for methane & ethane
- Lower O₂ flammability limit determinations - R&D

Opportunities:

- Mod5 Control
- Poly C vent feed to R-202
- Evaluate isobutane levels in Poly A recycle