PLAINTIFF'S EXHIBIT

UPRC-128

CONFIDENTIAL

CORPUS CHRISTI,TEXAS, REFINERY

LOSS CONTROL & SAFETY SURVEY

SEPTEMBER, 1981

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champlin

INTER-OFFICE CORRESPONDENCE

TO: R. J. Carlton — FORT WORTH, TEXAS

FROM: C. L. Strunk — DATE: 11/19/81

SUBJECT: Corpus Christi Refinery Loss Control & Safety Survey -1981

GENERAL CONDITIONS

In most areas of the plant housekeeping is excellent, leaks are minimal, dike walls are well maintained with progress continuing on replacing grass with gravel. Areas needing improvement are around Tanks 2005 and 2006, Demex Unit bottoms pumps, along piperack near No. 1 Cat Cracker, and oil ponds near flares.

Painting program has been very effective. Endorse the consideration for the DuPont program to maintain plant condition.

Warehousing appears adequate and centralized. The utilization of bulk chemical storage in process units has minimized drums being needed in process areas.

Recommend consideration be given to a central reclaim area adequately staffed and equipped under warehouse supervision.

In reference to flood exposure, endorse the need to study entire plant's storm water run-off capability during heavy rains.

Main piperack near office should be placed on a high priority for renovation.

Security forces are much improved over all previous surveys. Guards are particularly courteous, and accommodating while remaining business oriented.

Electrical System -- Recommend an update be made in the overall electrical supply with special attention to the CP & L industrial station relationship with Southwestern.

Instrument and plant air requirements need to be determined in order to reduce the high cost of leased portables throughout the plant.

Endorse the study to be completed on modifications to the No. 4 area atmospheric and vacuum heaters for more efficient firing conditions.

With all the pumps now existing inside dike walls, and more to be added this next year for West Plant, each particular installation needs to be studied for flood exposure.

Areas that do not have deluge systems should be reviewed for possible installation. Locations for emphasis include above all hot oil pumps throughout the refinery, overhead fin-fan coolers and the heavy concentration of pressure storage tanks adjacent to the No. 1 Cat Cracker.

In summary, very impressed with overall plant general condition, attitude of the people, and their cooperation during the survey this week.

Chester L. Strunk

Chester L. Strunk

champlin

INTER-OFFICE CORRESPONDENCE

TO: See Distribution

FORT WORTH, TEXAS

FROM: William E. Childers

DATE: November 11, 1981

SUBJECT: Corpus Christi Refinery
Safety and Loss Control Survey

Please note that the date for the Corpus Christi Refinery Safety and Loss Control Survey has been changed to one week later than originally scheduled.

The 1981 Corpus Christi Refinery Safety and Loss Control Survey will be conducted November 17, 18, 19, 1981 by the following survey team members.

SURVEY TEAM	ON SITE COUNTERPART
C. L. Strunk - Team Chairman	R. E. Schneck
E. J. Daugherty	R. C. Duvall
J. Mangrum	J. H. Tansey
D. Bladen	G. D. Whipple
D. R. Pace	B. D. Routh
T. L. Wills	D. L. Scharff
J. F. Gay/W. E. Childers	
R. A. Loveless	
W. L. Ott	

Accommodations have been booked in the name of William E. Childers for all visiting members at the Sheraton Marina Inn, 300 North Shoreline Drive, Corpus Christi, Texas 78401, Phone 512-883-5111 for arrival on Monday, November 16, 1981 and check out by Friday, November 20, 1981. Should there be a need for additional lodging time this office will be glad to assist upon request.

Arrangements for transportation should be accomplished by the individual team members.

In addition to the Loss Control Survey Form the survey team will utilize the services of an outside consultant to evaluate specific assignments. This evaluation should provide an additional source of viable information for management's consideration.

The survey team schedule will follow the same agenda as the previous surveys with the exception of Thursday, November 19, 1981.

INSPECTION SCHEDULE

Tuesday, November 17, 1981, 9:30 a.m.	Meeting, Conference Room, Discussion of purpose of inspection and assignment of responsibilities for team members. Each team will outline plan for their respective inspections. Begin inspection.
Wednesday, November 18, 1981,8:30 a.m.	Continue inspection.

Thursday, November 19, 1981,	8:30 a.m. to 11 a.m.	Continue inspections.
	11 a.m. to 12 noon	Meeting, Conference Room, survey teams to formulate verbal presentation for local management.
	1:30 p.m.	Meeting with local management for verbal presentation of each inspection.

Note: A written report will be prepared by each inspection team member and will be submitted to the team chairman within one week. The chairman will consolidate these reports and submit a final written report to local management. A copy of the final report will be submitted to the appropriate members of management.

The effectiveness of this survey will be largely dependent on advance preparation by each team member and a free exchange of unbiased information.

William E. Childers

WEC/od

DISTRIBUTION:

D. Bladen
E. J. Daugherty
J. Mangrum
R. C. Duvall
J. F. Gay
R. A. Loveless
W. L. Ott
D. R. Pace
B. D. Routh
D. L. Scharff
R. E. Schneck
C. L. Strunk
J. H. Tansey
G. D. Whipple
T. L. Wills

cc: T. J. Bronaugh
R. J. Carlton
P. D. Fritz

champlin

A Subsidiary of Union Pacific Corporation

INTER-OFFICE CORRESPONDENCE

TO: Survey Team Members OFFICE: FORT WORTH, TEXAS

FROM: C. L. Strunk DATE: 11-16-81

SUBJECT: 1981 Loss Control & Safety - Opening Meeting - 11-17-81
CORPUS CHRISTI -- AGENDA

I. Introduction

1. Introduce team members
2. Brief remarks about the survey
3. Lunch arrangements
4. Reports by team members

II. Presentation

1. Team assignments	Bill Childers
2. Purpose of survey	Bill Childers
3. Safety consultant comments	Wes Ott
4. Environmental consultant comments	

III. Review of 1980 Loss Control & Safety Survey

1. Action program by refinery — C. L. Strunk
2. Discuss accomplishments on:

(1) Weekly plant inspections by Dept. Heads

(2) Control of Safety Relief Valve installations

(3) Central Safety Committee work

(4) Evaluation of loss accidents and near misses

(5) Inspection of Fire & Safety equipment

(6) Color coding of vessels and pipelines

(7) Emergency training for operators

(8) Isolation of fire systems and control of its use, upgrading of fire water pumps, documentation on testing fire water pumps, fire water systems drawing

(9) Conducting safety meetings by personnel other than Safety Dept.

(10) Vehicle traffic in tank farm area

(11) Grounding program

(12) STOP program

IV. Areas of Emphasis

1. Operations

(1) Technical coverage for Process Units

(2) Routine reports and instructions from operations manager to operator and from operator to operations manager through each level of supervision.

2. Maintenance

(1) Technical coverage for Refinery

(2) Organizational relationship between Maintenance and Operations for handling routine and emergency job orders.

(3) Describe methods used between these two departments for establishing daily work schedules.

3. Technical Service

(1) Technical coverage for Process Units

(2) Technical coverage for Maintenance

4. Safety

(1) Review Wes Ott's report and prepare response

V. Miscellaneous

(1) Copies of all Operations and Emergency manuals for each process unit.

(2) Environmental coverage in future surveys

(3) OSHA oriented inspection.

C. L. Strunk

champlin

INTER-OFFICE CORRESPONDENCE

TO: Corpus Christi FORT WORTH, TEXAS

FROM: C. L. Strunk DATE: 12/02/81

SUBJECT: AGENDA - Wrap-Up Meeting Corpus Christi Refinery Loss Control & Safety Survey

I. Introduction

A. Appreciation for reception and accommodations
B. Appreciation for Department heads time and attitude
C. Appreciation for visiting team for efforts

II. Presentation

A. Operations, maintenance, Tech Service Safety team reports
B. OSHA report
C. Consultant report
D. Administrative report
E. Environmental comments

III. Conclusion

A. Comments from resident members
B. Closing comments by Chairman
   1. Discuss action after receiving final report. Review practice established at Enid and CCPC
   2. Request similar development at Corpus with responsibility for development and follow-up by Safety Manager.
   3. Developing safety tests - workmen's compensation, settlements, lost wages, etc.
   4. Lost time summary

Chester L. Strunk

CLS/rdg

champlin

A Subsidiary of Union Pacific Corporation

INTER-OFFICE CORRESPONDENCE

TO: SEE DISTRIBUTION

FORT WORTH, TEXAS

FROM: Tom Wills

DATE: Nov. 10, 1981

SUBJECT: Corpus Christi Safety Audit

Environmental Services is currently developing an Environmental Audit Program to be implemented in 1982. We are being assisted in this development by ERT (Environmental Research & Technology), an environmental consultant with an office in Houston. In conjunction with this work Ms. Sara Bass, an ERT Engineer will accompany me during the Corpus Christi Safety Audit, November 17-19, 1981. Ms. Bass will function as an observer only, and no ERT report will be prepared from this visit. This involvement will greatly assist in the development of the Environmental Audit Program.

Thomas L. Wills Tom

TLW/jf

DISTRIBUTION: Chet Strunk
Joe Gay/Bill Childers
Dick Schneck
Davis Scharff

cc: Pete Hoffman
Russell Light
Sara Bass

champlin

A Subsidiary of Union Pacific Corporation

INTER-OFFICE CORRESPONDENCE

TO: Chet Strunk OFFICE: Wilmington

FROM: Jim Mangrum DATE: 11-24-81

SUBJECT: 1981 Corpus Christi Refinery Safety and Loss Control Survey.

I. Start Up and Shutdown Procedures

A. Overall Refinery has a very good written startup/shutdown procedure. All procedures are readily accessible to plant operating people. I found the procedures to be complete and have all the vital information for a safe startup/shutdown, including clearing equipment and vessels for turnaround.

B. All planned startups/shutdowns are reviewed at least a week in advance. Two supervisors and two shifts are assigned. I find this to be a safe and controlled operation. All Emergency Procedures are reviewed weekly by operating people.

C. Communications between control and outside units were very good. Shift changes were complete and all information passed to oncoming shift.

D. Record keeping during startups/shutdowns were outstanding. I was quite impressed with this procedure.

E. Corpus Christi Refinery has a very good training program for new people.Program runs for a total of four years. Good records are kept on training personnel and a new advanced training program is planned in the near future.

F. Recommendations: Operating department should start using arrow diagrams for planned startups/shutdowns. They are much better than check lists and extremely helpful to newer people and boardmen.

II. Utilities Reliability

A. Each primary substation has two primary feeds from different utility generating plants, transmission lines are overhead on wood and steel poles.Transformers are located at ground level inside fenced and locked substations.
Because of two feeds into the plant, a major outage has never occured. Some plant transformers located on firewalls have no protection. Possible damage could be done to these transformers. When using a crane or cherry picker in these areas.

B. Steam Generation and alternate fuel system seem adequate. All permits are posted in proper locations.

III. EDPM Information

A. EDPM is located in main Control Building is brick. EDP is separated from adjoining occupancies with door only. Only fire protection is

with automatic smoke detectors and fire ext.

B. Hardware

Fox 1 is type used, Its functions are reports, displays, and controls. The equipment is owned and EDP Room is manned 8 hours p/d.

C. Software

Duplicate programs are stored in Refinery vault. They are updated weekly. Estimated replacement time of programs is 30 minutes max. Emergency Powers are Batteries and Generators.
All maintenance on EDP equipment is done by contract help. Cooling system for EDP Room is adequate, also is equipped with a backup system.

D. Physical inspection of EDP Room was neat and clean

Jim Mangrum
Jim Mangrum
FCC Area Supervisor
Wilmington Refinery

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A Subsidiary of Union Pacific Corporation

INTER-OFFICE CORRESPONDENCE

TO: Chester Strunk — FORT WORTH, TEXAS

FROM: Tom Wills — DATE: 12-17-81

SUBJECT: Corpus Christi Safety Audit - Environmental Review

During the Safety Audit of the Corpus Christi Refinery, completed on November 19, 1981, an environmental review was also conducted. This was the second such review and is a forerunner for an environmental audit program to be implemented in 1982. While the current participation does not comprise a comprehensive environmental audit, the following summarizes our observations:

1. A sound environmental program exists at the Corpus Christi refinery. The refinery has the required air, water and solid waste permits for operation and has completed notifications to the regulatory agencies where appropriate. The refinery appears to be in compliance with its environmental permit requirements. No issue was identified which has a potential to shut down the refinery or cause someone to be put in jail. The environmental department size appears to be appropriate and the direct reporting relationship with the plant manager enhances communication.

2. The interaction of the environmental department within the refinery is exemplary. Both at the management and operator level, a spirit of cooperation exists which is very effective in coordinating the environmental aspects of refinery operations at all levels.

3. The preparation for start-up and operation of the new facilities at the West Plant and, in particular, the wastewater treatment system, appear to be excellent. The people and organization are in place, training and staffing plans have been made, and an accountability system for environmental results by area supervisors has been developed. We believe that it is appropriate that the refinery management evaluate the need to add an additional environmental coordinator to ensure adequate coverage of the West Plant during start-up and operation.

4. Hazardous waste management procedures are in place which include drum control, inspections of disposal sites, a manifest system and contracts for disposal.

5. Operation of the East Plant wastewater treatment system is reliable and results in compliance with the NPDES Discharge Permit. The recent establishment of shift operating positions for the wastewater treatment plant will continue to improve operations. Future changes in loadings to the East Plant wastewater treatment system caused by the expansion may require changes in the operating strategy. The East Plant system is a sound reliable waste treatment system which has the best compliance record on the ship channel.

There were identified six areas within the refinery where it may be appropriate to place additional emphasis in the near future. They are:

1. The equalization basins have accumulated a considerable amount of oil floating on the surface and oily sludge on the bottom. This accumulation limits the volume of the equalization basins available for surge capacity and reduces the ability of the refinery to handle rainfall. The removal of the oil and particularly the oily sludge from the bottom is likely to be very expensive. We recommend an engineering study be conducted to identify the source of the oil and the sediment coming to the basin and determine what source control measures are appropriate, prior to the equalization basin, to prevent this accumulation from continuing. This would appear to be the greatest need facing the refinery today.

2. Occasionally, air emissions result which soil and damage the paint of cars parked at the adjoining PPG parking lot. In the past, the refinery has been required to wash these cars and sometimes to repaint them in order to repair the damage. We recommend that the refinery concentrate on identification of these emission sources and institution of programs to prevent their recurrence, rather than continuing to wash cars as required. It is possible that a continuation could result in a lawsuit. While the dollar impact would not appear to be large, it is probably preventable.

3. As produced cumene is shipped from the refinery on the Mississippi River to the cumene customer, the material in the barge is owned by Champlin until it is received by the customer. We were not able to identify adequate response plans in the event of a barge accident. From a safety, loss control and environmental standpoint, it would appear appropriate to evaluate the procedures for prevention of and reaction to barge accidents. We understand that the corporate safety department plans to review this need.

4. The current refinery cost accounting system does not allow measurement of enviromental expenses, therefore, we were not able to assess the cost effectiveness of the current program. Cost improvement opportunities are likely to be identified if a measurement system is implemented.

5. Housekeeping at the environmental facilities need improvement in the following areas:

   a) The walkway between the aeration basin is damaged, creating a safety hazard to people walking in this area.

   b) A slippery area exists near the DAF due to a pump seal leak

   c) The effluent weir area is unattractive and could be made to look much more pleasant.

   d) A safety shower is needed at the drum storage area where personnel handle hazardous materials.

e) The drum storage area contains drums that are bulged due to over-pressuring which could cause an explosion. These need to be properly stored.

f) The drum storage area contains too many empty drums which need to be removed.

6. The recent installation of a groundwater monitoring system may identify groundwater contamination due to hydrocarbon seepage onto the groundwater layer or from chemical wastes buried previously on refinery property.

Three other needs were identified which will be resolved in conjunction with Corporate Environmental Services Department and the Gulf Coast Environmental Affairs Coordinator. These are:

1. An air monitoring program may be required in order to continue to obtain permits to expand refinery facilities in the Corpus Christi area. A study is currently underway to evaluate this need and a management recommendation is planned for the first quarter of 1982.

2. Confusion exists about the respective areas of responsibility of Corporate Environmental Services Department, the Gulf Coast environmental coordinator and the refinery environmental coordinator. We will work together to better define these responsibilities.

3. No effective system exists for tracking changes in environmental regulations, determining the impact on the Corpus Christi refinery and responding appropriately to the regulatory agencies. Plans are underway to obtain the computerized information management systems needed to support this regulatory tracking and response system.

In summary of our visit to the Corpus Christi refinery, we found that a sound environmental program is in place, the refinery is well positioned for the West Plant start-up, outstanding cooperation exists among refinery departments on environmental matters, and we congratulate Davis Scharff and the environmental department for the excellent job they are doing.

Until the environmental audit program is completed, we plan to continue to participate in the safety audit program. Our experience to date indicates that it may be productive to dovetail the environmental audit with the safety audits on a long term basis; we will continue to review this with you.

Tom

Thomas L. Wills

TLW/rdg

cc: Davis Scharff

champlin

A Subsidiary of Union Pacific Corporation

INTER-OFFICE CORRESPONDENCE

TO: Chester Strunk OFFICE: Wilmington

FROM: Donald Pace DATE: November 23,1981

SUBJECT: Corpus Christi Refinery Safety and Loss Control Audit, 1981

I. Review of the Refinery Safety Program

A. Extent of the Program: The program is designed to involve all plant personnel and to comply with Governmental regulatory agencies. The refinery has a safety program that is provided with the proper tools to have one of the best in the hydrocarbon refining industry. As long as the Refinery Management utilizes the tools provided, there will be progress in a positive direction.

B. Accountability:The areas of safety accountability have been defined and from this survey they seem to be mostly understood. There appeared to be a minor problem still existing involving hourly personnel by-passing supervision and going directly to safety personnel with problems. Example: A maintenance craftsman approached a safety engineer and requested that Safety initiate a work order for repairs to an overhead cooler in a process unit. The overhead cooler was supposed to be making excessive noise.
There were a few rumors originating from the maintenance department concerning the issuance of safety permits. The maintenance department would like the safety engineers to issue all safety permits during daily operations. The members of different departmental groups interviewed seem to have a respectable understanding of what is expected of them in the area of safety accountability.

C. Training and Education: The training and education program is extensive and appears to be receiving good reviews from the personnel attending. The training records were reviewed and there seems to be very little participation from staff and upper level supervisory and management participation.

D. PlantKeeping Inspections: The refinery program is very impressive, has good participation, and appears to be very effective. Actions taken from inspection reports were not reviewed.

Comments from a walk thru inspection conducted Tuesday, November 17, and Wednesday, November 18,1981.

1. The operators seemed to be very attentive to the maintenance activities being conducted in the process units.

2. The mosquito problem should be addressed and a spraying program implemented in the tank farm during peak periods.

3. The cooling tower for the BTX unit appears to be in need of attention from the plant electrical and structual inspection departments. The pumps look like they need a good scrub-down.

4. Since the Safety Department has taken over the responsibility of inspection and maintenance of fire and safety equipment, the unit operators seem to have been relieved of their responsibility of performing weekly checks. This should be re-instituted thru a punch list program on a weekly basis.

5. An investigation to determine if the piperack supports at the west end of Alkylation Unit need fireproofing should be made.

6. The electrical conduits and cable tray supports brackets at the west end of the Alkylation Unit look to have excessive corrossion. If this is the case, it could cause future problems.

7. Consideration should be addressed to the provision of additional fire protection for cooling towers such as area fire water monitors.

8. Steam trap drops-nozzles for draining should be directed down, not straight out.

E. Safety Awareness Program:This program is well publicized in the plant and seems to be very effective.

Examples: Awards Program
Utilizing coffee cups for Safety messages
Nomax Jump Suit program
Safety Shoe Program

F. Health Program: Records are in order and the program is appreciated by all plant personnel.

G. Safety Policies and Procedures: Excellent and they are continuously being reviewed and updated.

H. Safety Committees: Progress is being made to make them more effective.

II. Wesley Ott's Report

A. General Areas for Improvements

1. The Refinery Manager is now chairing the Central Safety Committee.
2. From the results of this audit it is apparent that safety related problems and information provided in the Plant Manager's Staff Meetings are being filtered down to line supervision.
3. Formal Audits are not being conducted by Department Managers, but Department Managers as well as the Refinery Manager's presence is known in the plant.
4. If there is not adequate communication regarding the number of first-aid injuries in a department or communciation between departments, I would suggest a department clean-up on reporting. The Safety Department has provided more than adequate tools for reporting and communicating most aspects of the Refinery Safety Program. All reported injuries to the Safety Department are discussed and reviewed in the Central Safety Committee Meeting as well as most group safety meetings. They are also discussed with area and department Superintendents by the Area Assigned Safety Engineer.

B. Suggestions for Improvements

1. Complete or good progress has been made.
2. Progress has been made.
3. Progress has been made.
4. The area safety engineers have established and made considerable progress.

C. Supplemental Suggestions

1. Light Duty Policy: This policy has created an increase in lost time injuries resulting from this policy. It is recommended that each department be allowed to and mandated to develope a case by case restricted duty program. The Light Duty Policy is negative and will only create an unsatifactory atmosphere between employee and Management.

2. Monthly Safety Meetings: No negative responses to report. A task Force has not been assigned for planning and procuring meeting resource materials. The program now developed may not require a task force, it appears to be a very impressive program.

3. Stop Program: This program has been discontinued and should be reinstituted.

4. Safety Huddles: Discontinued, but a positive push for re-instatement of the program is under way.

5. Safety Department Responsibilities- This recommendation was implemented.

6. Laboratory: No action taken. Serious consideration should be given to relocating the lab from its present location. The present exposures of the lab and lab employees are great and could be fatal in the future.

   The morale of the lab employees could have a negative impact in the future on their excellent safety record.

Donald Pace

Donald R. Pace

Safety Manager
Wilmington Refinery

NEW PLANT

This area had well maintained operating and emergency manuals. Recent emphasis on this training was apparant. The current operator training program is being very well received. The central control room does not appear to have Halon type automatic fire system. Computer room had smoke alarms. The people I talked with were not aware of any protection in the ceilings or under the floors. Operators were aware that supervisors conducted monthly safety meetings. No operators conduct any safety inspections themselves. Training to address instrument air failures specifically had not been conducted by the operators I talked with. Housekeeping was good with one exception - bottoms pump area at the Demex Unit. I noticed two vibration problems (a) HVGO control loop (b) newly installed line in Demex piperack near the control room.

All operators use weekly check lists to verify that RV's are not blocked in and are not leaking.

OLD PLANT

This area had some units with well maintained operating manuals. Other units had no manuals. I estimate about 50/50. Most units had emergency procedure manuals. Control rooms are air conditioned and are being pressurized. No fire systems are included in false ceilings.

Housekeeping was generally good. Exceptions - old FCCU area under reactor-regenerator structure is cluttered with barrels and had quite a bit of slurry oil on the slab. Operators are aware that monthly safety inspections are done. No weekly inspections are done. All operators use weekly check lists on RV's and pump switching. Training program is being well received. Paving is needed in some old units.

GENERAL

New procedures have been implemented to improve communications between operators and supervisors. i.e., order books. Could use system to insure their use.

More spot checks on procedures etc, by managers should be made. This indicates to all employees that top management does indeed expect procedures to be followed.

champlin

A Subsidiary of Union Pacific Corporation

INTER-OFFICE CORRESPONDENCE

TO: C. L. Strunk — OFFICE: FORT WORTH, TEXAS

FROM: W. E. Childers / R. A. Loveless — DATE: December 1, 1981

SUBJECT: CORPUS CHRISTI REFINERY SAFETY SURVEY - 1981

We would like to express our appreciation to all involved Refinery personnel for their assistance and cooperation during our recent survey. The Refinery appears to have made significant improvements during the past year and this is evident throughout the operating areas.

During our particular portion of the survey we concentrated on off site areas, including Tank Farms 90 and 91 in addition to in-plant facilities.

The following items were noted during the inspection:

A. AREA 90 TANK FARM

1. The diesel driven fire pumps are provided with transparent filter bowls on the fuel system for removal of condensation, sediment, etc. from the incoming fuel. When the pumps were painted the filters also received paint prohibiting visual inspection of the filter medium. These should be cleaned to allow visual confirmation of the fuel filter conditions.

2. It appeared that the covers on the API separator have been removed for visual level inspection during pump out operations. This API water discharges directly inside the dike wall on Tank 5001 causing severe erosion of the dike. This practice should be examined for acceptability and the necessary repairs made to the dike in addition to the API separator cover replacement.

3. A 350# wheeled fire extinguisher is located inside the transfer pump area adjacent to the pumps. In the event of a spill and possible fire situation, access to this unit would be substantially limited. A similar curbed area as in Tank Farm 91 should be considered or the extinguishing unit should be relocated outside the diked area. This unit should also have a hydrostatic test performed on the nitrogen cylinder to comply with the five year NFPA requirement.

4. The weed control program should be continued in the tank farm areas to eliminate a fire exposure potential.

5. The foam trailers located in this area are equipped with a minimal amount of fire hose that does not appear adequate for the initial demands of a fire emergency. An evaluation should be made to determine the material requirements necessary to provide adequate protection.

6. The storm water drain in the northwest corner of the dike for Tank 5007 has been undermined by water erosion and should be repaired to prevent possible dike deterioration and/or failure.

7. The hydrant inside the transfer pump area should be examined in respect to accessibility during a fire condition in this area. Consideration should be given to relocation outside of the dike wall for ease of utilization.

8. Barricade posts should be installed adjacent to the east-west drainage ditch near the foam trailer shed to prevent vehicles from driving off embankment.

B. OLD PLANT AREAS

1. It was noted on our inspection of the MTBE construction project that the LPG spheres were located inside a common dike with storage facilities for liquid hydrocarbons with no separation wall. This should be reevaluated to determine the necessary provisions for compliance with NFPA No. 30, Section 2-2.2.G. The Corporate Loss Control staff would again like to offer our assistance in these areas at any time.

2. The two oscillating monitor nozzles and their control valves located inside the dike for Tank 1029 for protection of the east-west pipe rack should be located outside the dike to prevent impingement from a potential spill fire.

3. It appears that Tank 1003 has been overfilled recently resulting in an accumulation of liquid hydrocarbons in the foam injection line. In light of this situation and the possibility of a similar occurrence on other tanks, consideration should be given to the installation of check valves in the foam line inlets which are not presently equipped.

4. Efforts should be undertaken to remove all pallets and drums not in use from beneath the east-west pipe rack in the old Penex unit. Should a fire develop in this area severe exposure to overhead pipe racks would result. In addition, it was observed that trash has been discarded inside the vessel skirts on the hydrogen treaters for the platformer which should be removed.

5. Several foam lines providing protection for Tanks 1024, 1025 and 1026 are in a severe state of deterioration and should be replaced on a priority basis.

6. One of the foam chambers for Tank 1025 is lacking an aeration chamber rendering this particular system ineffective in the event of a fire.

7. The deluge system protecting the pumps and fin fan coolers in the #4 Platformer should be examined closely in respect to effectiveness and reliability. Piping which is too small to deliver the necessary flow for protection is utilized throughout the facility and some locations are missing sprinkler heads. Consideration should be given to replacement or upgrading of the present system.

8. The deluge system piping for the #4 Platformer cooling tower is in a severe state of corrosion and should be repaired. It was also discovered that the control valve for this system was not operational therefore negating the intent of the system.

9. Control of motorized equipment throughout the tank farms continues to be a problem in some areas with several instances being observed of equipment entering diked areas without adequate determination of possible flammable materials present. A total positive control program should be established in all areas with a potential for flammable atmospheres.

10. Several drums containing waste solvent and paint material located in the sandblasting area should be properly disposed of on a priority basis. Several of the drums have severely deformed heads apparently caused by overpressure.

11. The drum storage area located beneath the flare stack should be relocated due to the potential exposure of these drums to liquid discharge from the flare. The involvement of these drums in a fire situation not only creates a potential toxic and environmental problem but could constitute a serious injury potential to personnel engaged in fire suppression activities. It should also be noted that several of these drums exhibit similar deformity characteristics as the ones mentioned previously and should be disposed of.

12. Chromate storage tank 3771 has in the past and presently continues to leak onto the mat beneath the valves and tap. Subsequently, this material drains into the roadway gutter and away from the area with no indication of control.

13. The 1½" fire hose stored in the hose box adjacent to hydrant 30-24 is pressured with water while still folded inside the box.

14. Efforts should resume to provide water weir or sprinkler protection for all spheres and horizontal storage tanks containing isobutane, mixed butane, and alky-feed north of the alkylation unit. Due to the close proximity of these vessels to each other and surrounding units a fire in this area would create a serious fire impingement potential necessitating massive cooling efforts.

15. Work is presently underway to install a new sulfuric acid storage tank and subsequent piping for the BTX cooling tower. Attention should also be directed toward the sulfuric acid injection pump and piping to prevent failure of this system creating an injury potential to personnel.

C. NEW PLANT AREAS

1. The water jacket induction heater for the fire water pump #29 was not operational which could result in engine damage when the pump is started.

2. The #30 diesel fire pump ran continuously during our survey rather than during emergency situations despite the installation of an additional jockey pump to maintain system pressure. The original recommendations made by the Corporate Loss Control staff relative to these pumps should be reviewed and initiated to upgrade this installation.

3. The presence of a barrel beneath the third stage separation drum for the cat cracker with piping attached to both bung holes along with obvious bulging of both ends would indicate a need for management review of any practice of attempting to use drums as substitute pressure vessels.

4. Several of the signs located on post indicator valves for control of sprinkler systems have deteriorated to the point that they are no longer legible and should be repainted.

5. Attempts should be made to remove all drums that are not in use and relocate them to a more remote location.

6. While slings and wire rope inspected on cranes and cherry pickers were found to be in excellent condition several electrical carts have severely damaged chokers in them which should be discarded to prevent accidental use.

7. The sulfuric acid and caustic tank truck unloading station located on the north end of 60 block is so constructed to defer all spillage toward the roadway creating both an environmental and personal injury problem. Consideration should be given to placing a curb on the outermost edge of this area to divert any spillage to a common drain and sump area.

W. E. Childers W E Childers by R A L
R. A. Loveless R. A. Loveless

WEC/RAL/gw

wesley ott associates, inc.
SAFETY MANAGEMENT CONSULTANTS
P.O. BOX 161 GASTONIA, N.C. 28052 704-866-8001

December 4, 1981

Mr. J. F. Gay
Champlin Petroleum Company
P. O. Box 7
Fort Worth, TX 76101

Dear Joe:

Enclosed is my report resulting from the review of the Safety Management Program at the Corpus Christi refinery.

Significant progress has been made since the 1980 review and all members of management at the site are to be commended for their efforts. It was gratifying to hear other members of the Survey Team report similar conclusions, based on their reveiw.

Please advise me if there are questions on the report contents or if there is any way I can provide assistance in specific areas requiring improvements.

Best wishes for a joyous Holiday Season!

Sincerely yours,

Wesley L. Ott

/ma

Enclosure

SPECIAL SAFETY MANAGEMENT SURVEY
CHAMPLIN PETROLEUM COMPANY
CORPUS CHRISTI REFINERY
November 17-19, 1981

INTRODUCTION

A special survey of the safety management program at Champlin Petroleum Company's Corpus Christi refinery was made in conjunction with the annual Loss Control Survey on November 17-19, 1981. The primary purposes of the survey were to assess the current status of the overall safety management effort and implementation of activities outlined in Champlin's overall safety management guidelines.

OVERALL EVALUATION

A comprehensive safety management program is in existence at the Corpus Christi refinery. There is more consistent understanding of the line organization approach to safety management than has existed at any time in the past. As a result of actions taken since the previous loss control survey, the overall safety management program effectiveness has improved.

Members of management through the superintendent level appear to have obtained a good understanding of their role in safety and have an increased knowledge that safety is a line organization responsibility. Members of supervision at the supervisor and leading man level are also more involved in the safety effort and have obtained a clearer understanding of their safety responsibilities.

The plant safety organization is considered to be a "supportive" department and is effectively functioning in this capacity. The assignment of Safety Engineers to specific areas within the refinery has been a very positive program.

Most of the positive activities and programs that were underway (many of which were outlined in the 1980 report) are still ongoing and in some instances, have been refined. Additional pro-

grams and activities are continually being developed to meet recognized needs. An example is the training program on HF acid.

One activity which has not been implemented is scheduled audits by members of the Central Safety Committee. The benefits of these planned tours cannot be achieved with the informal, or routine visits to the refinery areas being made by department managers. Another concern is that the "Safety Huddles", which were receiving emphasis one year ago, have been eliminated or reduced in the Process and Maintenance areas. An exception is the Terminal area, which recently initiated safety huddles on a weekly basis.

SPECIAL PROGRAMS

In addition to continuation of the positive programs highlighted in the 1980 survey report, additional programs of note that were brought to my attention during this survey, and worthy of mention, include:

- Emphasis on off-the-job safety and tracking of lost-time injuries occurring away from work.
- Mail outs, such as the Channing Bete booklets, on off-the-job subjects, first-aid manuals, etc.
- Special off-the-job training such as CPR, First-Aid, and Defensive Driving Training, which is offered on a voluntary basis.
- The vidio tape training program on HF acid and the Alky area safety, which was produced at the plant.
- The program underway in the process area to review specific safety procedures with operators on a scheduled basis.
- The intensified training and re-training program for process operators.

GENERAL COMMENTS AND SUGGESTIONS

Emphasis was directed at discussions with management at the supervisory levels to review programs and activities underway in

their area of responsibility and determine their involvement in the safety effort.

Another member of the survey team was assigned the specific responsibility of following-up on status of previous recommendations so this area was not addressed specifically. The following sections of this report contain a summary of conclusions resulting from these discussions plus brief remarks on the status of several of the major suggestions contained in the 1980 report.

Safety Information and Discussions

One of the most positive changes observed during the previous year is the increased discussion taking place in meetings with members of supervision. One of the contribution reasons for this is the attendance at these meetings by the Area Safety Engineer. Discussions reveal that minor injuries are receiving prompter response. There is more discussion on these among supervisors and superintendents than previously.

An indicated weakness is that there is little involvement of the Leading Men in the morning meetings and no planned communications regarding safety matters with them. Also, because of the move away from weekly safety huddles, which used to involve the leading men, their primary safety contact is in the monthly department safety meetings.

ACTION--Each Department Manager should review the extent of involvement and degree of communication on safety matters that the leading men are now exposed to. Where improvements are needed, specific plans for doing so should be developed. An ideal method would be to reinstitute the weekly safety huddles. Another approach would be to involve the leading men in the morning meetings, at least on a weekly basis. This latter approach could be utilized in the maintenance areas but might not be practical in some process areas.

Because the leading men are the persons in primary contact with the hourly employees and are directly responsible for their safety

performance, it is imperative that they be actively involved in the safety effort.

Consideration should be given to providing specific training to leading men to aid them in their holding the safety huddles.

Supervisor Safety Meeting Involvement

The involvement of supervisors in the monthly departmental or general safety meetings has improved. A brief review of records indicates that all members of supervision are not in attendance at these meetings and members of management at the superintendent level or above are seldom in attendance.

ACTION--Management should review the impact that attendance by line supervision at the monthly safety meetings could have, and establish a schedule for regular attendance, particularly for supervisors.

Safety Huddles

A program promoting weekly "Safety Huddles" between the first-line supervisors and members of his crew was begun in 1980 to involve line supervision in the safety effort to a greater extent than previously involved. A major objective was to have supervisors assume primary responsibility for the safety communication and performance of their employees, as opposed to the safety department personnel doing so. This was achieved largely by the safety huddles and by having supervisors assume more responsibility in the monthly safety meetings.

Recently, safety huddles have been discontinued in the process areas. An exception is in the Terminal area. Safety huddles are being held for Contract Maintenance employees on a weekly basis, but most Champlin maintenance employees are not involved in weekly safety huddles.

ACTION--Most companies with superior safety performance consider the regular safety contacts between first-line supervisors and members of their crew as a primary element in the overall safety

effort. Consideration should be given to reinstituting the safety huddles as a regular part of all area programs. Ideally, a planned weekly contact would be desirable, but a minimum of a monthly contact or meeting between the first-line supervisor and his crew should be established.

Management Audits

Scheduled audits by members of the Central Safety Committee have not been established. Members of management state that they are frequently in their respective areas on an informal basis, and this is good.

ACTION--Management should consider the many positive benefits that could be achieved via a scheduled "self audit" procedure, involving members of staff management. In addition to reviewing their own area, they would provide the advantage of having other members of management review status of programs and activities in different areas. The visible communication of top management commitment to safety that is conveyed by scheduled audits are another of the primary benefits. Also, unless decisions are made to monitor programs such as record keeping, and tour out-of-the-way areas, these often are overlooked in the regular, day-to-day, informal walk-thrus.

Emergency Procedure Review

This program has worked very well. Another member of the survey team commented about the operators knowledge of emergency procedures and availability of these in the operating areas. A good record keeping system was established to help insure that the reviews were thorough and maintained.

A review of the records shows that the review program has not received emphasis recently, and there are new operators who have not participated in the reviews.

ACTION--The need for continuation of the Emergency Review Program during 1982 should be reviewed and guidelines for conducting the reviews established, if it is continued. As a minimum, it would

be beneficial to schedule procedure reviews with newly assigned operators as part of their on-going training. This would help insure that the chief operator maintained a thorough knowledge of procedures and would help to insure availability of current procedures in the areas.

Miscellaneous

A positive contribution to the safety effort at the refinery should result from the planned assignment of Process Engineers to the operating areas. This should increase the attention which can be given to area safety hazards, particularly of a process nature. Correction or improvement of process hazards, or operating difficulties not of a direct safety nature, should have a positive effect on employee attitude and awareness. Also, process engineers could supplement supervision in the area at times, which could allow for greater flexibility in supervisory training.

Another positive indicator is Mr. Schneck's emphasis on safety. Several comments were received that indicated a strong commitment to safety and emphasis on the line organization's responsibility for this area of performance.

The introductory pages of the Loss Control Survey Report contained several areas of recognized need for improvement, including the need for additional supervisory training and use of disciplinary procedures for safety infractions. Continued efforts to alleviate these weaknesses, and development of programs to do so, will further upgrade the overall loss control effort.

CONCLUSIONS

An effective safety organization is in existence and a good management structure for administering the safety and loss control program is established. Continuation of the comprehensive safety effort now established at the refinery should allow control of unplanned incidents at the site.

Many areas of the refinery have demonstrated success in the area

of accident and loss control, as evidenced by their records of "days since the last lost-time injury" within their department.

Management must guard against decreasing the priority now devoted to the safety effort. As the West Plant expansion begins to demand more of management's day-to-day attention, the possibility of doing so will increase.

Respectfully submitted,

WESLEY OTT ASSOCIATES, INC.

Wesley L. Ott, CSP, P. E.

CHAMPLIN PETROLEUM COMPANY

FORT WORTH, TEXAS

SAFETY AND LOSS CONTROL SURVEY

LOCATION: Corpus Christi Refinery

DATE: 11/17/81 thru 11/19/81

		NAME	LOCATION
MEMBERS OF SURVEY TEAM:	1.	Schneck/Strunk	Adm. 4 thru 13
	2.	Daugherty/Duvall	Opr. 14 thru 23
	3.	Whipple/Bladen	Maint. 24 thru 34
	4.	Mangrum/Tansey	Tech. 35 thru 43
	5.	Routh/Pace	Safety 44 thru 55
	6.		

CHAMPLIN PETROLEUM COMPANY

SAFETY AND LOSS CONTROL SURVEY

Date: September 21, 1981

Plant Name: Corpus Christi Refinery

Location: 1308 Oak Park Avenue, Corpus Christi, Texas 78408

Number of Employees: 519

Senior Management Official: R. E. Schneck

Nature of Business: Manufacturing petroleum fuels and solvents

Principal Problem Areas:
(1) Supervisory training in discussion leading
(2) Application of progressive corrective discipline to safet infractions by controlling management echelon.
(3) Enforcement of protective equipment use.
(4) Uniform Corporate accident classification and reporting policy.

Accident Experience: (Based on 200,000 man-hours.)

This Year to Date August

Total Reported Injuries 86 OSHA Recorded Med. Cases 8 L. T. I's 6

Man-hours to date 782,685 Freq. Rate 1.53 Total Incidence Rate 2.04

Property Damage _____ Down Time _____

Last Year

Total Report Injuries 109 OSHA Recorded Med. Cases 19 L. T. I's 14

Man-hours to date 1,117,078 Freq. Rate 2.50 Total Incidence Rate 3.40

Property Damage _____ Down Time _____

Previous Year

Total Reported Injuries 95 OSHA Recorded Med. Cases 7 L. T. I's 1

Man-hours to date 1,019,151 Freq. Rate 0.196 Total Incidence Rate 0.392

Property Damage _____ Down Time _____

Fire & Explosion Experience:

This Year to Date

Total Number of Fires Reported 1 Injuries 0

Property Damage _____ Business Interruption Loss _____

Fire & Explosion (Continued)

Last Year

Total Number of Fires Reported 3 Injuries 0

Property Damage _____ Business Interruption Loss _____

Previous Year

Total Number of Fires Reported _____ Injuries _____

Property Damage _____ Business Interruption Loss _____

Principal Causes of Fires (1) Operator error in reacting to process problems

(2) Process equipment failure

(3) Lightning

GENERAL INFORMATION

A. Feedstock or Charge Stock Crude

1. Source

Import	84%	130M BPD AUG
Domestic	16%	25M BPD AUG

2. Characteristics - Physical Properties Crude

Sweet	68%
Sour	32%
API gravity index	35
Sulfur content	.7% by weight

3. Shipping and Receiving Methods

Pipeline
Tanker ship
Barge
Highway tanker truck-Feedstocks - ISO & Mixed Butanes
Products - Approx. 8M BPD total gasoline, diesel
Railroad - Negligible

4. Throughput (Barrels per day) - Use Per Day

160,000 barrels of crude per day - will vary depending upon crude slate.

B. List Principal Operating Units

Crude Units, No. 1, 3, 4	No. 1 Crude Unit 28M BPSD No. 3 Crude Unit 12M BPSD No. 4 Crude Unit 125M BPSD
Fluid Catalytic Cracking Units 1 and 2	No. 1 Cat Cracker 12.5M BPSD No. 2 Cat Cracker 50M BPSD
Alkylation Unit	19M BPSD
Vacuum Units 1 and 2	No. 1 9M BPSD No. 2 55M BPSD
Platformer	No. 3 Platformer Udex Extraction Unit 6.8M BPSD No. 4 Platformer - 27M BPSD
Petrochemical, BTX Unit	12.5M BPSD
Cumene Unit	40M BPSD
Sulfur Units	2 Trains - 85 Tons
Steam Plant	Three boilers approx. 80M #/Hr.
Hydrar	1700 BPSD
Demex	15000 BPSD

C. Additional Pertinent Information

1. *No. 3 Crude Unit capacity limited by downstream fractionation facilities.
2. Overall electrical system should be reviewed. Review should include current status of CP&L industrial station at Buddy Lawrence Drive, joint lease arrangement with Southwestern, under-ground feeders from this station, etc.
3. Refinery plans to study No. 4 crude heater firing conditions to improve overall performance.
4. Refinery needs to review overall instrument and plant air supply. Many leased, expensive portable air compressors in plant as back-up.

I. ADMINISTRATION

A. General Conditions

1. Paint
   Process units and tank farms in excellent condition.

2. Warehouse Storage
   Orderly and appears adequate. Drum storage well managed and facilities excellent.

3. Pump Leaks
   Minimum. Worst area is in the Demex unit. Refinery plans to replace existing bottoms pumps enabling area to be cleaned up.

4. Stabilized Surfaces - Gravel - Grass - Weeds
   In most areas excellent. Progress has been made in changing grass firewalls to gravel. Weeds in most areas properly cut - area at pump row inside 2005 tank needs attention.

5. Plant Drainage
   Under normal rainfall conditions very good - have major potential problem with occasional 10" or heavier rains in some tank areas with water backing up and threatening critical pumps located inside dyke walls.

6. Fire Equipment
   Fire equipment stations well painted and general condition much improved over past surveys.

7. Process Area
   Housekeeping excellent. Need to eliminate oil trap near No. 1 cat cracker.

8. Control Rooms
   Housekeeping inside and outside very good except for one location. This is outside cumene control room where there is considerable material stacked.

9. Tank Farms
   Entire area inside 2005 and 2006 needs attention. Too much traffic - area used as a throughfare for dump trucks, pick-ups and scooters. Has become a junkyard for miscellaneous materials, blind storage, etc., is also used for dumping oily refuse and drums.

10. Shops and Warehouses
    Housekeeping and facilities in excellent condition. Shops particularly in good housekeeping condition.

COMMENT/RECOMMENDATIONS

1. Refinery plans to evaluate Dupont painting program to maintain present condition. CCPC has this in effect now.

2. Refinery plans to study critical tank farm pump locations for reducing flood exposure.

3. Recommend central reclaim area adequately equipped and staffed under warehouse control.

I. ADMINISTRATION (Continued)

B. Supervision (General Attitude)

1. Cooperation of Employees

Very Good

2. Cooperation of Safety Personnel

Excellent

3. Cooperation of Management at Closing Meeting

Excellent. Very receptive to comments.

COMMENT/RECOMMENDATIONS

Morale appears to be very high at all levels of management and hourly compliment.

C. General Remarks on Interest and Responsiveness to Fire Protection and Loss Prevention.

Positive. With increase in personnel in Safety Department from 3 to 5 emphasis is apparent.

D. Fireproofing

1. Process vessels — Yes.

2. Pipeway supports — Some improvement needed particularly in older areas.

COMMENT/RECOMMENDATIONS

Main pipeway support between plant office and parking lot needs rehabitating.

I. ADMINISTRATION (Continued)

E. Flammable Liquid Pumps

1. Protection In the No. 4 area deluge systems over pump rows and under overhead fin fans installed in cat cracker area, not over crude unit and vacuum unit.

2. Exposure Added in BTX unit and No. 3 vacuum unit.

COMMENT/RECOMMENDATIONS

There are areas in Process units where deluge systems should be considered.

F. Cooling Towers

1. Protection
Located in readily accessible areas, most towers are protected on sides with transite sheeting.

2. Exposure
Have a mist problem from the cooling tower near BTX unit.

COMMENT/RECOMMENDATIONS

Too much fouling on water side. Setting up program to sample water periodically and improve treating. Pumps inside dyke walls subject to flooding during heavy rain storms. Drift control - major problem in new cooling tower.

G. Water Pollution

1. Location of plant with reference to waterways, marshlands, natural or man-made drainage facilities: Add West Plant.
Exposed to ship channel

2. If exposed to water pollution, comment on:
Ship channel. During 11" rain, tank farm fills up.
Need to investigate oil and run off storm sewers in new unit area.
HOlding pond has too high level of oil.

I. ADMINISTRATION (Continued)

a. Distance from plant to nearest waterway
Immediately adjacent to ship channel.

b. Dike capacity
Adequate and in accordance with industry practice.

c. Spill prevention/containment plan
Yes. Updated each year by Environmental Engineer.

COMMENT/RECOMMENDATIONS

H. Business Interruption Potential

1. Feedstock and Source
When at minimum inventories of crude, channel is restricted. Same application on high product inventories.

2. Are there single train operations that present a significant risk?
Power train - has spare rotor for blowers. Spare motor on order. No spare on gas compressor. Spare rotating element. No spare motor.

3. List critical process equipment (Identify bottlenecks) capable of B.I. loss.
Crude heater, vacuum heater.

4. Indicate significant interdependency with other company operations and/or alternative solutions.
Limited due to wholesale marketing of products.

COMMENT/RECOMMENDATIONS

I. ADMINISTRATION (Continued)

I. Manpower

1. Peak 418 Champlin employees

2. 2:00 a.m. 61

3. On call or call system — Excellent system for call outs. Have weekend team.

4. Contract employees — 190 total - 30 on project. Balance in plant operations.

COMMENT/RECOMMENDATIONS

Program is to increase Champlin craftsmen. Use contractors for non-competitive positions such as janitors, laborers,etc. Eliminate bottle washers. Eliminate clerical contract. Hire as Champlin or eliminate.

J. Storage Facilities

1. Spacing - National Fire Code Guidelines with special adaptation to an unusual location.

2. Diking (Capacity adequate to contain contents of largest tank)

Yes

3. Drainage

Some dike areas need surface rehabilitation to drain properly after heavy rains.

4. Weed control

Grass cutting by contract. In most areas, program is okay.

5. Exposure

Minimum

I. ADMINISTRATION (Continued)

6. System for assuring adequate protection considerations during alterations or additions to existing facilities. There is a procedure in practice that any installations will not be made without the Technical Service Dept. approval. Coordination is done with the Purchasing Dept. to help maintain integrity.

7. Are all storage facilities for oil products adequately separated from the LPG facilities? For the most part, yes. There is a heavy concentration of pressure storage (both spheres and bullets) adjaacent to the No. 1 Cat Cracker.

8. Comment on use and condition of shunts installed on floating roof tanks

   Unknown. Technical Dept. to pursue.

9. Are shunt strips checked for impedance/continuity?

   Unknown--Recommend Technical Dept. evaluate.

COMMENT/RECOMMENDATIONS

K. Loss Control Program

1. Safety Policy and Attitude

   Copies to each new employee. Brack Routh is currently revising. Will then be issued.

   a. Is there a written accident prevention policy? Yes
      Issued on first day of safety orientation. Along with safety gear.

   b. Is it oriented toward injury prevention only? Yes

   c. Is it oriented toward accident prevention? Yes

   d. Is it oriented toward total loss control? ---

I. ADMINISTRATION (Continued)

e. Are all supervisory personnel familiar with it? Yes

f. Are hourly workers familiar with it? Yes

g. How does management support the policy? Strong Commitment

Past four Refinery Managers had similar commitment.

h. General attitude toward safety:

WORKERS: First impression is during employment interviews where applicants have had feecback from existing employees. Good attitude during Safety meetings, but interest does vary with subject matter.

SUPERVISORS: Excellent. Particularly apparent when they are conducting Safety Meetings.

MANAGEMENT: Strong Commitment. Reifnery Manager chairs the Central Safety Committee, and the Safety Manager attends the Operating Meetings.

i. To what extent to senior management meetings include safety? Central Safety Committee meets once per month. Daily meetings on Monday, Wednesday and Friday are attended by Safety Manager for his input. Loss time accidents are initially discussed in this Department Head meetings.

j. What are the stated safety objectives?
Current year: (1) Reduce injuries
(2) Improve Supervisor's conduct of Safety Meetings.
(3) Improve consistency in corrective discipline.
(4) Protective equipment enforcement.
(5) Go one year as a minimum without a loss time accident.

Five-Year plan: None

k. Is success in accident prevention recognized by management?

PROMOTIONS: Not used as an effective tool.

APPRAISALS: Applied to Safety Manager. Needs emphasis placed on other Department Heads and Supervisors' appraisals.

OTHER: Has caused a few delays in the past on merit increases in a few specific instances.

l. Are the areas of responsibility for safety defined in writing? Yes.

Do those responsible understand? Yes

Do all levels of supervision understand their responsibilities? Yes.

I. ADMINISTRATION (Continued)

m. Is safety responsibility included in job descriptions? Yes

Included as a general requirement among the duties and responsibilities described for the particular position.

n. Are accidents and their costs charged against the department? No
Costs are identified and compared to statistics from such agencies as National Safety Council.

o. Are first line supervisors required to submit periodic safety reports to management? Inspection reports which include safety related items made by Area Supervisors. Normally apply to special areas such as crane and hoise inspection, radiation, boiler inspections, etc.

COMMENT/RECOMMENDATIONS

Department Heads and Superintendents do not attend Safety Meetings for Hourly employees. Recommend they attend occasionallky to demonstrate interest and insure their satisfaction with the program.

Occasionally a Champlin designee should attend Contractor's Safety Meetings. Reported that Mundy has not had a disabling injury in 2 years and RMC since March, 1981.

2. Safety Organization

a. Does facility have designated safety personnel? Yes

Has increased from 3 to 5. Plant divided into areas. Attend morning meetings with Area Supervisor.

b. Safety Committees

Senior management Central Safety Committee

Supervisory Superintendent's chair Supervisors meetings

Other Hazardous Job Procedure Committee--Schneck, Duvall, Tansey, Whipple, Cornelison, Routh. Change in procedures clear this committee before going to Central Safety Committee.

c. How often do they meet? Central Safety Committee--Once per month.

Report to Refinery Manager

Chairmen Refinery Manager

Agenda prepared by Safety Manager with impact from Refinery Manager

I. ADMINISTRATION (Continued)

Are serious accidents and near miss accidents reviewed by this committee? Qualified Yes. Each one is reviewed by investigating committee and circulated to management & Central Safety Committee. Near misses could be expanded. Have form established. Need more emphasis.

COMMENT/RECOMMENDATIONS

Refinery has an off-the-job Safety Committee chaired by B. Duckworth. Committee includes Warren Thompson and R. Poynter. Sponsor seminars on CPR, Defensive Driving, First-Air Training and Home Safety.

3. Safety Education and Training

a. Is there a formal safety orientation program for newly hired employees? Yes

b. Is there a formal and ongoing program to train supervision in loss control techniques? Yes. At least one course per year for new supervisros. Evaluating having a quarterly Safety Meeting for all first-line Supervisors.

c. Describe the job training programs and their applications. Four weeks basic training. one-half day classroom and one-half day out. Includes forklift, HF Acid, H_2S, Scott air pak, and may more.

d. What type of planned safety training programs are utilized? Similar to TYRO program, but modified to fit CCR. Use API slides and manuals for additional impact.

Who conducts the training? Tom McNeal and Ken Bosworth, Training Supervisors, and some outsiders in specialized areas.

What is the nature of these programs

Video tape, films, and verbal.

e. Is there a training program for industrial power trucks? Yes

Who attends?

I. ADMINISTRATION (Continued)

f. How is safety publicized within the plant?

Bulletin Boards XX Post near misses No, need stimulation in discussion

Post serious accidents Discussed Newsletters Yes Other Bulletins --Information sent to Champ-Action Newsletter. Family Safety Magazines, Various other-- fountain pens.

g. Have there been any special educational programs conducted within the last 12 months? Many special programs varying from different types of first-aid to diverse educational programs.

h. To what extent are the preventive and predictive aspects of safety emphasized in these programs? Very strongly emphasized

i. Is there a safety handbook? Yes

COMMENT/RECOMMENDATIONS

II. PLANT OPERATIONS PRACTICES

A. Hot Work and Entry Permits

1. Responsibility for Authorization - (written)

   a. Daily operations

      Operations supervisors, maintenance supervisor and operator must approve hot work.

   b. Turnarounds

      Same as (a) except some permitting is delegated to Safety Engineers.

2. Plant Supervision of Such Work

   a. Gas free responsibility

      Operations Department is in charge of preparing equipment for work.

   b. Supervision of hot tapping Operations supervisor, safety supervisor and maintenance representative must sign permit. Sonoray by inspection is required.

   c. Is there a written hot tapping procedure?

      Yes

3. Is motorized equipment required to operate under permit? Under what circumstances? Any time such equipment is to enter unit limits they must have a permit from an operator or supervisor. The logistics department is initiating tank dyke entry restrictions.

4. Plant Records of Permits

   Hard copies are retained by issuing authority.

5. Responsibility for Area Clearance

   a. Qualifications necessary for area clearance

6. "On Site" Fire Protection

   a. Who is responsible for designating and assuring?
      The issuing authority from operations designates the requirements. The Supervisors are supposed to spot check for compliance. The Safety Department issues a spot check compliance report.

   b. Who is responsible for providing?
      The people doing the work, i.e. maintenance or contractor personnel.

II. PLANT OPERATIONS PRACTICES (Continued)

7. Management Supervision

a. How much active participation?
Some spot checking is done. However, managers admit they don't do as much as they should.

b. Implementation of written programs and procedures.

8. Management's knowledge and understanding of procedures and practices.

a. What parameters govern the issuance of a Hot Work Permit?
Managers know the paramerters.

b. What conditions must be met for authorization of an Entry Permit?
Managers know the conditions.

c. What type training or qualification is required to establish personnel competence for issuing permits?
No formal training is typically done. Logistics has recently conducted training for all issuing authorities.

d. What parameters are established for the retention and/or retrieval of completed permits in case of need?
Issuing party keeps hard copies of all permits issued.

COMMENT/RECOMMENDATIONS

B. What procedures are provided to assure the inspection and servicing of pressure/vacuum vents, static bonding and grounding, level measuring devices, etc.?
Relief valves have weekly inspections by operators for proper alignment and no leakage. Check lists are forwarded to supervisors.

COMMENT/RECOMMENDATIONS

II. PLANT OPERATIONS PRACTICES (Continued)

C. Control Houses

1. Are control rooms pressurized? Is source of air for control room from a safe place? Are there alarms for loss of pressure? Are audible alarms for critical services loud enough and long enough to insure being heard?

   All control rooms air pressurized. Not many have alarms. Air source is elevated intake above control rooms.

2. Does uninterruptable power supply services provide for adequate lighting in control room during power outage?

   There is a battery backup power supply for the new plant control room. It supplies power to partial unit lighting as well.

3. Are sealed or inaccessible areas such as false ceiling or raised flooring provided with adequate fire detection systems?

   No fire detection systems were noted in the areas.

4. Are air conditioning systems designed to prevent the induction and/or recirculation of smoke or vapors in the control room in the event of a fire?

   No. They are once-thru systems with no hydrocarbon monitors or smoke detectors.

5. Are there indications of disabling or dismantling of audible alarm or warning devices?

   The one alarm system I saw was not being disabled.

COMMENT/RECOMMENDATIONS

The only Halan fire system I noted was in the knock engine room at the terminal. The new plant control room should be considered for this as well as the Alky-Cumene control room.

D. Plant Control of Contractor Personnel

1. Type of pre-entry briefing given contractors (Written, oral - or both).

   a. By whom?

      Dave Levy - Project Coordinator meets with each lead man for each contractor entering the refinery.

   b. Specific subject covered.

      A discussion covers all general refinery safety rules, including all permit procedures, special hazards, special equipment, etc.

II. PLANT OPERATIONS PRACTICES (Continued)

2. Are personnel properly instructed in the use and limitations of personal protective equipment?
This area is covered in both the initial orientation and when work permits are issued by field coordinators.

3. What type of hazard orientation program is being provided contractor personnel?
Same comments as above.

4. Program Records - Describe the types and extent of records maintained to verify contractor training and orientation.
No records of safety orientation are kept. Contractors are required to hold safety meetings and Champlin Project people attend those meetings.

5. What does plant management conceive as its role in supervising or monitoring contract personnel activities within the unit?
The ultimate responsibility is shared by operations, project, and maintenance supervisors.

COMMENT/RECOMMENDATIONS

E. Unit Emergency Shutdown Procedure

1. Does each unit have a pre-planned documented emergency shutdown procedure?
Each unit checked had such procedures.

2. How are emergency shutdown procedures made available to the operating personnel?
The manuals are in the control rooms. The material is used in safety meetings.

3. Are emergency shutdown procedures rehearsed?

a. Frequency

b. "Dry run" or actual

The procedures are not rehearsed. Review is an on-going process between operators and new helpers.

II. PLANT OPERATIONS PRACTICES (Continued)

c. Records maintained Check lists have been used to keep track of which employee has received which training. This is currently not being done in operations. Logistics uses a weekly check off list.

4. Which units are equipped with Blowdown facilities?

a. Can Blowdown controls be remotely operated?
The crude units have liquid blowdown systems. They are felt to be inadequate and would not be used.

5. What type of facilities are provided for Blowdown discharge?

6. What equipment is provided with depressuring systems to protect pressure vessels during fire conditions? What criteria was used in their selection?
All hydrotreaters and platformers have remote depressuring systems.

7. What training has been provided to the operations department personnel to cope with the possibility of having to operate units after a total instrumentation failure? No specific training program exists. This is partially covered in general emergency training. The plant has back-up nitrogren systems and it is felt a total failure is unlikely.

COMMENT/RECOMMENDATIONS

F. Plant Emergency Procedures

1. Is written manual available? Yes

a. Date of last review/revision
I failed to check revision date.

b. Does it include?

(1) Assigned P.R. representative
The Personnel Manager is the initial contact.

II. PLANT OPERATIONS PRACTICES (Continued)

(2) Facilities for news media No facilities are provided for. The general approach is to keep news media out of the plant.

(3) Legal support Provided for by the Personnel Manager contacting Fort Worth office.

(4) Plan for distributing news releases
The Personnel Manager contacts Ray Dryden.

COMMENT/RECOMMENDATIONS

2. Mutual Aid

a. What mutual aid plans does this unit participate in?
The refinery is a member of the TERMINAL FIRE DEPARTMENT (TFD).

b. Are inventories of equipment and supplies available, current and compatible?
Supplies and equipment are compatible with a TFD member.

c. Are notification and/or call out procedures clearly defined and current?
Any supervisor can call the TFD directly or have security call.

COMMENT/RECOMMENDATIONS

G. Fire Brigade

1. What criteria is used to establish brigade participation?

Positions within operations are chosen from the organization which can be released with minimum risk to the units.

II. PLANT OPERATIONS PRACTICES (Continued)

2. Is participation mandatory; within what parameters?
Participation is mandatory. No physical limitations are allowed.

3. Number of employee members drawn from which departments?

Two from new plant, two from the terminal/ shift
Three from old plant, two from laboratory/

4. Coverage on each shift and weekends

Yes, see 3, above.

5. What provisions have been established to facilitate liaison with:

a. Public fire department The city fire department will respond if called by the TFD. No formal training with the city is conducted.

b. Other industrial fire brigades
See item F. II. 2.

6. Training Program (drills - frequency - records - outside help)
The Emergency Response Team (fire Brigade) trains one 8 hour session per week, thus everyone receives training once a month.

7. Supervision
The ERT and TFD members are supervised and trained by the Safety Department.

8. Pipe, equipment, and adapters for public fire department

All equipment is compatible with the city.

9. What provisions have been made to provide additional fire fighting support (additional men, foam, fire trucks, hose, etc.)
All TFD members share manpower and equipment.

COMMENT/RECOMMENDATIONS

H. Plant Employee Fire Protection Training Program

1. Which employee groups receive training?
All employees receive 3 hours training anually. All new employees receive training during one day orientation and again 4 weeks after hiring.

II. PLANT OPERATIONS PRACTICES (Continued)

2. Describe the frequency and types of training provided?
Hand extinguishers on open pit and paint rock fires. Fire truck on open pit and LPG fires.

3. Indicate the types and extent of records being maintained relative to employee fire protection training. Monthly reports are issued which include rosters of who received training. No individual files are maintained to track particular employee training.

4. Who is responsible for establishing and implementing the fire protection training program?

The Safety Department Manager working thru a Safety Engineer.

5. Are professional schools on fire protection being utilized? Yes. Approximately 40% of the ERT attends fire school at Lamar each year.

COMMENT/RECOMMENDATIONS

II. PLANT OPERATIONS PRACTICES (Continued)

I. Operator Training and Preparedness

1. Who has the primary accountability for operator training programs and performance?
   Ray Duvall - Manager of Operations.

2. Have minimum levels of training and competency been established for the various operator classifications, and if so, are these training levels mandatory prior to upgrading?
   Yes, to a certain extent. Trainees and helpers participate and must pass competency exams.

3. Are training requirements, objectives and goals stated in clear and specific terms by classification, subject, assignment, objective, etc?
   Yes. Tests on specific subjects require minimum scores.

4. Have job descriptions been established for each operating position which clearly and specifically establishes the position's duties and responsibilities?
   Yes. All units either have or are currently developing job descriptions for all positions.

5. What provisions have been made to assure consistent and timely program evaluation and follow-up?
   Review boards are used to evaluate employees during each phase of training. No system is used to evaluate the program itself.

6. What provisions have been established to assure the availability of adequate facilities, time and subjects for training? Currently there are two training supervisors with plans for a third. Two clerks are used to keep records current. Two mobile trailers are used for classrooms, 30 - 40 people are in training.

7. What methods are established for testing/evaluating the effectiveness of training functions? How is periodic program review and updating accomplished? No testing is used to evaluate the training function. The performance of new employees would indicate the effectiveness of the program.

8. What specific policies have been established to provide guidelines in the event an operating employee fails to meet the prescribed minimum training requirements?
   If an employee consistently scores below 70% the trainer discusses this with the new employee. If no improvement is seen, the employee is terminated.

9. What programs have been established to provide for apprenticeship type training in recognition and preparation for future operating manpower needs?
   Up to 24 weeks of the training program is apprenticeship. A minimum of 7 weeks is apprenticeship.

II. PLANT OPERATIONS PRACTICES (Continued)

10. Are all training requirements and programs equally applicable to supervisory personnel too? if not, indicate the differences.
Yes. The training coordinator, former operator, indicates he has learned from the training.

11. To what extent are the following operating aids provided in the various control rooms and are they complete and current?

a. Unit operating manuals
All units in the new plant and most in the old plant had operating manuals.

b. Operating department standard operating procedures for all routine and common duties.
All positions either have or are having developed job descriptions.

c. Safety manual covering regulations for all hazardous permit procedures.
All units checked had a safety manual.

d. Adequate and detailed check lists for start-up and shutdown operations.
No detailed check lists were found.

e. Emergency operating situation manual covering each operating unit and/or major piece of equipment serviced by the control room.

All units had emergency procedure manauals. A lot of work has recently been done in this area.

12. When was each of the indicated manuals last revised?
See above.

13. What methods are used to assure the operators understand and utilize the information contained within the above publications?
Approximately once each 3-4 months the operators are required to review procedures with helpers and document this review.

14. Do the various shift logs indicate an adequate record of operating activities, functions, decisions, etc. to be utilized as a permanent and accurate record? A new program has just been put into affect which provides for order books for written orders from supervisors. I recommend that supervisors and operators be required to initial the operator or supervisor log daily to show they have read the log.

COMMENT/RECOMMENDATIONS

III. PLANT MAINTENANCE PRACTICES

A. TANK FARM

1. Dikes and drain appear to be well maintained. Housekeeping can be improved. Observed empty barrels and containers in TK-2001, 2, 3, & 4 Area. Area 90 dike walls showing signs of erosion.

2. Dike drain valves are not always visible. Valves are kept in a closed position.

3. Good.

4. Maintenance Department inspects tank vents and flame arrestors twice a year. Inspection Department has a program to U/T tank wall thickness every 18 months.

5. See Item 4.

6. Yes - Both tank farm and operations inspect each shift.

7. No - Signs are posted.

8. The majority of the remote shipping pumps including the crude charge pumps and Area 90 and 91 pumps.

9. Yes - Inspected twice annually.

10. No - There seems to be no effect to stop vehicles entering tank dike areas.

11. No - W.O. basis.

12. Recently started program to change all wooden platforms and steps to galvanized steel.

13. No - W.O. basis.

14. Operations submits W.O. to maintenance.

III. PLANT MAINTENANCE PRACTICES (Continued)

COMMENTS AND RECOMMENDATIONS

Tank Farm is in good condition. Areas of improvement are:

1. Housekeeping especially inside the diked areas.

2. Weed control program. Weeds inside the diked areas are extremely high.

3. Control vehicle entry into the diked areas. Suggest installing a chain across the entrance.

B. FIREPROOFING

1. New Units' fireproofing is adequate. Older units need improvement.

   (a) Appearance of the insulation is good.

   (b) Need additional coverage in the older units.

COMMENTS AND RECOMMENDATIONS

The fireproofing in the newer units is generally good. Suggest a survey is performed to review the present and future needs for fireproofing of the older units.

C. PLANT DRAINAGE

1. Yes - effective in the process areas.

2. The recent heavy rainfall (10-inches) did cause problems in outlying areas.

3. Yes

4. None

COMMENTS AND RECOMMENDATIONS

Drainage system appears to be adequate. Review problem areas with the recent heavy rainfall and take the necessary corrective action.

III. PLANT MAINTENANCE PRACTICES (Continued)

D. SHOP FACILITIES

1. Housekeeping is excellent. Shop areas are large and adequate.

2. Yes - All are operable.

3. (a) Face shields and eye protection guards on all grinding wheels and bench grinders.

(b) Lathe chuck guards.

(c) Gloves and eye protection for chemical cleaning.

(d) Gloves and face protection for welding.

4. Yes - And it is kept clean and in good repair.

5. Yes.

6. Yes - Records are kept in a file in the craft supervisor's office.

7. Yes.

COMMENTS AND RECOMMENDATIONS

The general appearance of all the craft shops is very good. Housekeeping is excellent.

SUGGESTIONS

1. Installation of a foot guard at the base of the 100 ton press in the machine shop area.

2. Relocate air and electrical supply to the machine shop work benches, present location is a possible tripping hazard.

E. CONTROL HOUSES

1. Yes - In the new units.
No - In the old units.

2. Yes.

3. Yes

4. Yes - for instrumentation in the #1 Crude Unit.

III. PLANT MAINTENANCE PRACTICES (Continued)

E. CONTROL HOUSES (Continued)

5. Yes

6. Halon System in the Cumine Unit. Fire extinguishers in the #1 Crude Unit.

7. Yes

COMMENTS AND RECOMMENDATIONS

General housekeeping is good.

SUGGESTIONS

1. Install safety windows - #1 Crude Unit.

2. Repair control room doors, they presently will not close.

F. INSTRUMENTATION

1. Boiler Shutdown - Every 3 months.
Fin Fan Coolers - Every 3 months.

2. P/M program, records are maintained and kept in the craft supervisor's equipment file.

3. All repairs are performed in the instrument shop. The facilities are fully adequate for current and possibly future needs.

4. Yes - Only exception is that the vibration shutdowns on all centrifugal compressors has been disconnected, this was a management decision.

5. Yes.

6. Yes - U.P.S. and nitrogen for the instrument air.

7. #1 Crude Unit control panel is dirty and is presently being utilized as storage for rubber hose.

8. None (only one exception, see Item #4.)

III. PLANT MAINTENANCE PRACTICES (Continued)

F. INSTRUMENTATION (Continued)

9. When failure is noted.

10. Every 6 months as part of a P/M program.

11. Yes. Alarms to the control room.

12. Each turnaround - Instrument department.

COMMENTS AND RECOMMENDATIONS

There is a good P.M. program in effect and records are kept up-to-date. Shop facilities are good and housekeeping is excellent.

G. ROTATING MACHINERY

1. Yes - Vibration monitoring, and lubrication programs, records are updated weekly.

2. Yes

3. Yes

4. Yes - Equipment maintenance card with vibration baseline reading.

(a) All critical pumps, motor, gearboxes and compressors.

COMMENTS AND RECOMMENDATIONS

Very impressed with the vibration monitoring program, records are well maintained and updated.

Recommend program is expanded to all of the rotating equipment.

H. ELECTRICAL

1. Yes - During T/A work and every two years by an outside contractor (B.E.S.)

2. Yes

(a) Yes
(b) None

III. PLANT MAINTENANCE PRACTICES (Continued)

H. ELECTRICAL (Continued)

3. Switch gear rooms are checked weekly by the Electrical Department, rooms were clean on the day of the inspection. Rooms are purged and have fire extinguishers.

4. Yes.

5. Yes

6. Yes

   (a) Yes - Alarms to the control room.

7. Yes - Exceptions are:

   (a) T-16 substation
   (b) Item 31-BLM-1
   (c) Item 32-CM-1

8. Testing of the grounding grid system is not required due to the high water table. Manholes are checked after each rainstorm.

COMMENTS AND RECOMMENDATIONS

Electrical shop is well maintained, housekeeping is excellent, the equipment files are up-to-date.

I. INSPECTION

1. Yes - Inspection of refinery equipment is well documented and any follow-up is forwarded to Technical Services or Maintenance for the appropriate action.

2. Yes - U.T. piping and vessels.

3. Yes. Yes they are up-to-date. Yes all of the company and contract welders are tested and are qualified for all code work.

4. Inspectors are certified by the American Welding Society.

5. Technical Services forwards a written procedure of the repairs to the maintenance manager for the appropriate action.

III. PLANT MAINTENANCE PRACTICES (Continued)

I. INSPECTION (Continued)

6. A weld procedure of the repairs is written and forwarded to the maintenance department.

7. Yes. Inspection Department - readings are taken monthly.

8. Yes. Shop inspections are performed by the inspection department, however, not for each step of the process.

9. Yes. Mechanical Engineering Department.

10. Yes. Mechanical Engineering Department, inspection group.

11. Yes. Mechanical Engineering Department, inspection group.

COMMENTS AND RECOMMENDATIONS

Although I did not see any of the inspection records, I was told they were kept up-to-date. I would suggest that the quality assurance inspection program be expanded to include detailed inspection of major equipment.

J. RELIEF VALVE INSPECTION PROGRAM

1. Mechanical engineering is responsible with the inspection department implementing the program.

2. Yes

3. Yes

4. Operating areas - Every 24-30 months.
Tank Farm Areas - Every 5 years.

5. Yes - Contract Shop - Contract shop is certified, not certain if the personnel are certified.

6. Chief Inspector.

7. See interoffice correspondence date 10/2/81, a copy is attached.

8. Yes

9. Yes

III. PLANT MAINTENANCE PRACTICES (Continued)

J. RELIEF VALVE INSPECTION PROGRAM (Continued)

COMMENTS AND RECOMMENDATIONS

All of the refinery relief valves which have block valves on the inlet or outlet have been identified. A follow-up inspection program has been implemented to ensure that these valves are chained or carsealed open, this appears to be working quite well.

All records appear to be up-to-date and well documented.

K. PLANT PROCESS EQUIPMENT INSPECTION RECORDS

1. Records concerning insurance on boilers, air receivers and fire protection systems. Records on inspection of floating roof tanks by the State of Texas.

2. Not generally available.

3. None

4. Emergency shutdown on control panels are tested on turnaround and shutdowns.

5. Maintenance Department in conjunction with operations.

COMMENTS AND RECOMMENDATIONS

Review the need to store important records pertaining to permits, insurance, etc., in a safe location.

L. PLANT OVERHAUL OR TURNAROUND PRACTICE

1. Yes, hourly. Two main contractors are used during turnaround each has his own Safety Director who under the direction of Champlin's Safety Department properly indoctrinate contractor personnel.

2. Safety Department attends all of the turnaround meeting and are active in all of the shutdown planning.

(a) Yes. Coverage is provided for both the day and night shifts.

III. PLANT MAINTENANCE PRACTICES (Continued)

L. PLANT OVERHAUL OR TURNAROUND PRACTICE (Continued)

3. Yes

4. Inspection Department issues a report of all the turnaround findings, which is issued to department managers.

5. Only deviation is for hot work permits, the Safety Department issues these during T/A.

COMMENTS AND RECOMMENDATIONS

None of the units were shutdown at the time of the survey, however, it appears that all safety rules concerning equipment and personnel are completely followed. The Safety Department appears to fully cooperate with maintenance and operations during this period.

IV. TECHNICAL CONSIDERATIONS

A. Startup and Shutdown Procedures

1. Does plant have a formal (written) startup/shutdown procedure for all units?

   Most units. Most operators have own copy in lockers.

2. Does plant employ the critical path (arrow diagram) method for startup/-shutdown operations, supplemented by detailed check lists?

   No arrow diagram - use check lists and experience.

3. What arrangements are made for communications between shifts? Is there a supervision overlap?

   Planned shutdown and startups - two shifts - two supervisors.

4. What provisions are made for coordination between the unit and other units, power station, tank fields, pump houses, water pumping station, etc. on startup and shutdown?

   Raidos and Phones

5. Are "practice or simulated start-ups" performed before actual startup?

   Operators review startup procedures weekly - also emergency shutdowns.

6. Are the start-up/shutdown procedures readily accessible to plant operating people for use and reference?

   Yes

7. Does startup procedure include the following phases:

   (Note - Items 6 and 7 for guidance only and are not to be included per se in the narrative section).

   a. Preliminary Preparations

   b. Preparation of Auxiliary Equipment and Services

   c. Elimination of Air

   d. Tightness Testing

IV. TECHNICAL CONSIDERATIONS (Continued)

e. Introduction of Fuel Gas

f. Elimination of Water

g. Bringing Unit on Stream

Yes

8. Shutdown procedure should include the following phases:

a. Cooling and depressuring

b. Pumping out

c. Removal of residual hydrocarbons

d. Removal of corrosive or poisonous material

e. Disposal of water

f. Blinding and opening

g. Removal of contaminants, including pyrophoric iron sulfide

h. Inspection for entering

Very good

9. What records are maintained of these activities?

Records are kept during planned shutdowns and startup. Some readings taken every five minutes.

IV. TECHNICAL CONSIDERATIONS (Continued)

10. What communication equipment is available for startup and shutdown?

Raidos and telephones.

11. Operator and maintenance training program

a. Initial training. Documented program. Planned program outlined.

20 weeks yes yes

b. Refresher training, frequency. Program outline. Time requirements.

One week old plant - twice a week new plant.

c. Training program records.

Records kept in operations office.

COMMENT/RECOMMENDATIONS

New advanced training program coming up in the future.

B. Utilities Reliability

1. Electrical Power

a. Public Utility

(1) Number of feeds

Each primary substation (1-69KU and 1-138KU) has two primary feeds from different utility generating plants.

(2) Construction of poles

Wood construction "H" frame; steel construction, single-pole.

(3) Exposure to transmission lines and transformers

Transmission lines are overhead on wood and steel poles. Transformers are located at ground level inside fenced and locked substation.

(4) Reliability history

Exceptional well, have had trip-outs, average one per year. However, because of two feed into the plant a major outage has never occured.

IV. TECHNICAL CONSIDERATIONS (Continued)

b. Plant electrical generation

(1) Capacity

1-500KW new Fluor Plant

(2) Power source
Diesel driven

(3) Protection provided

None

(4) Exposure s

Outdoor, no weather proof protection directly exposed.

c. Plant transformers

(1) Protection from physical damage

Some units located on firewalls have no protection, others located inside fenced areas.

(2) Exposure (to and from)

No direct exposure to personnel.

2. Steam Generation

a. Boiler capacity (pounds per hour and psi). Are boiler permits posted or available in plant?

Old Plant - 2/50,000 lbs; 2/70,000 lbs.; 250lb leader
New Plant - 2/125,000 lbs.; 2/150,000 lbs.; 600lb leader

b. Fuel (alternate fuel)

Gas oil

c. Fuel supply on hand - source of replacement

Storage tank - made at plant

d. Number of generators

e. Transmission system

600 - 150 - 50

IV. TECHNICAL CONSIDERATIONS (Continued)

COMMENT/RECOMMENDATIONS

None

C. Water and Air Entrapment
(*See note below)

1. Spot check plant practice for locating drains at low points and vents at high points for process lines, vessels and equipment.

2. Check plant program for draining water from bottom of vessels, low points of lines and exchangers during steaming and startup periods.

3. Plant practice for drawing water from feed tanks (frequency, responsibility records).

4. Plant safeguard control for proper purging.

5. Spot check for valves in vertical lines. (Freeze protection)

COMMENT/RECOMMENDATIONS

Very good program in this area.

(*The above subject will not be used as a written topic in the narrative section of our report. The above is only for guidance in this area. Deficiencies are to be covered in the recommendation section of report.)

IV. TECHNICAL CONSIDERATIONS (Continued)

D. Electronic Data Processing Machine (EDPM) Information

1. Location of EDPM

Main control

2. Building construction

Brick

3. Is EDP room physically separated from media storage and adjoining occupancies? Describe.

Brick wall and door between main control.

4. Protection for EDP room, media storage and adjoining occupancies:

a. Automatic protection

(1) Type (sprinkers, CO_2, Halon 1301)

CO_2

(2) Coverage (total flooding, cabinets, under floor)

Total coverage

b. Smoke detection (type & location of units)

Smoke detection only - EDR room

c. Automatic alarm

All automatic

d. First Aid fire appliances

5. Occupancy

a. Hardware:

(1) Type used

Fox 1

(2) Functions being performed

Reports, displays, and controls

IV. TECHNICAL CONSIDERATIONS (Continued)

(3) Owned or leased
Owned

(4) Back-up facilities
Back up disc

(5) EDP room is attended on a 8 Hr. per Day basis.

(6) Estimated hardware replacement time.

Depends on hardware.

b. Software:

(1) Are duplicate programs maintained?

Three weeks back.

(2) Where stored?

Vault

(3) How frequently are duplicates updated?

Weekly

(4) Estimated replacement time of programs.

30 minutes maximum.

6. Business Interruption

a. Is the EDPM necessary for continued operation of this facility - Explain.

Yes. Loss of money.

7. Emergency Power

a. Cable routes
Battery and generator.

b. Fireproofing
Okay

IV. TECHNICAL CONSIDERATIONS (Continued)

8. Portable applicances: (employee convenience items should not be permitted).

   a. Coffee pots

   b. Water heaters

   c. Hot plates

   d. Sandwich warmers

   All up to code.

9. Atmospheric Control

   a. Heating - quality of air, automatic shutdown

   b. Cooling - alternate source. Separate from other occupancies. Adequate filtration.

   c. Monitoring of variables with supervisory alarms and shutdowns.

      (1) Temperature and relative humidity of room air.

      (2) Temperature and relative humidity of machine air.

      (3) Alarm and supervisory systems provided with reliable and backup power supplies.

   Okay in all these areas.

10. Maintenance

   a. EDP Equipment

   Contractors.

IV. TECHNICAL CONSIDERATIONS (Continued)

b. Air conditioning plant

Fox contracts

c. Power supplies

d. Fire alarm and automatic suppression systems

11. Physical Inspections

a. Underfloor areas and cable raceways

b. Components

c. Ceiling or lining - abnormal and/or condensate from ducts

d. Electrical - including lighting and emergency lighting systems

Okay in these areas.

COMMENT/RECOMMENDATIONS

None

V. LOSS CONTROL CONSIDERATIONS

A. Auditing and Implementation

1. Are regular inspections made of plant areas, facilities, building, machinery, equipment, tools and work methods? Yes

   a. By whom? Line Supervision and Safety Dept./Maint. Insp. of Equip.

   b. How frequently? Weekly, monthly, semi-annually and annually

   c. How extensively? Spot check by supervision and by punch list

   d. With what results? Positive - very prompt with reports

2. Is a check list used in making inspections? Yes

3. Are recommendations for the correction of hazards acted upon promptly? Set on priority basis
   Safety Department sets priorities on Safety Work Orders submitted by S. Dep Keith Stevens Method utilized for work order processing/Supervisors audit work progress.

4. Do supervisors report hazards and advise mnagement of unsafe conditions beyond their control? Yes, thru area group meetings, Safety rep's are assigned to areas. Routine items, Area Supervisor takes care. Safety reps are utilized for specialized problems. Foremen will not accept unsafe practices. Department heads are generally very cooperative.

Safety Reps. manage area safety program.

5. What methods are utilized to assure follow-up and feedback on recommendations? Monitoring and inspection by Safety and Line Supervision.

6. Is there a safety suggestion program? Yes How is it processed?
   Safety Suggestion Box, follow-up by area Safety Engineer.

7. Are local safety rules and regulations including those pertaining to the use of personal protective equipment administered in accordance with the plant's current written policies? Yes, Line Supervision
   Joint responsibility of all departments.

V. LOSS CONTROL CONSIDERATIONS (Continued)

8. Is disciplinary action taken towards supervisors who tolerate unsafe conditions or practices? Yes, thru job performance evaluations.

9. Is disciplinary action taken toward employees who refuse to conform with the plant safety rules and regulations? Yes For failure to use protective equipment? Done on a progressive stage as with the Company disciplinary program.

10. Do good housekeeping conditions prevail? Above average.

11. What special permits are enforced:

Hot Work? ✓ Vessel Entry? ✓ Lock out? No, but have procedure.

Other? (List) Excavation

COMMENT/RECOMMENDATIONS

4. The area supervisor and employees rely on the area Safety Engineer for writing work orders involving unsafe conditions. The employees in general will by-pass supervision and go directly to the Safety Engineer.

8. Safety record to have more importance on salary reviews.

B. Statistics, Reporting and Accident Investigations

1. Are injury statistics being kept and posted in accordance with OSHA requirements? Yes, OSHA 200

2. Is a record made of all injuries & Illnesses? All that are reported

3. Is the cost of property damage, material loss and business interruption recorded? Yes - Corporate Loss Control Form - Dept. Sup.

V. LOSS CONTROL CONSIDERATIONS (Continued)

4. What use is made of these statistics? Analysis, Trends, Performance, Trouble spots.

Broken down into types and causes? Yes - Excellent

Analyzed and reviewed periodically? Yes - by all department managers.

Other? The communication between all departments - creates awareness.

5. What system is being used for reporting accidents and emergencies?

Written refinery rules that are communicated to all refinery personnel by supervision and the Safety Department.

6. Is there a published emergency plan? Yes What type of

situations does it cover? Injuries, Fire, Oil Spills, Equipment Failure, Weather Conditions.

7. Who investigates fires and accidents? Dept. supervision, Safety, Technical Services. Accident investigation panel made up of different Department rep'

8. Do supervisors prepare accident reports? Yes, generally within 24 hours.

9. What provisions are there for reviewing the loss reports for completeness

and accuracy? Safety Engineer reviews to insure.

COMMENT/RECOMMENDATIONS

An excellent system and the Refinery Management are to be complimented regarding their support of the Safety Department in this vital area.

V. LOSS CONTROL CONSIDERATIONS (Continued)

C. Medical Program

1. Are pre-employment physicals utilized in employment selection process?

Yes - standard Corporate program.

3. Are medical and hospital services readily available? Yes, pre-arrangements are made.

4. Are dispensary facilities available on premises? Yes

Contractor use? Initial emergency only and back billed for services.

5. Is it open on every shift? Day shift - on call other shifts.

6. Is there a plant doctor or nurse on duty? Yes - Company Doctor? Retainer days

7. Are there trained First Aid people on every shift? Yes - Foremen, Emergency Response and Guards.
Is first aid training documentation available, current? Yes

8. Are environmental health hazards being monitored? Yes

Fumes? ✓ Dust? ✓ Noise? Yes

H_2S, combustible gases. Dust has been checked for and determined not necessary.

9. What programs are being used to accomplish the monitoring and by whom?

Noise Conservation Program - Safety Dept.
Environmental Monitoring Program - Environmental Dept.
Employee exposure monitoring by Safety.

10. What provisions have been made to identify, corrolate, and preserve

employee medical records? By the Industrial Nurse in the Medical Department and thru the Insurance Claims Department.

V. LOSS CONTROL CONSIDERATIONS (Continued)

COMMENT/RECOMMENDATIONS

The medical program is excellent and the plant employees have confidence in the medical and safety personnel.

D. Personal Protective Equipment

1. What protective equipment is available to employees?

Eye glasses? Safety glasses with flat fold side shields.

Safety footwear? Safety shoes and boots - company paid.

Goggles and face shields? Yes

Self-contained breathing apparatus? Yes

Airline respirators? Yes

Gas masks? No Respirators? No

Ear muffs and plugs? Yes - readily available at different locations.

2. Are fit tests utilized where applicable? Yes - thru training programs.

3. Who is responsible for fit testing and how is it done? Safety Department and supervisor.

4. What instruments are available to check environmental conditions?

a. Combustible Gas Analyzer? Yes, MSA, Gas Tech, Bacharach.

b. Toxic gas analyzer? Gas Tech, H_2S, Draeger Tubes.

c. Oxygen meter? Yes - Gas Tech

d. Noise meter? Yes - Scott

e. Other? Alnor Velometer - for checking air flow for welding ventilation Smoke tubes; Radiation leak detector for microwave ovens.

V. LOSS CONTROL CONSIDERATIONS (Continued)

5. Who is responsible for equipment, inspection and maintenance? Safety responsible - maintenance done by Safety or sent to outside certified repair shop.

6. Are there maintenance sterilization facilities? Yes - Respirator and medical instruments.

COMMENT/RECOMMENDATIONS

The Safety Department and Plant Management has one of the best programs established that I have reviewed in years. DRP

E. Engineering Controls

1. Is the safety department consulted prior to requisition and installation of new equipment regarding safety in design and/or alteration of plant facilities, building and layout of machinery or facilities? Within limitations, not all items.

2. What committees have been established to evaluate the impact of changes in environmental conditions that might be brought about by plant alterations and/or expansions? Central Safety and Staff Committees.

3. Does the safety representative sit on these committees? Yes

4. What equipment and materials are purchased under the direction of the safety department? All fire, safety and medical equipment.

5. Is there a priority system for safety items? Yes

What are its provisions? Work order system.

V. LOSS CONTROL CONSIDERATIONS (Continued)

COMMENT/RECOMMENDATIONS

A safety department should not be limited in reviewing any change that will take place, whether new addition or revamp of old equipment.

F. Unsafe Conditions

1. Major structural deficiencies, exits, fire doors, etc.? Corroded metal parts in the Alky Unit.

2. Adequate control of fumes, dust, gases, heat and noise? Thru supervision, Educational Training Programs and having protective devices readily available. Primarily an Administrative Controlled Program.

3. Indicate types of periodic inspections made of heat activating devices, automatic releasing devices, audible or visual warning systems, gas analyzers and other devices, pertaining to fire and/or accident

prevention? In house controlled and followed up by annually contracted certification of equipment.

4. Are applicable codes being employed as a guide to providing safety devices

and machine guards for hazardous operations? ANSI, NEC, ASME, OSHA, and Texas Regulatory Agencies.

5. Color Coding? Yes - on-going program.

6. Specific problems noted:

a. Employees reporting Unsafe Conditions to Safety - not immediate supervisor.
b. Excessive corrosion in the Alky Unit.
c. _____
d. _____

COMMENT/RECOMMENDATIONS

1. Safety representatives should not be the receiver of unsafe condition reports from the employees prior to other channels being exhausted.
2. The excessive corrosion in the Alky Unit should not be overlooked too long.
3. The Safety Department are to be complimented for having the trust of the employees for being an action department.

V. LOSS CONTROL CONSIDERATIONS (Continued)

G. Unsafe Work Methods Observed During Tours

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

7. _____

_____

H. Fire Loss Investigation and Related Records

1. Describe plant fire loss investigation program.
Safety initiates the investigation and includes Tech Services representative along with Department supervision of area involved.

2. Do fire/loss reports indicate sufficient factual information to evaluate the actual causes and determine realistic remedial recommendations?
The fire is critiqued and determinations made. Safety Manager chairs the critique.

3. Who is responsible for investigating losses and implementing the indicated preventative corrections?
Safety, Department involved, and Tech Services.
The Department involved implements necessary corrective actions.

V. LOSS CONTROL CONSIDERATIONS (Continued)

4. What procedures are established for review/evaluation of the loss reports for completeness, accuracy and implementation of recommended corrections?
Submitted to the Refinery Manager and he utilizes his staff for all determinations.

5. To what extent does plant management participate in the loss reporting and correction process?
Full extent to insure corrective measures are taken.

COMMENT/RECOMMENDATIONS

Well organized program.

I. Fire Protection

1. Indicate outside protection services available Refinery Terminal Fire Company - funded by the Inter-Refinery Group. Corpus Christi City Fire Department - responds on a pay as you go basis, not mutual aid.

2. Water supply

a. Source
12" City water main at East and 16" on West side, fresh water source from Corpus Christi. Tank 65 is a fire water tank, 49,749 barrels.

b. Distribution system (including sectional control)
Throughout the refinery on a loop system.

c. Sectional valves checked at least weekly. Are sectional valves adequately marked to indicate service?
Check weekly for open-close position.
Not identified for area service.

d. Hydrants - (type and spacing)
Mueller, American Darling and Refinery made.

e. Fire Hose

(1) Amount immediately available for fire fighting. Adequate amount, footage not known.

(2) Are all fittings and attachments compatible? Yes - National Standard Threads.

V. LOSS CONTROL CONSIDERATIONS (Continued)

f. Is fire hose pressure tested annually? Are records up to date?

Tested and records are in order.

COMMENT/RECOMMENDATIONS

It is recommended that the refinery standardize on Angus Fire Hose. This fire hose is more compatible to refinery environments.

3. Fire Pumps

Model or Type	Driven by	Rated Capacity	Rated Discharge-psi	Rated Speed	Manual or Automatic
4 - Gardner Denver	Diesel	1500 gpm	150 psi	1500 RPM	Manual
2 - Detroit V-71	Diesel	2000 gpm	150 psi	1500 RPM	Auto & Manual

a. Does test data show any indication of significant performance changes recently? One pump six months ago located at the steam plant. The pump has been overhauled.

b. Are critical spare parts identified and available? Spare parts are maintained for engines and pumps.

c. Pump started (at least weekly) using automatic or remote means

(1) Where is documentation maintained? Documentation is maintained in the Truck Shop and the Safety Department.

(2) Is it up to date? Yes - Documentation reviewed 11-18-81.

4. Public Protection

a. Public water supply

(1) Source
City of Corpus Christi - 12" line on E-st and 16" on West side. Dock Three (3) uses salt water.

V. LOSS CONTROL CONSIDERATIONS (Continued)

(2) Volume
50 psig

b. Distribution system and hydrants

Done inside of plant. Refinery has private loop system.

c. Public Fire Department

(1) Paid or volunteer None automatically responds.
Corpus Christi will respond when requested.

(2) Distance

5. Automatic Sprinklers - Lead Plant

a. Water supply Fire water mains

b. Alarms - None

c. Dry or wet systems - Deluge

d. Portions not sprinklered
Yes - Old Plant: Vacuum Unit
#1 Crude Unit
#2 Crude Unit
Cat Cracker

6. Water Spray

a. Manual
New Plant - Overhead coolers and hydrocarbon pumps.
Old Plant has some coverage but needs more for overhead coolers and all hydrocarbon pumps.

b. Automatic - None

7. First Aid Fire Appliances

a. Extinguishers
525

V. LOSS CONTROL CONSIDERATIONS (Continued)

b. Standpipe and hose

20 stations, 1½" hose and nozzles.

8. Motorized Equipment

a. Trucks, trailers, etc. 2 fire trucks; #1 - 300 gal. H_2O and 100 gal. of AFFF. #2 - 150# dry chemical and 100 gal. pre-mixed AFFF.
2 foam trailers; 300 gal. XL-3 foam each.

9. Fire Alarm Systems

Local alarm system for areas - actuation at Old Cat and Main Control Room.

10. Watchman and/or Security Guards

a. Number

31 full time and 4 part time.

b. Own employee or outside agency

Burns International.

c. Area covered

Entire Champlin property.

d. Patrol frequency

24 hour - camera surveillance
2 radio equipped patrols.

e. Radio equipment

12 radios.

COMMENT/RECOMMENDATIONS

It is highly recommended that an operating efficiency test on existing spray systems be conducted by an outside consultant.