

TO: EDC/VOC EXPOSURE TEAM

DATE: FEBRUARY 19, 1991

FROM: MARK WOODYEAR

RE: MEETING 2/18/91
MINUTES

The EDC/VOC Exposure team met in the Main Conference Room at 9:30 am Monday 2/18. In attendance were Nelson Perez (timekeeper), Craig LeJeune (scribe), Johnny Stephenson, Craig Davis, Mike Huber, Ernie Parsons, Max Hekmat, Francisco Ortiz, Art Reinhardt, Ron Williams, and Mark Woodyear (secretary).

Pancho began the meeting by introducing the members to the regulations facing PPG and the effects that this will have on our operations. He briefly described both the EDC IPEL and VOC laws.

Ron Williams then gave a brief history of the EDC IPEL regulation and some of our efforts to date. After January of 1993, respirators can only be used for emergencies, or other applications where engineering controls are not feasible. He mentioned that high costs could not be used as a reason for unfeasibility. Presently, we are in an interim period where respiratory protection can be used. After Jan. 1, 1993 we must comply with the new limits without using respiratory equipment. The new limits are 1 ppm TWA and 2 ppm STEL. He also mentioned that the Vinyl Institute has challenged the law in court. He estimated that our chances of winning the court action were about 50/50 and that any result would not be known until late '91 or early '92.

There was then some discussion of the regulations. Several questions were raised as to what we were going to consider as VOC's, will stabilizers be included, etc. Nelson will write a formal project scope for the project by the second meeting. Also, Ron will write an abstract of the EDC IPEL regulation. We will contact Plauche about the VOC regulations. These items should better define what needs to be done.

Johnny reviewed the work done so far. The project was divided into two phases. Phase I just had a pre-ACT meeting last Friday. This phase involves pump seals, tank vents, closed-loop sampling. It also includes money for purchase of some vacuum pumps and nitrogen heaters. Phase II is what we are working on. This involves clearing equipment, emissions from sumps, etc.

A team contract was then adopted. It is included in the attachments. Nelson then presented the project schedule to the group.

Next we reviewed and brainstormed a list of potential methods for clearing equipment. Assignments were made for members of the group to develop the procedures. It was further decided that each member would review the brainstorming list with operators and/or maintenance to get any ideas they may have on the subject. The final list of

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clearing concepts and the person(s) assigned to develop the concepts are listed below:

Steaming stripping	MW
Hot nitrogen purging	CL
Vacuum	NP/EP
Pigging lines	CL
Using heavy liquids to displace liquid org.	FO/MW/EP
Solvent washing	MKH/CL
Reduce # of plugged reboiler tubes	MKH/NP/AR
Carbon Absorption	CD/RW/CL
Freezing Solids and liquids	CD/FO
Equipment Redesign	
Nitrogen purging	
Water-washing	

The development of each of these concepts involves several items. These items are listed under the concepts in the attached Activity List. The activity list will be updated after each meeting to reflect progress made. It should be used in addition to the assignments made at the meeting.

We then reviewed the activity list. Assignments were made to gather equipment lists and pressure/temp ratings for each piece of equipment in Derivatives that contains EDC or any VOC's.

The following assignments were made at the meeting:

1. Define VOC. - Andy P.
 2. Exactly when is VOC report due. - Andy P.
 3. Get operator input for clearing concepts list. - Operations Reps
 4. Bring copy of VCM clearing SOP's. - Ernie
 5. Make P/T equipment list/ratings. - Huber/LeJeune
 6. Make TE2 equipment list/ratings. - Reinhardt/N.Perez
 7. Make WTU equipment list/ratings. - I.Perez/Woodyear
 8. Make VC2 equipment list/ratings. - Parsons/Woodyear
 9. Make VDC equipment list/ratings. - Davis/N.Perez
 10. Make EDC equipment list/ratings. - Davis/LeJeune
 11. Make EC-HCL equipment list/ratings. - Davis/N.Perez
 12. Look at outage schedules and individual equipment outages for the next two months. With an eye towards testing clearing concepts. - ALL
 13. Consider equipment being cleared for TE-2 outage and possible testing. - Art & Process Engrs
 14. Work on developing clearing concepts. - All assigned above.
 15. Process engineering to finish their assignment as stated in the attached list.
- NEXT MEETING AT TELECONFERENCE ROOM AT 12:30 PM ON 2/27/91.
(see Agenda on next page)

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AGENDA

1. Review Assignments
2. TE-2 Test Schedule
3. Make agenda for next meeting.

Distribution:

Attendees -
Ismael Perez -
Andy Plauche -
Vern Morgan -

Attachments:

Team Contract
Updated Activity List
Unit Notes for Reducing EDC Exposure
Major Equipment Clearing with Potential for EDC Exposure

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Revised 2/18/91

ACTIVITY LIST FOR P-3097
NEW EDC AND VOC EXPOSURE LIMITS

Abbreviations for the team members are:

Craig Davis	CD	Francisco Ortiz	FO	Art Reinhardt	AR
Max Hekmat	MJH	Ernie Parsons	EP	Johnny Stephenson	JS
Mike Huber	MKH	Andy Plauche'	AP	Ron Williams	RW
Craig LeJeune	CL	Ismael Perez	IP	Mark Woodyear	MW
Vern Morgan	VM	Nelson Perez	NP		

	Responsible Individual(s)	Required Completion Date
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I. PROJECT LOGISTICS

1. Determine team meeting frequency.	ALL	Done
2. Select and schedule meeting room.	MW	Done
3. Select and set-up file/drawing room.	CL	2/25

II. REVISE SCOPE AND SCHEDULE

1. Issue Scope for Phase II.	NP	By 2/27 Meeting
a) Establish a design basis. The guideline is to clear equipment as fast as or faster than is done currently.		
a) Review with Operations/Maintenance.		
b) Obtain approval from all Area Supervisors (including Maint.), Environmental, Industrial Hygiene, and Dick Holliday.		
c) Send copy to White, Samelson, Graybill, and possibly others in GO.		
2. Prepare Project Schedule.	JS	Done
3. Develop abstract of the regulations.	RW/AP	2/27
4. Put this activity list in timeline.	JS	2/28

III. DEVELOP CLEARING CONCEPTS

1. Brainstorm additional concepts and develop list.	ALL	2/18
Some concepts are:		
a) Steam Stripping	MW	3/11
b) Hot Nitrogen Purging	CL	3/11
c) Vacuum	NP/EP	3/11
d) Pigging	CL	3/11
e) Water-Washing	ALL	3/11
f) Nitrogen Purging	ALL	3/11

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g) Freezing solids and liquids	CD/FO	3/11
h) Solvent Washing	MH/CL	3/11
i) Displacing liquid orgs from tanks	FO/MW/EP	3/11
j) Equipment Redesign	ALL	3/11
k) Reduce number of plugged reboiler tubes	NP/MKH/AR	3/11
l) Carbon Absorption	CD/RW/CL	3/11

For each concept:

- | | |
|--|------|
| 1. Determine possible applications. | 3/11 |
| 2. Draw Sketch and develop preliminary procedure to illustrate the use of the concept. | 3/11 |
| 3. Evaluate Feasibility. | 3/11 |
| a) Technical | |
| b) Economic | |
| c) Constructability | |
| 4. Discuss with Operators/Operations and Maintenance and obtain input. | 3/11 |
| 5. Evaluate Results. | 3/11 |
| 6. Determine limitations and potential problems | 3/11 |

(Note - The responsible individual(s) for items 1 - 6 is as listed for each concept above.)

IV. CATEGORIZE EQUIPMENT

- | | |
|--|----------------|
| 1. Make a list of Equipment for each unit and determine Equipment Ratings (press/vacuum and temp). | 2/25 |
| 2. Brainstorm categories and develop an equipment list for each. Some categories are: | NP/CL/MW 3/4 |
| a) Equipment rated for a full vacuum. | |
| b) Pressure Vessels. | |
| c) Atmospheric Vessels. | |
| d) Temperature Rating. | |
| e) Frequency of clearing or opening to the atmosphere. | |
| f) others | |
| g) ? | |
| h) ? | |
| 3. Verify Equipment integrity. | Operations 3/4 |

V. PRELIMINARY SKETCHES AND FLOWSHEETS

4/1

1. Make generic sketches for each equipment type.
2. Develop Process Flow Diagrams (PFD).
3. Develop Preliminary P&ID's (new ones).

VI. MATCH CLEARING CONCEPTS TO CATEGORIES

3/13

1. Schedule and conduct meeting to discuss best alternatives.
2. Analyze clearing concepts and category for each piece of equipment.

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3. Determine clearing parameters (temp/time/vac) for each piece of equipment.
4. Develop implementation strategy.
 - a) How many clearing units?
 - b) Where located?
 - c) Mobile or permanent installation?
5. Determine owner/manager/maintainer of mobile type equipment.

VII. MATERIAL AND ENERGY BALANCES

3/18

1. Establish a design basis.
2. Determine where needed.
3. Utilize ChemCad when necessary.
4. Apply material and energy balances to clearing concepts and include in PFD's.

VIII. DETERMINE METHOD OF TELLING WHEN EQUIPMENT IS CLEARED

4/15

Given: Sampling is required to verify that a piece of equipment contains less than 1 PPM EDC or VOC.

1. Brainstorm methods.
2. Evaluate methods for VC and Chlorine.
3. Determine where to sample.
4. Determine how to sample.
5. Evaluate sampling techniques that can be done by operations.
6. Develop or update SOPs for equipment clearing.

IX. ENVIRONMENTAL

4/29

1. Interact with Environmental Department.
2. Conduct testing of present water-washing.
3. Evaluate re-use of flush water.
4. Evaluate the affect in WTU and design equipment or change concepts.

X. TEST CONCEPTS

4/15

1. Determine a specific piece of equipment to test in each category. 3/4
2. Obtain and Look at outage schedules. 2/27
3. Evaluate needed test equipment and procure. 3/11
4. Decide on procedure and develop schedule. Design Experiments/Testing Methods, Locations, and Timing. 3/18
5. Make a sampling program and execute.
6. Collect data and evaluate results. 4/15
7. Determine charge number and fund resource. VM 2/21

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<u>XI. ECONOMICS</u>	5/13
1. Compare current clearing time to new clearing time for each piece of equipment. May have a return if the new clearing time is shorter than the current clearing time.	4/22
2. Assess the positive economic impact in on-stream time by unit by product line.	4/24
3. Determine the operating cost increase of:	4/30
a) utilities	
b) maintenance	
c) manpower.	
4. Determine capital cost in matrix form as follows:	
a) Total cost for Derivatives.	
b) Cost by product line.	
c) Cost with and without solvents.	
d) Cost of EDC IPEL only.	
e) Cost of VOC regulation only.	
<u>XII. MARK-UP EXISTING P&ID'S</u>	4/15
1. Develop a management procedure for drawings.	2/28
2. Determine needed drawings.	
3. Get the prints.	
4. Develop a logbook to keep track of drawings.	2/28
5. Engage project engineering and drafting.	
6. Learn the fileroom Drawing system.	
7. Develop a new equipment numbering system.	
8. Team to check final P&ID's for completeness.	2/18
<u>XIII. DESIGN NEW EQUIPMENT AND COMPLETE EQUIPMENT SPEC SHEETS</u>	4/15
1. Carbon beds.	
2. Nitrogen heater(s).	
3. Vacuum pump(s).	
4. Steam Condensers.	
5. Water vessels (portable).	
6. Water Tanks.	
7. Equipment for Pigging lines.	
8. Pipe sizing.	
9. Look at existing systems ability to handle changes (vent headers/incin/wtu).	
10. Blowers.	
11. Mobile clearing units (self-contained).	
12. Pumps.	
13. Compressors.	
14. Make new equipment list.	
15. Team to check specification sheets for completeness.	2/18
<u>XIV. FINALIZE CLEARING PROCEDURES FOR CATEGORIES</u>	4/29
1. Evaluate alternatives.	

2. Develop and finalize written procedures.
3. Review with operations and maintenance.

XV. PREPARE PROCESS DESIGN PACKAGE

5/13

1. Finalize subheadings for the manual and appendices.

2/28

Book I - Report (Articulated Text)

Table of Contents

Abstract

Justification

Project Overview

Discussion of the EDC IPEL and VOC

Project

Energy and Material Balances

Discussion of PFD's and PEID's

Equipment Design

Additional considerations

Environmental Regulations

Authors

Book II, III, etc. - Appendices

Process Flowsheets

Design Basis

Material and Energy Balances

Process Description(s)

Clearing Procedures

Equipment List

Equipment Design

Process Spec. Sheets

Pipeline Sizing

PEID's

PFD/PEID Revision Logbook

Economics

Correspondence

Meeting Minutes

2. Co-ordinate the secretarial duties.
3. Co-ordinate the manual development as the project progresses.

5/13

5/13

XVI. PREPARE ACT

7/1

XVII. STUDY AND ESTIMATE PHASE

7/1

XVIII. CONTRACT ENGINEERING

1. Consider engaging Process Engineering Contractor.
2. Engage Project Engineering Contractor.

FO

3/18

5/6

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MAJOR EQUIPMENT CLEARING WITH
POTENTIAL PERSONNEL EDC EXPOSURE LIST

1. DISTILLATION COLUMNS IN EDC SERVICE:
 - HYDROBLAST REBOILERS
 - CLEAN CONDENSERS
 - CLEAN PACKING / TRAYS
 - REPLACE MAJOR VALVES, ETC.
 - VESSEL INTERNAL INSPECTIONS
 - REPAIR INSTRUMENTATION
 - OTHER VESSEL REPAIRS
2. PROCESS TANKS: (WITHIN THE UNIT)
 - REPLACE VALVES
 - REPAIR LEAKS DUE TO CORROSION OR GASKET FAILURE
 - VESSEL INTERNAL INSPECTIONS
 - REPAIR INSTRUMENTATION
 - OTHER VESSEL REPAIRS
3. EDC STORAGE TANKS: (INCLUDING REMOTE LOCATION)
 - REPLACE VALVES
 - REPAIR LEAKS
 - VESSEL INTERNAL INSPECTIONS
 - REPAIR INSTRUMENTATION
4. PROCESS PIPING:
 - REPLACE VALVES
 - REPAIR LEAKS
 - REPAIR INSTRUMENTATION
5. EDC DRYERS: (INCLUDE REMOTE LOCATIONS)
 - PREPARE FOR RECHARGING
 - REPLACE VALVES, OTHER REPAIRS
6. EDC FILTERS: (INCLUDE REMOTE LOCATIONS)
 - PREPARE FOR RECHARGING
 - REPLACE VALVES, OTHER REPAIRS
7. PUMPS:
 - PREPARE FOR SEAL REPAIRS
 - REPLACE VALVES
8. HEAT EXCHANGERS / ECONOMIZERS
 - PREPARE TO WASH / HYDROBLAST
 - REPLACE VALVES
9. VACUUM TRUCKS:
 - LOADING / UNLOADING OPERATIONS
 - WASHING

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3.-
10. PROCESS SUMPS / LIFT STATIONS:

CLEANING
SURFACE EVAPORATION LOSSES
MOVING WATERS TO AND FROM SUMP

11. SHIPPING OPERATIONS: ALSO INCLUDED IN FLAMMABLE LOADING:

LOADING/UNLOADING TANK CARS
LOADING/UNLOADING TANK TRUCKS
INSPECTING TANK CARS / TANK TRUCKS
LOADING/UNLOADING DRUMS

12. TAP BUGGIES:

WASHING
LOADING / UNLOADING
OTHER REPAIRS

13. WTU CLASSIFIER:

LOADING / UNLOADING MATERIAL
CLEANING OPERATIONS

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UNIT PROPOSALS FOR THE REDUCTION OF EDC EXPOSURE

PURPOSE

THE PURPOSE OF THIS WRITE UP IS TO OUTLINE PROPOSED IDEAS FOR ENGINEERING REDUCTIONS IN EDC EXPOSURE AS REQUIRED BY CHANGE IN OSHA REGULATION. THIS CHANGE HAS LOWERED PERSONNEL EXPOSURE TO EDC TO 1 PPM FOR 8 HOURS TWA AND 2 PPM FOR A 15 MINUTE STEL WITHOUT THE USE OF RESPIRATORY PROTECTIVE EQUIPMENT. THESE ENGINEERING CONTROLS MUST BE IN PLACE BEFORE A DEADLINE OF DECEMBER 31, 1992 IN ORDER TO MAINTAIN COMPLIANCE.

WTU

MODIFICATION OF THE FOLLOWING TASKS:

1. CLEARING OF THE BOTTOMS PLANT PRODUCT DRYERS.
2. DRAINING INCINERATOR KNOCK OUT POTS. A PROJECT CURRENTLY IN PROGRESS.
3. SAMPLING OF INCINERATOR FEED/BOTTOMS PLANT BOTTOMS.
4. REMOVAL OF ORGANICS FROM CSS AND BAT STRIPPER FEED SYSTEMS.
5. SAMPLING OF INCINERATOR FEED/BTMS PLANT BOTTOMS.

PER/TRI

PROPOSALS BY N. PEREZ THAT WILL BE DISCUSSED WITH PER/TRI SUPERVISION REGARDING IDENTIFIED PROBLEM AREAS AS INDICATED BY PERSONNEL MONITORING:

1. BAT SUMP
COVER THE BAT SUMP TO ELIMINATE WHILE DUMPING VACUUM TRUCKS. ADD A NOZZLE FOR VACUUM TRUCKS DISCHARGE.
2. BAT SUMP PRIMING
ADD A BLEED LINE BACK TO THE COVERED BAT SUMP INSTEAD TO THE SUMP PAD.
3. CLEARING VAPORIZER FOR OUTAGE
INSTALL A LOW POINT BLEED AT THE PUMP BOWLS TO INSURE COMPLETE DRAINAGE OF THE VAPORIZERS. UPON DRAINAGE. USE HEATED N2 TO PURGE THE VENT HEADER. KEEP STEAM GOING TO THE REBOILER TO HELP HEATING AND RID ORGANIC VAPORS.
4. VAPORIZER BLOWDOWN PIPING CLEARING
N2 BLOW THE LINES EMPTY AND THEN USE HEATED N2 TO GET RID OF ORGANIC VAPORS. VENT TO VENT HEADER.
5. TRI STILL REFLUX DRYER DUMPING
N2 PAD THE DRYER. WHEN EMPTY OF LIQUID. USE HEATED N2 TO RID ORGANIC VAPORS. VENT TO VENT HEADER.
6. TRI STILL REFLUX SYSTEM
 - A. REFLUX PUMPS
PUMP CLEARING LINE TO THE REFLUX TANK. USE DOUBLE SEAL ON THE PUMPS.
 - B. REFLUX TANK
EMPTY THE TANK INTO THE STILL AND USE HEATED N2 TO RID ORGANIC VAPORS. VENT TO THE VENT HEADER.

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7. LINE LEAK IN WHICH EDC IS A MAJOR COMPONENT
BEGIN WORK ON INDIVIDUAL ITEMS FOR COST ESTIMATES.

TRI II

1. THE NEED FOR CLOSED LOOP SAMPLING IN THE FOLLOWING
LOCATIONS:

OHC ACID AT RX P/S	L.S. REFLUX BEFORE DRYERS
CHLORAL TREATMENT PRODUCT	L.S. REFLUX AFTER DRYERS
DH BOTTOMS	LIGHTS TANKS
L.S. FEED	HEAVY STILL BOTTOMS
L.S. BOTTOMS	

2. THE NEED FOR A CLOSED CLEARING METHOD FOR THE FOLLOWING
CLEARING PURPOSES:

OHC CRUDE TRANSFER PUMPS	LIGHT STILL FINAL FILTERS
OHC PRODUCT TRANSFER PUMPS	LIGHT STILL REFLUX FILTERS
CHLORAL TREATMENT FEED PUMPS	LIGHT STILL FINAL DRYERS
CHLORAL TREATMENT PRODUCT PUMPS	LIGHT STILL REFLUX DRYERS
DH STILL FEED PUMPS	FURNACE FEED PUMPS
DH STILL BOTTOMS PUMPS	HEAVY STILL FEED PUMPS
LIGHT STILL FEED PUMPS	HEAVY STILL REFLUX PUMPS
LIGHT STILL BOTTOMS PUMPS	HEAVY STILL BOTTOMS PUMPS
LIGHT STILL REFLUX PUMPS	CHLORAL TREATMENT FILTERS
STEAM STRIPPER PHASE SEPARATOR ORGANICS PUMPS	

3. THE POSSIBILITY OF INSTALLING DOUBLE TANDEM SEALS ON ALL
PUMPS LISTED IN NUMBER TWO ABOVE.

VCM II

IMPLEMENTING CHANGES IN THE FOLLOWING JOBS THAT HAVE
REQUIRED RESPIRATORY PROTECTION AS A PAST PRACTICE:

1. DRAINING AND CLEARING EDC PUMPS
INSTALL PUMP CLEARING LINE. THE CLEARING LINE CAN
DISCHARGE BACK TO THE VESSEL OR COMMON HEADER.
2. CATCHING OHC DEGASSER SAMPLES
USE AN ACID RESISTANT SAMPLING RIG WITH A BOTTLE. SAMPLE
TO BE CAUGHT BEFORE THE LCV AND DISCHARGE AFTER.
3. DISCARD EDC SAMPLES INTO THE PROCESS TANK
USE 5 GAL JUG IN THE PLANT LAB UNDER THE HOOD TO EMPTY
THE SAMPLE BOTTLES.
4. COLOR CHECK ON EDC REACTOR
USE A SAMPLE RIG WITH A CLEAR BOTTLE CONTAINING A SMALL
AMOUNT OF TESTING REAGENT. TAKE THE SAMPLE FROM THE
REACTOR PCV. A LIQUID SAMPLE CAN BE TESTED IN THE SAME
FASHION EXCEPT IN THIS CASE THE LIQUID CAN GO FROM THE
REACTOR LIQUOR TO A BOTTLE BOX OR SIMILAR ITEM.
5. SAMPLING EDC TRUCKS
REQUEST A TRUCK SAMPLE WITH EVERY SHIPMENT BY THE EDC
SUPERVISOR OR GET A CLOSED LOOP SAMPLE AT THE UNLOADING
PUMP AND HAVE IT ANALYZED. IF OK. THEN FINISH THE
UNLOADING PROCESS.
6. WORKING BY THE COVERED SEPARATOR
INSTALL A FLOATING COVER
7. CHARGING THE EDC REACTOR CATALYST POTS
EVALUATE THE INSTALLED CLEARING LINE PERFORMANCE. IF

STILL HAVING POTENTIAL EDC EXPOSURE. CONSIDER USING HOT N2.

8. WASH DH STILL
TO BE CONSIDERED AT A LATER TIME.
9. WASH DH STILL FEED ECONOMIZER
N2 PAD OUT THE EDC TO A VESSEL. WHEN EMPTY. USE HOT N2 TO PURGE TO THE VENT HEADER TILL CLEAR.
10. CATCH EDC SAMPLES THAT ARE NOT CLOSED LOOP
CONVERT TO CLOSED LOOP.
11. CLEARING INSTRUMENTS AND SIGHT GLASS IN EDC SERVICE
N2 PAD SIGHT GLASSES INTO THE VESSEL AND THEN PURGE TO THE VENT HEADER USING HOT N2.
12. DRAINING OR UNPLUGGING LINES OR VESSELS CONTAINING EDC.
GO TO A CLEARING VESSEL OR TAR BUGGY. AFTERWARDS. USE HOT N2 TO PURGE TO THE VENT HEADER IF OPENING IS NEEDED.
13. DUMPING EDC DOPP KETTLE INTO DRUMS
NEEDING FURTHER STUDY.
14. FLUSHING PH PROBES IN EDC SERVICE
BLOW BACK THE PROBES INTO THE VESSEL.
15. DRAINING LIQUIDS OUT OF VENT HEADERS
INSTALL SMALL DIAPHRAM PUMPS TO PUMP LIQUIDS OUT OF THE HEADERS BACK INTO THE INTERMEDIATE CRUDE TANK IN OHC.
16. DRAIN ST-2 VENT TO KNOCKOUT POT
USE DIAPHRAM PUMP TO PUMP BACK INTO THE TANK.
17. CLEARING CARBON/PELS BED AND FILTER
N2 PAD OUT THE EDC IN THE VESSELS. USE HOT N2 TO PURGE TO A VENT HEADER OR RECOVERY SYSTEM.
18. CLEARING EDC STORAGE TANKS
NEEDING FURTHER STUDY.

LP/EDC

IMPLEMENTING CHANGES IN THE FOLLOWING ACTIVITIES THAT HAVE BEEN DETERMINED AS SOURCES OF EDC EXPOSURE:

1. ROUTINE SAMPLES
IMPLEMENT CLOSED LOOP SAMPLING.
2. ORTHOTOLINE CHLORINE CHECK IN REACTOR CRUDE
IN LINE CHLORINE ANALYZER AT REACTOR CONDENSER DRAIN.
3. ETHYLENE ANALYZER VENT
SYSTEM TO PUT VENTS TO INCINERATOR HEADER.
4. RECHARGING OF DRYERS AND NEUTRALIZERS
IN NEED OF FURTHER STUDY.
5. CLEARING OF PUMPS
TO CLEAR PUMP SUCTION/BOWL FOR SEAL JOB. A PORTABLE N2 DRIVEN PUMP WILL BE CONNECTED TO LOW POINT DRAIN AND ALL LIQUID WILL BE PUMPED BACK TO SYSTEM. THEN PURGED TO VENT HEADER.
6. #2 AND #4 EDC TANKS USED AS AREA BTMS STORAGE TANKS.
INSTALL BS&B VENT VALVES AND COMPRESS VENTS TO INCINERATOR.
7. CLEARING OF TANKS. VESSELS. AND COLUMNS
 - A. PURGE TO INCINERATOR
 - B. PURGE THROUGH CARBON BED.
 - C. VACUUM PUMP EXHAUST TO INCINERATOR.
 - D. VAPORIZE TO INCINERATOR USING N2 THROUGH PORTABLE

(G. t)

HEATER.

8. VENT HEADER LIQUID
INSTALL KNOCK OUT POTS WITH PUMPS TO TRANSFER LIQUID BACK
TO THE SYSTEM.
9. SPENT SAMPLE ACCUMULATION BOX
SYSTEM TO TRANSFER LIQUID BACK TO SYSTEM.
10. EDC REACTOR LIQUOR SAMPLES
FORCED CIRCULATION CLOSED LOOP SAMPLING.
11. RUNNING ANALYSIS IN PLANT LAB
 - A. NEW LAB VENT HOOD.
 - B. EDC MONITOR FOR LAB.
12. PUMP SEAL LEAKS
DOUBLE SEAL SYSTEM.
13. VALVE PACKING LEAKS
CHANGE SPECS TO ORBIT VALVES.
14. FUGITIVE LEAKS
 - A. AREA EDC MONITOR
 - B. HAND HELD EDC MONITOR.

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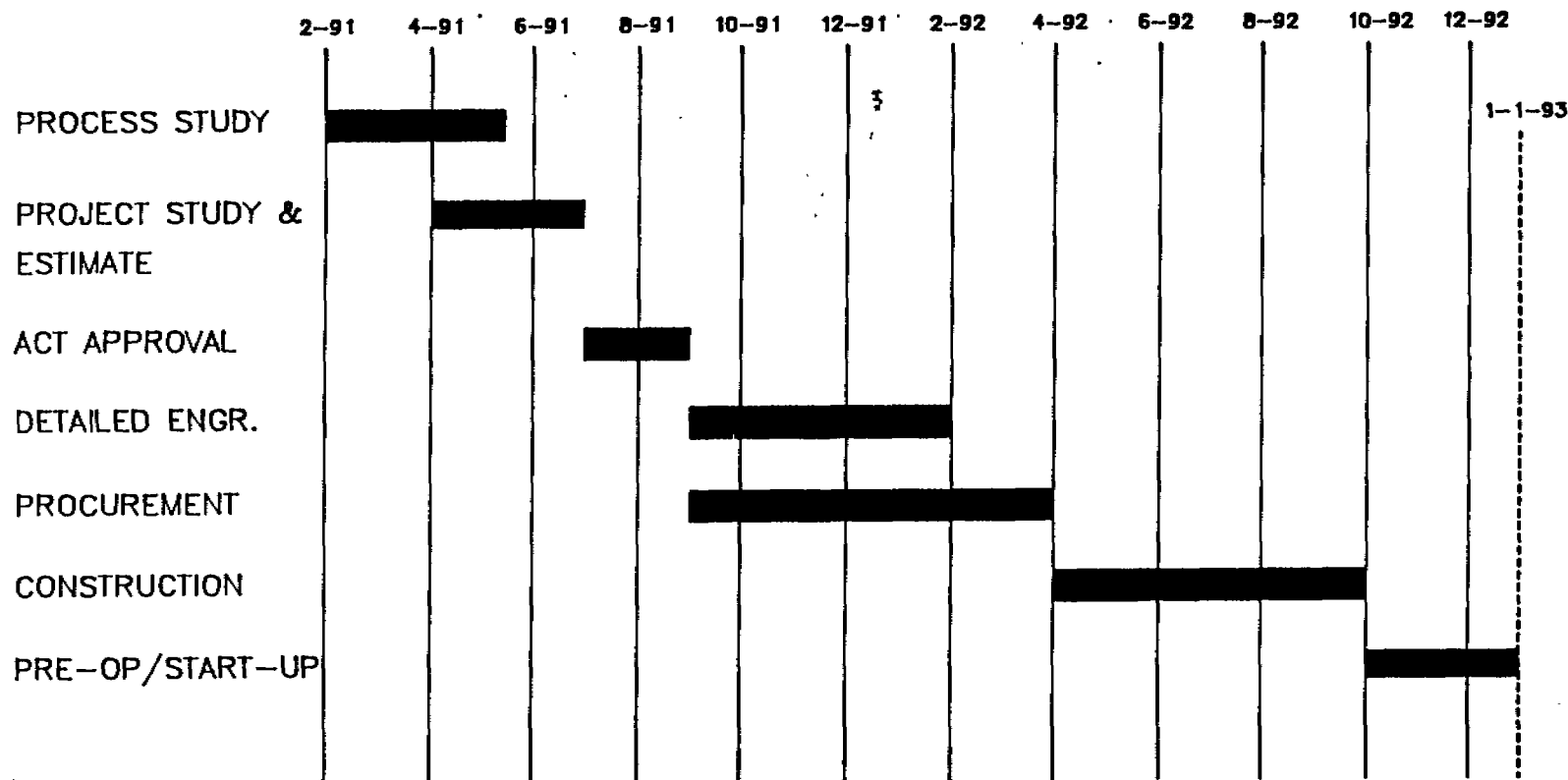
AGENDA FOR FIRST EDC IPEL TEAM MEETING

- | | | |
|-------|--|---------|
| J | I. INTRODUCTION - F. ORTIZ/R.WILLIAMS/A.PLAUCHE | 10 min. |
| | <i>Regulations</i> | |
| | <i>Reason for team being formed</i> | |
| J | II. STATUS OF WORK DONE TO DATE - N. PEREZ/J. STEPHENSON | 10 min. |
| / | III. DEVELOP A TEAM CONTRACT | 10 min. |
| J | IV. OVERALL PROJECT SCHEDULE | 5 min. |
| V. | DISCUSSION/BRAINSTORM OF NEW CONCEPTS FOR PHASE II | 15 min. |
| | <i>Steaming - M. Woodyear ✓</i> | |
| | <i>Hot Nitrogen purging - C. LeJeune ✓</i> | |
| | <i>Vacuum - N. Perez ✓</i> | |
| | <i>Pigging</i> | |
| | <i>Water-washing</i> | |
| | <i>Nitrogen purging</i> | |
| VI. | ACTIVITY LIST DISCUSSION | 60 min. |
| | <i>Main Categories:</i> | |
| | Revise Scope & Schedule | |
| | Develop Clearing Concepts | |
| | Categorize Equipment | |
| | Preliminary Sketches & Flowsheets | |
| | Match Clearing Concepts to Categories | |
| | Material & Energy Balances | |
| | Determining When Equipment is Cleared | |
| | Disposal of Rinse or Flush Materials | |
| | Test Concepts | |
| | Mark-up Existing P&ID's | |
| | Design New Equipment/Equip Spec Sheets | |
| | Finalize Clearing Procedures for Categories | |
| | Prepare Process Design Package | |
| VII. | MAKE ASSIGNMENTS | 5 min. |
| VIII. | SCHEDULE NEXT MEETING AND MAKE AGENDA | 5 min. |

PROPOSED TEAM CONTRACT FOR P-3097

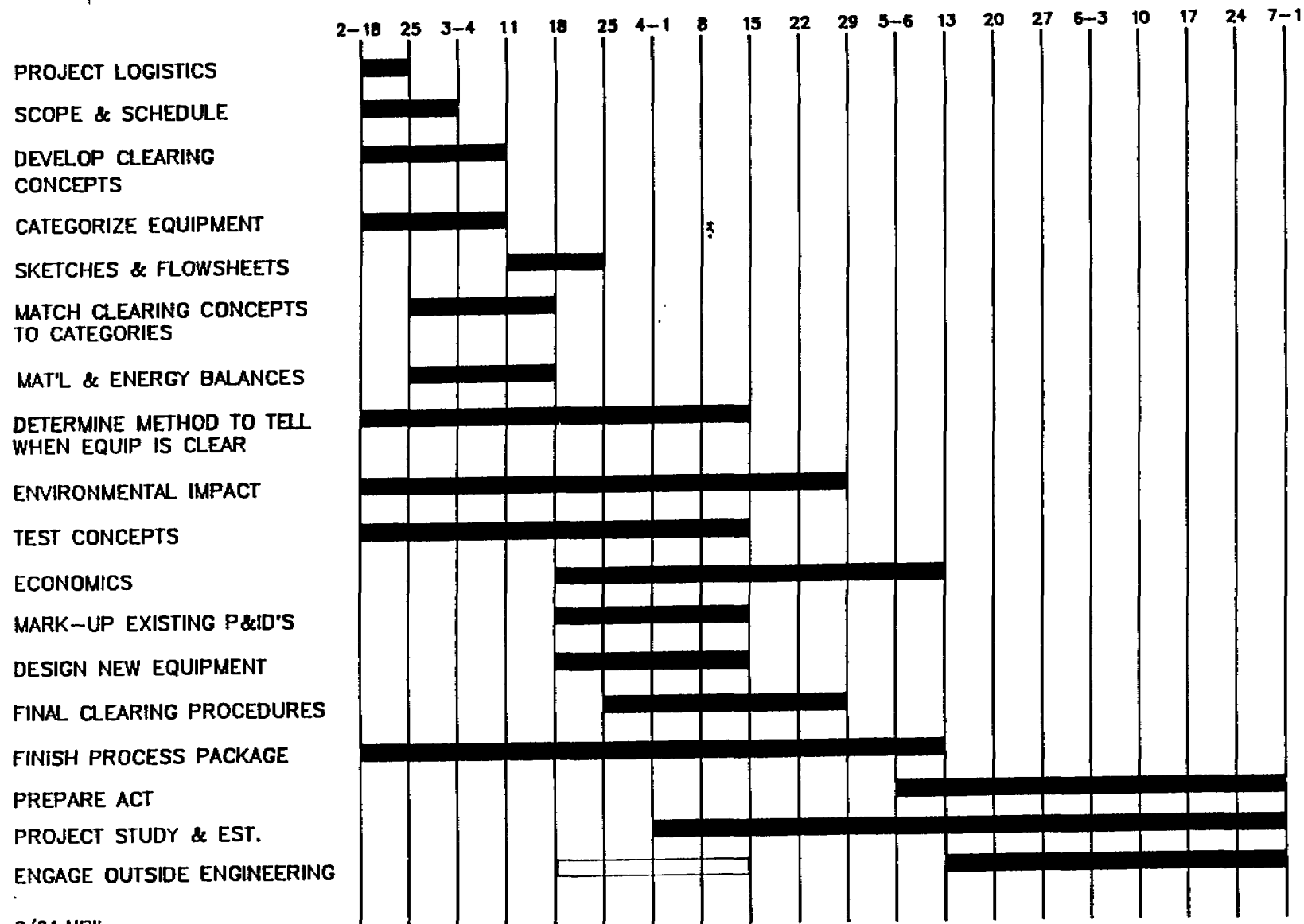
1. Each meeting is to have an agenda with time limits. Agenda to be included in minutes of previous meeting.
2. Each member to come prepared to the meetings.
3. Meetings to not exceed 1-1/2 hours.
4. Hold meeting as scheduled.
5. Start and end on time.
6. Meeting shall be held if proper members are present in lieu of quorum.
7. Rotate scribe, timekeeper, and secretary.
8. Timekeeper to be merciless.
9. Deal only with P-3097 issues.
10. One person speaks at a time.
11. Leader is to insure that each member has an opportunity to express their views.
12. No personal attacks or arguments.
13. Attempt to reach consensus. Vote only as a last resort.
14. All ideas are good ones.
15. Pagers are to be turned down to lowest volume.
16. Use TQ methods on problem solving.
17. Distribute assignments equally to all members.
18. Contract is amendable.
19. P&ID revisions based on majority. Those not present will initial revisions or may raise objections to be discussed at the next meeting.
20. No update during the meeting for those who are late. (No rehash)
21. Minimize design in the meeting. If excessive time is being spent on a subject, it should be tabled or an agreement reached to turn entire remainder of meeting to subject.
22. Meeting to start on time as soon as "quorum" is present.
23. A person will be assigned to update P&ID's and maintain logbook. (Assignment will rotate as with timekeeper, scribe, and secretary.)
24. Meetings will be held on Wednesdays at 10:00 AM. *Every two weeks of or so and*
cancel in every meeting if next meeting will be held.
25. Meetings will consist of two parts: a) Status report and b) Results of design work.
26. Minutes to be issued by Thursday morning.

P-3097 EDC ^{9 voc.} IPEL PROJECT SCHEDULE



SL 087877

P-3097 PRE-ACT SCHEDULE



2/91 MEW

SL 087878

Revised 2/15/91

ACTIVITY LIST FOR P-3097
NEW EDC AND VOC EXPOSURE LIMITS

Abbreviations for the team members are:					
Craig Davis	CD	Francisco Ortiz	FO	Art Reinhardt	AR
Max Hekmat	MJH	Ernie Parsons	EP	Johnny Stephenson	JS
Mike Huber	MKH	Andy Plauche	AP	Ron Williams	RW
Craig LeJeune	CL	Ismael Perez	IP	Mark Woodyear	MW
Vern Morgan	VM	Nelson Perez	NP		

Responsible Individual(s)	Required Completion Date
------------------------------	--------------------------------

I. PROJECT LOGISTICS

- | | | |
|---|-----|--------|
| 1. Determine team meeting frequency. | ALL | 2/18 ✓ |
| 2. Select and schedule meeting room. | MW | 2/19 ✓ |
| 3. Select and set-up file/drawing room. | CL | 2/25 ✓ |

II. REVISE SCOPE AND SCHEDULE

- | | | |
|--|--------------------|----------------------------|
| 1. Issue Scope for Phase II. | NP | By
Second
Meeting |
| a) Establish a design basis. The guideline is to clear equipment as fast as or faster than is done currently. | | |
| a) Review with Operations/Maintenance. | | |
| b) Obtain approval from all Area Supervisors (including Maint.), Environmental, Industrial Hygiene, and Dick Holliday. | | |
| c) Send copy to White, Samelson, Graybill, and possibly others in GO. | | |
| 2. Prepare Project Schedule. | JS | Done |
| 3. Develop abstract of the regulations. | <i>Handi/RW/mw</i> | <i>Done except meeting</i> |
| 4. Put this activity list in timeline. | JS | 2/28 ✓ |

III. DEVELOP CLEARING CONCEPTS

- | | | |
|---|----------------------|--------|
| 1. Brainstorm additional concepts and develop list. | ALL | 2/18 - |
| Some concepts are: | | |
| a) Steam Stripping | MW/? | 3/11 |
| b) Hot Nitrogen Purging | CL/? | 3/11 |
| c) Vacuum | NP/ JS BP | 3/11 |
| d) Pigging | CL | 3/11 |
| e) Water-Washing | ? N-P. | 3/11 |
| f) Nitrogen Purging | ? | 3/11 |

- g) Freezing solids and liquids
- h) others
- i) ?
- j) ?

/CD ~~4~~ / R. Ortiz 3/11 ←
?
?
?

For each concept:

- 1. Determine possible applications. 3/11
- 2. Draw Sketch and develop preliminary procedure to illustrate the use of the concept. 3/11
- 3. Evaluate Feasibility. 3/11
 - a) Technical
 - b) Economic
 - c) Constructability
- 4. Discuss with Operators/Operations and Maintenance and obtain input. 3/11
- 5. Evaluate Results. 3/11
- 6. *Simulation and Problem areas.*

(Note - The responsible individual(s) for items 1 - 5 is as listed for each concept above.)

IV. CATEGORIZE EQUIPMENT

- 1. Make a list of Equipment for each unit and determine Equipment Ratings (press/vacuum and temp). 2/25
- 2. Brainstorm categories and develop an equipment list for each. Some categories are: NP/CL/MW 3/4
 - a) Equipment rated for a full vacuum.
 - b) Pressure Vessels.
 - c) Atmospheric Vessels.
 - d) Temperature Rating.
 - e) Frequency of clearing or opening to the atmosphere.
 - f) others
 - g) ?
 - h) ?
- 3. Verify Equipment integrity. Operations 3/4

V. PRELIMINARY SKETCHES AND FLOWSHEETS

4/1

- 1. Make generic sketches for each equipment type.
- 2. Develop Process Flow Diagrams (PFD).
- 3. Develop Preliminary P&ID's (new ones).

VI. MATCH CLEARING CONCEPTS TO CATEGORIES

3/13

- 1. Schedule and conduct meeting to discuss best alternatives.
- 2. Analyze clearing concepts and category for each piece of equipment.
- 3. Determine clearing parameters (temp/time/vac) for each piece of equipment.
- 4. Develop implementation strategy.

- a) How many clearing units?
- b) Where located?
- c) Mobile or permanent installation?
- 5. Determine owner/manager/maintainer of mobile type equipment.

VII. MATERIAL AND ENERGY BALANCES

3/18

- 1. Establish a design basis.
- 2. Determine where needed.
- 3. Utilize ChemCad when necessary.
- 4. Apply material and energy balances to clearing concepts and include in PFD's.

VIII. DETERMINE METHOD OF TELLING WHEN EQUIPMENT IS CLEARED

4/15

Given: Sampling is required to verify that a piece of equipment contains less than 1 PPM EDC or VOC.

- 1. Brainstorm methods.
- 2. Evaluate methods for VC and Chlorine.
- 3. Determine where to sample.
- 4. Determine how to sample.
- 5. Evaluate sampling techniques that can be done by operations.
- 6. Develop or update SOPs for equipment clearing.

IX. ENVIRONMENTAL

4/29

- 1. Interact with Environmental Department.
- 2. Conduct testing of present water-washing.
- 3. Evaluate re-use of flush water.
- 4. Evaluate the affect in WTU and design equipment or change concepts.

X. TEST CONCEPTS

4/15

- 1. Determine a specific piece of equipment to test in each category. 3/4
- 2. Obtain and Look at outage schedules. 2/27
- 3. Evaluate needed test equipment and procure. 3/11
- 4. Decide on procedure and develop schedule. Design Experiments/Testing Methods, Locations, and Timing. 3/18
- 5. Make a sampling program and execute.
- 6. Collect data and evaluate results. 4/15
- 7. Determine charge number and fund resource. VM 2/21

XI. ECONOMICS

5/13

- 1. Compare current clearing time to new clearing 4/22

- time for each piece of equipment. May have a return if the new clearing time is shorter than the current clearing time.
2. Assess the positive economic impact in on-stream time by unit by product line. 4/24
 3. Determine the operating cost increase of: 4/30
 - a) utilities
 - b) maintenance
 - c) manpower.
 4. Determine capital cost in matrix form as follows:
 - a) Total cost for Derivatives.
 - b) Cost by product line.
 - c) Cost with and without solvents.
 - d) Cost of EDC IPEL only.
 - e) Cost of VOC regulation only.
- XII. MARK-UP EXISTING P&ID'S 4/15
1. Develop a management procedure for drawings. 2/28
 2. Determine needed drawings.
 3. Get the prints.
 4. Develop a logbook to keep track of drawings. 2/28
 5. Engage project engineering and drafting.
 6. Learn the fileroom Drawing system.
 7. Develop a new equipment numbering system.
 8. Team to check final P&ID's for completeness. 2/18
- XIII. DESIGN NEW EQUIPMENT AND COMPLETE EQUIPMENT SPEC SHEETS 4/15
1. Carbon beds.
 2. Nitrogen heater(s).
 3. Vacuum pump(s).
 4. Steam Condensers.
 5. Water vessels (portable).
 6. Water Tanks.
 7. Equipment for Pigging lines.
 8. Pipe sizing.
 9. Look at existing systems ability to handle changes (vent headers/incin/wtu).
 10. Blowers.
 11. Mobile clearing units (self-contained).
 12. Pumps.
 13. Compressors.
 14. Make new equipment list.
 15. Team to check specification sheets for completeness. 2/18
- XIV. FINALIZE CLEARING PROCEDURES FOR CATEGORIES 4/29
1. Evaluate alternatives.
 2. Develop and finalize written procedures.
 3. Review with operations and maintenance.

XV. PREPARE PROCESS DESIGN PACKAGE

5/13

1. Finalize subheadings for the manual and appendices.

27/28

Book I - Report (Articulated Text)
Table of Contents
Abstract
Justification
Project Overview
Discussion of the EDC IPEL and VOC Project
Energy and Material Balances
Discussion of PFD's and P&ID's
Equipment Design
Additional considerations
Environmental Regulations
Authors
Book II, III, etc. - Appendices
Process Flowsheets
Design Basis
Material and Energy Balances
Process Description(s)
Clearing Procedures
Equipment List
Equipment Design
Process Spec. Sheets
Pipeline Sizing
P&ID's
PFD/P&ID Revision Logbook
Economics
Correspondence
Meeting Minutes

2. Co-ordinate the secretarial duties.
3. Co-ordinate the manual development as the project progresses.

5/13

5/13

XVI. PREPARE ACT

7/1

XVII. STUDY AND ESTIMATE PHASE

7/1

XVIII. CONTRACT ENGINEERING

1. Consider engaging Process Engineering Contractor.
2. Engage Project Engineering Contractor.

FO

3/18

5/6

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P-3097 MEET EDC EXPOSURE REGULATIONS
MEETINGS RESPONSIBILITIES

<u>MEETING #</u>	<u>SECRETARY</u>	<u>SCRIBE</u>	<u>TIMEKEEPER</u>
1	MW	CL	NP
2	CD	FO	AR
3	MJH	EP	MW
4	MKH	AP	CD
5	CL	IP	MJH
6	FO	NP	MKH
7	EP	AR	CL
8	AP	MW	FO
9	IP	CD	EP
10	NP	MJH	AP
11	AR	MKH	IP

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